A CASE STUDY OF STAKEHOLDER PERCEPTIONS ON COMMUNICATIVE COMPETENCE IN ENGINEERING TECHNICAL ORAL PRESENTATION

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ABSTRACT

To date, the notion of communicative competence is deemed "fuzzy" and limited in its operational definition from a linguistic and rhetorical perspective in oral communication literature. An understanding of communicative competence requirements in technical oral presentations stems from the lack of linguistic and rhetorical competency studies required among ESL learners in a Malaysian setting; employer discontent over graduates' apparent lack of communication skills and limited literature on linguistic and rhetorical features necessary in scientific and engineering oral presentations (Dannels, 2009; Hafizoah Kassim & Kassim Ali 2010; Morton, 2009). The notion becomes more complex when selected stakeholders from various communities of practice (COP) are required to provide their perceptions on such a notion in a workplace related communicative event, the technical oral presentation. Technical oral presentations are project presentations delivered by final year engineering students to a panel of examiners comprising selected members from the academic and professional engineering community. Drawing on the theoretical principles of communicative competence, this study initially investigates the notion based on five sub-sets of communicative competence constructs namely strategic, socio-cultural, interactional, linguistic and discourse competence. In this study, these sub-sets are termed as presentation skills and attribute construct (strategic and socio-cultural competence), behavioral skills and attribute construct (strategic and interactional competence), content construct (linguistic and discourse competence), language competency construct (linguistic competence) and non-verbal skills construct (interactional competence). The notion is further investigated within critique sessions of technical oral presentations from the linguistic and rhetorical dimension as used by ESL learners in a Malaysian setting, an area deemed lacking in scientific and engineering technical oral presentations in the Malaysian setting. A mixed methods design (which encompassed two phases) was utilised. In the quantitative phase, 240 final year engineering students (as participants from the academic community) and 66 engineers (from the professional engineering community) who as end users of the said communicative event, were required to respond to a questionnaire based on the above mentioned constructs. The analysis revealed that there are no significant findings except for the content construct (introduction stage). Inferential tests however, revealed that slight differences exist on the level of importance accorded to various items listed within each construct. The interpretive stage necessitated selected members of the academia (26 students; 13 lecturers; and 6 language lecturers) and 12 engineers from the professional engineering community to comment on linguistic and rhetorical features considered necessary to create that “magic” or “interaction and engagement” in critique sessions within technical oral presentations. Thematic analysis revealed the prevalence of five linguistic (technical competence, disciplinary competence, meta-cognitive competence, linguistic competence, and structural competence) and two rhetorical (rhetorical competence and interpersonal and interactive competence) themes. This study addresses the linguistic and rhetorical competence required of ESL engineering students as perceived by ESL practitioners in the Malaysian tertiary education setting as well as those from the science and engineering profession. A suggested linguistic and rhetorical framework is proposed in an attempt to enhance the communicative competence requirement in critique sessions within technical oral presentations to enable today’s ESL graduates to speak like engineers in tomorrow’s future.

ABSTRAK

Sehingga kini, tanggapan terhadap kemahiran berkomunikasi dianggap "kabur" berdasarkan takrifan sedia ada dalam kajian literatur komunikasi lisan. Tanggapan ini menjadi lebih kompleks apabila pihak-pihak berkepentingan yang terdiri daripada pelbagai komuniti pengamal yang juga dikenali sebagai “Communities of Practice” (COP) dikehendaki untuk memberikan persepsi mereka terhadap acara berkaitan komunikasi atau pembentangan lisan teknikal di tempat kerja. Kefahaman terhadap keperluan kemahiran berkomunikasi dalam pembentangan lisan teknikal di sesebuah universiti teknikal Malaysia adalah relevan bagi mendalami keperluan komunikasi di antara kalangan pelajar “ESL” dalam konteks Malaysia dengan lebih lanjut (Hafizoah Kassim & Kassim Ali, 2010). Malahan, aduan daripada pihak majikan yang tidak berpuas hati dengan kemahiran graduan berkomunikasi menunjukkan kekurangan kemahiran aspek linguistik dan ciri-ciri retorik dalam sesi kritikan pembentangan lisan teknikal (Dannels, 2009; Morton, 2009). Pembentangan lisan teknikal atau “Technical Oral Presentation” (TOP) merupakan pembentangan projek oleh pelajar tahun akhir projek kejuruteraan kepada para panel pemeriksa yang dipilih daripada kalangan ahli akademik dan profesional komuniti kejuruteraan. Berdasarkan teori kemahiran berkomunikasi, kajian ini mulanya menyelidik konsep kemahiran berkomunikasi dalam pembentangan lisan teknikal daripada lima subset konstruk kemahiran berkomunikasi iaitu kemahiran strategik, sosio-budaya, interaksi, linguistik dan kecekapan wacana. Dalam kajian ini, subset konstruk telah diistilahkan sebagai kemahiran pembentangan dan keupayaan pembentang (kemahiran strategik dan sosiobudaya), kemahiran tingkah laku dan keupayaan pembentang (kemahiran strategik dan interaksi), kecekapan struktur (kemahiran lingusitik dan bertutur), kecekapan bahasa (kemahiran lingusitik), dan kemahiran bukan lisan (kemahiran berinteraksi). Konsep kemahiran berkomunikasi

telah diselidik dengan lebih lanjut daripada sudut linguistik dan retorik di antara kalangan pelajar “ESL”; ahli akademik serta ahli jurutera di Malaysia kerana merupakan satu bidang yang kurang dikaji di Asia Tenggara. Kaedah rekabentuk campuran telah digunakan. Pada peringkat kuantitatif, 240 para pelajar tahun akhir kejuruteraan (sebagai pembentang lisan teknikal dan ahli komuniti akademik dari universiti) dan 66 ahli jurutera daripada komuniti kejuruteraan (yang merupakan pemeriksa luar untuk pembentangan projek) terlibat dalam soal-selidik. Kedua-dua kumpulan mempunyai tanggapan sinonim terhadap kepentingan item yang dipilih daripada setiap konstruk kecuali bagi konstruk kecekapan struktur (peringkat permulaan). Namun, ujian inferensi menunjukkan terdapat perbezaan yang wujud dalam kalangan pelajar dan jurutera mengenai tahap kepentingan yang diberikan kepada pelbagai item yang disenaraikan dalam setiap pembinaan konstruk. Oleh yang demikian, kajian lanjutan dengan ahli akademik (26 pelajar; 13 pensyarah aliran jurutera; dan 6 pensyarah Bahasa Inggeris) dan 12 ahli jurutera diminta untuk memberikan komentar daripada perspektif linguistik dan retorik bagi menghasilkan suatu "keajaiban" atau “interaksi” dalam sesi kritikan pembentangan lisan teknikal. Analisis tematik mendedahkan kepentingan lima tema linguistik (kemahiran teknikal, kemahiran bahasa dalam sesuatu bidang, kemahiran metakognitif, kemahiran linguistik dan kemahiran struktur) dan dua tema retorik utama (kemahiran retorik dan kemahiran interpersonal dan interaktif) untuk berkomunikasi dengan baik dalam sesi kritikan pembentangan lisan teknikal. Hasil daripada penyelidikan tersebut, kerangka kajian berdasarkan aspek linguistik dan retorik yang disyorkan dalam kajian ini bertujuan untuk meningkatkan ciri-ciri linguistik dan retorik dalam sesi kritikan pembentangan lisan. Ia juga bertujuan untuk memenuhi keperluan kemahiran berkomunikasi di antara ahli akademik dan professional dalam pembentangan lisan teknikal serta membantu para graduan ESL dapat bertutur sebagai jurutera yang “interaktif” di tempat bekerja dan di COP.

DEDICATION

For my Dad,
Ranjit Kumar Bhattacharyya, A.B.S., MIPR (London)
An irreplaceable father
from the shores of Chittagong
to the fiery island of Borneo
your charisma and zest for life
will forever be an imprint to us all.

Mum & Beloved Family for their unfailing support and encouragement.

My three children,
Shorolipi Emma, Arvind Kunal and Ashwin Kunal Chaudhury
who at such tender ages
toiled unquestioningly without Mum
You have all been such courageous and inspirational trio
This is for you!

&

The Almighty for His strength, guidance and direction
every single step of the way

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1. ABET: Accreditation Board for Engineering and Technology
2. APEX: Accelerated Program for Excellence
3. BEM: Board of Engineers Malaysia
4. CAQDAS: Computer Assisted Qualitative Data Analysis Software
5. CC: Communicative competence
6. CEFR: Common European Framework of Reference for Languages
7. CLA: Communicative Language Ability
8. CLT: Communicative Language Teaching
9. COP: Community of Practice
10. DC: Discourse Community
11. EC: Engineering Criteria
12. EFL: English as a Foreign Language
13. ESL: English as a Second Language
14. ESP: English for Specific Purposes
15. FYP 1: Final Year Project 1
16. FYP 2: Final Year Project 2
17. ICT: Information and Communication Technology
18. LPP: Legitimate Peripheral Participation
19. MOE: Ministry of Education

20. MOHE: Ministry of Higher Education

21. MQR: Malaysian Qualifications Framework

22. NNS: Non-Native Speaker

23. NS: Native Speaker

24. OBE: Outcome Based Education

25. OPU: Oil Producing Unit

26. PRCA: Personal Report of Communication Apprehension

27. QAD: Quality Assurance Division

28. QSR: Qualitative Software Research

29. SAP: Strategic Action Plan

30. SLA: Second Language Acquisition

31. SLT: Situated Learning Theory

32. SRCC: Self Rated Communicative Competence

33. SPSS Part A: Social Performance Survey Schedule Part A

34. SPSS: Statistical Package for Social Science

35. TOP: Technical Oral Presentation

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Typical of any oral project presentation assessment session, a student may most likely face a barrage of questions by multiple examiners as depicted below:

> An Engineering lecturer asks,
>
> > *What are the steps involved in obtaining this result? Why did you use this product? Is there a difference in the results if you adjusted the temperature to XX Celsius?*
>
> An engineer from the industry questions,
>
> > *What is the difference with existing competitor products? Is this product workable in the industry? How much does it cost? Is it effective for the community?*
>
> A language lecturer may comment,
>
> > *What do you mean when you mention this term…? Please explain…*

The above scenario denotes a familiar evaluation session of any technical oral project presentation assessment performance conducted in any institution of higher learning. The scenario revolves around a series of questions posed by the panel of examiners who most likely are individuals from technical and non-technical fields of specialisation.

Based on the scenario provided, similar evaluation sessions can occur in the classroom. Different questions are posed by members of the evaluation panel who comprise professionals from different professional backgrounds. Although in cases where areas of specialisation may be similar, the community of practice (COP) may differ. In this case, the scenario indicates that engineering lecturers and language lecturers are members from the academic community while engineers represent industry practitioners from the industry.

In relation to the scenario provided, it is evident that students are queried on various issues during a project presentation. Various questions are posed. Some questions are content matter related while some are contextual or real world application based. Language lecturers on the other hand, may emphasise language related elements in a presentation. Thus, a student can be queried from content, context, linguistic or even societal relevance.

Such a scenario is mirrored in real life workplace related presentations. Students can be queried by a panel of professionals from different professional discourse communities. This study seeks to investigate the stakeholders' notion of communicative competence in one of the many workplace related communicative events, i.e. technical oral presentations. In this context, stakeholders are selected participants from the academic and professional engineering community involved in technical oral presentations. The central research question posed is,

"What are the stakeholders' perceptions of communicative competence in a technical oral presentation?"

This central research question lends support to the possible communicative competence requirement of various stakeholders involved in the business of technical oral presentations. Answers to these questions would be angled from a linguistic and rhetorical perspective as language is deemed as the “main ingredient of a presentation” (Alemdar Yalçin & Nursel Yalçin, 2010, p. 481).

1.1 Scope of the Study

From the point of view of a Language and Communications lecturer and from the Communicative Language Teaching (CLT) perspective, I was captivated to understand the purpose and intentions of questions posed by the professionals during similar oral presentation sessions i.e. technical oral project presentations held in my university.

I was curious to know what questions were posed during such presentation sessions in order to understand what mattered to these professionals. In other words, the attempt to shed some light on the type of questions posed by the examiners would provide language and communication lecturers (like myself) an insight of the perception and actual practice of communicative competence.

Inadvertently, such knowledge is utilised to possibly shed light on the “academia-industry practitioner divide” of communication skills among graduates (Nguyen, 1998; Norback & Hardin, 2005). Knowledge of such competency features from a linguistic and rhetorical dimension will also add linguistic and rhetorical input on to a less explored area in ESP (English for Specific Purposes) and oral communication related courses i.e. oral presentations (Hyland, 2002; Morton, 2009).

For the purpose of this study, communicative competence centers on the linguistic and rhetorical dimensions necessary in critique sessions within technical oral presentations. Critique sessions refer to the question and answer session within the technical oral presentation. Linguistic dimension looks at how the presentation is structured with focus on linguistic accuracy and appropriacy, syntax, grammar, language use and language expressions in oral text (Dannels, 2009; Schleppegrell, 2001; Telebaković, 2009). Rhetorical dimension focuses on the genre required to create that interactive element within a presentation (Morton, 2009; Thøgersen & Airey, 2011).

In addition, I was also interested to comprehend the "judgment values" held by these stakeholders on communicative competence and its effects on CLT. What are the implications of selected stakeholders' views on communicative competence in technical oral presentations in the epistemology of engineering education? What linguistic and rhetorical competencies are expected of graduates of the 21st century to communicate competently during critique sessions within technical oral presentations?

I was keen to identify if the stakeholders' beliefs and value judgments of communicative competence in technical oral project presentations are reflective of the COP legitimate peripheral participation (LPP) as advocated in the situated theory of learning (Lave & Wenger, 1991). Are there similarities and/or differences in the way these stakeholders' identify the notion of communicative competence in technical oral presentation? Stakeholder description is described in a later section of this chapter (see Section 2.7).

Basically, I am interested to identify the linguistic and rhetorical dimension and its theoretical implication of communicative competence requirement in technical oral presentations as perceived by various stakeholders in a technological university. Such findings attempt to bridge the academia-practitioner divide and provide linguistic and rhetorical input necessary for the teaching and learning of communication skills in technical oral presentations. This, in a nutshell, illuminates the parameters and interest of my study.

1.2 Problem Statement

Resounding engineer complaints over graduates' lack of communication skills indicate disparity in imparting the relevant communicative competence for graduates to communicate effectively in a professional setting. Local studies have indicated that engineering communicative competence remains much to be desired (Fatimah Ali, Noor Raha Mohd Radzuan, & Hafizoah Kassim, 2006; Hafizoah Kassim & Fatimah Ali, 2010; Noor Raha Mohd Radzuan, Fatimah Ali, & Hafizoah Kassim, 2008; Noor Raha Mohd Radzuan, Fatimah Ali, Hafizoah Kassim, et al., 2008).

Employers voice their discontent over engineering graduates lack of communication skills. In addition, local studies indicate stakeholders' perceptions and the construct of communicative competence in technical oral presentations (Bhattacharyya, 2014 ; Hadina Habil & Nur Afiqah Bt Ab Rahman, 2010; Mariana Yusoff, 2008). Thus, concerted efforts on the part of language and communication lecturers need to be addressed to enhance ESL learners or engineering students' apparent lack of communicative competence in the Asian region.

In addition, the emphasis on communication skills is stated in the Engineering Criteria (EC) 2000 and Accreditation Board for Engineering and Technology (ABET) requirements where knowledge on non-technical competency skills such as communication skills, teamwork and lifelong learning to students are stressed by the educators (Martin, Maytham, Case, & Fraser, 2005). Despite such pedagogical efforts, engineers continue to convey discontent over graduates' inability to communicate (Venkatesan & Ravenell, 2011).

Thus, such disparity if left unchecked in the global and Asian region will impede human capital necessary for nation building efforts (Ministry of Higher Education, 2007). Notwithstanding this gap on communication skills requirement, literature also mentions that 60% of engineers' time is spent on communicating (Tenopir & King, 2004). In fact, oral presentations denote one of the many oral communicative events expected of engineers (Crosling & Ward, 2002; Myles, 2009). This means that language and communication lecturers as well as curriculum decision makers need to re-look at the communicative competence requirement among engineering students in technical and scientific oral presentations. Pedagogical efforts in this direction will enhance ESL learners or engineering students' participation in the professional engineering community.

In this context, the communicative event investigated is the Final Year Project 2 (FYP 2) delivered by final year engineering students in the university. The FYP2 mirrors a workplace related oral communicative event. During such sessions, professionals from the academic and engineering community who are appointed as examiners, convene to critique the technical aspects of the presentation. During such sessions, the presence of language lecturers is optional as this is not a mandatory practice in the university. Such is the practice in my university. Language lecturers, like me, if invited to such evaluation sessions, focus on the non-technical aspect of the presentation.

During such evaluation sessions, as universally concurred, no two examiners will provide similar feedback in an evaluation session (Dannels, 2003). Thus, the notion of communicative competence construct from a linguistic and rhetorical perspective may differ between the examiners (Graaff, Reed, & Shay, 2004; Shay, 2004). What is considered crucial element to one examiner may not necessarily be similarly perceived by another. What then is expected of students who may be faced with myriad of questions from examiners of varied backgrounds during such a presentation?

Recognising the multifaceted complexity and “fuzziness” of assessing a complex linguistic notion such as a “communicative competence” when perceived by participants of a COP in CLT, I was interested to explore the notion in technical oral presentations from a linguistic and rhetorical perspective. The said investigation is conducted in view of the limited studies in the linguistic and rhetorical dimension in technical oral presentations and lack of research necessary to create that “magic” or interactivity and enagagement needed in technical oral presentations (Morton, 2009).

Eventually, the study seeks to provide a possible linguistic and rhetorical framework required for critique sessions within technical oral presentation, an area considered least explored in language and oral communication studies (Hyland, 2002; Morton, 2009). An off-shoot of the study is to ascertain pedagogical implications in CLT and understand if theoretical underpinnings of situated theory of learning (SLT) are reflected in such presentation sessions (Lave & Wenger, 1991).

1.3 Objectives of the Study

The objectives of this study are to understand the differing stakeholder perceptions of communicative competence from a linguistic and rhetorical dimension with regard to critique sessions within technical oral presentations. Perceptions refer to the way human beings organise and interpret certain views into experiences which is tied to one's past experiences, beliefs and expectations (Jung, 2003). As the notion of communicative competence is deemed fuzzy among linguists, it is the intention of the researcher to understand the construct of communicative competence as perceived by the students, lecturers, language lecturers and engineers involved in the business of technical oral presentations.

The study also attempts to identify the similarities and differences of the stakeholders' perceptions and actual practice of communicative competence, i.e. linguistic and rhetorical competence, in technical oral presentations. An understanding of the construct from a linguistic and rhetorical perspective enables stakeholders from both the academic and professional engineering community (i.e. ESL learners, students, language and communication experts, curriculum designers and professional engineers) to understand the construct from different COP perspective. It aims to lessen the academia-industry practitioner divide on communication skills ability of engineering students (Bhattacharyya, Sivapalan, & Hairuzila Idrus, 2007; Eisner, 2010; Norback, Leeds, & Kulkarni, 2010).

Moreover, current communication studies emphasise the need to relook at students' disciplinary and interactive competence (Fraile et al., 2010; Morton, 2009). Thus, the aim of this study is to identify the linguistic and rhetorical sub-sets of communicative competence in technical oral presentations set in an ESL context within a Malaysian setting in the Asian region. As aptly pointed out by Morton, students need to "demonstrate confidence, assuredness, competence and artistic exuberance" (Morton, 2009, p. 227). Thus, the investigation into the sub-sets of communicative competence, i.e. the linguistic and rhetorical dimension, is aimed at creating presenter-audience engagement and interactivity within technical and scientific engineering oral presentation sessions.

This study also contributes to the notion of communicative competence in the Malaysian setting, i.e. ESP, ESL language and communication experts, curriculum designers in the Malaysian tertiary education context, and more widely in the promotion of communicative competence among tertiary students involved in technical oral presentations. Language and communication experts as well as curriculum designers can include the linguistic and rhetorical competency features as the grading criteria in technical oral presentation evaluation sessions.

At the same time, it is undeniable that the study promotes the study of communicative competence in the scientific and engineering profession where technical oral presentations are a norm of the said professional work culture. Thus, this study contributes to the stakeholders' understanding of the communicative competence construct from a linguistic and rhetorical perspective in technical oral presentations within a Malaysian context; language and communication experts and curriculum designers' notion of communicative competence as an added component in the evaluation criteria of technical oral presentations in the Malaysian tertiary education and lessen the academia-industry practitioner divide on the communicative ability of engineering students in technical oral presentations. At the same time, the study provides an insight of the engineers' notion of communicative competence as held by the professionals within the engineering community in the Malaysian context.

1.4 Research Questions

The findings discussed are aimed at providing feedback to the central research question,

"What are the selected stakeholders' perceptions of communicative competence in a technical oral presentation?"

The research questions that attempt to identify the stakeholders' communicative competence gap requirement in perception and actual practice of technical oral presentation include:

1. What are the students' perceptions of communicative competence requirement in technical oral presentation?

a. What are the students’ perceptions of presentation skills required in technical oral presentation?

b. What are the students’ perceptions of attributes required in technical oral presentation?

2. What are the engineers’ perceptions of communicative competence requirement in technical oral presentation?

   a. What are the engineers’ perceptions of presentation skills required in technical oral presentation?

   b. What are the engineers’ perceptions of attributes required in technical oral presentation?

3. What are the lecturers' and language lecturers’ perceptions of communicative competence requirement in technical oral presentation?

   a. How similar are they in their perceptions of presentation skills and attributes required in technical oral presentations?

   b. How different are they in their perceptions of presentation skills and attributes required in technical oral presentations?

4. What are the stakeholders’ perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

   a. How similar are the selected students’, lecturers’, language lecturers’ and engineers’ perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

b. How different are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

5. In practice, what do lecturers and engineers consider as essential linguistic and rhetorical features necessary for successful technical oral presentations?
   a. In practice, how similar and different are the selected lecturers' and engineers' critique on linguistic and rhetorical features necessary for technical oral presentations?
   b. In practice, how similar and different are the selected lecturers' and engineers' written comments on linguistic and rhetorical features necessary for technical oral presentations?

The research questions aim to provide feedback on stakeholder perception of communicative competence in technical oral presentations. Findings from the study aim to identify stakeholders' (students, lecturers, language lecturers and engineers) perception on the importance of relevant sub-items associated to the notion. Knowledge of such salient features enables stakeholders to achieve their own goals and be effective participants in their own COP. Such findings contribute to the linguistic and rhetorical dimensions based on the existing theoretical framework of communicative competence by Celce-Murcia (2007) (see section 2.14). Findings from the study aim to bridge the academia-industry practitioner divide on linguistic and rhetorical competence necessary in critique sessions within technical oral presentations.

In addition, the study aims to relate the importance of communicative competence in the study of technical oral presentations in an ESL context within a Malaysian tertiary education setting. The study highlights the importance of incorporating the notion of communicative competence in the evaluation of technical oral presentations. The study promotes the use of communicative competence as envisaged in among stakeholders in an ESL context in the South East Asian region, i.e. Malaysia. It adds emphasis to the significance of communicative competence in scientific and engineering discourse.

Findings to the first two research questions are exemplified in the quantitative phase while the qualitative phase is intended to provide suggested findings to the remaining three research questions. The findings aim to enhance the operational definition of communicative competence from a linguistic and rhetorical perspective. The findings provide feedback to 21st century graduates on essential linguistic and rhetorical competencies necessary to create that "magic" missing in technical oral presentations. The "magic" in this context essentially refers to speaker-audience interactivity and meaningful engagement during an oral presentation session (Morton, 2009).

1.5 Background of the Study

The following sections provide an overview of engineering graduate communication skill requirement as advocated in the engineering education curriculum. It also provides a snapshot of global and national communication skills requirement of an engineer.

1.5.1 Global Engineer of the 21st Century

The intent of the study is a result of global competency requirements expected of 21st century engineering graduates. With globalization and industrialization in the new millennium, engineering graduates competency skills and attributes far defer from that of the 1980's and 1990's (Lucena, Downey, Jesiek, & Elber, 2008). With increased mobility of engineers, a re-look at existing "country-based systems of engineering education" is required as prospective graduates need "valuable competencies recognized by other countries or by other international engineers" to increase workplace mobility (Crawley, Malmqvist, Lucas, & Brodeur, 2011; Lucena et al., 2008, p. 433).

Engineers need to be equipped with a combination of engineering (hard), professional (soft) and global skills to work within a global context (Patil, 2005). Engineers need to be constantly equipped with relevant competencies required for 21st century workplace communication and participation needs (Norback & Hardin, 2005; Tilli & Trevelyan, 2008).

Such concerns are similarly echoed on local shores. Studies reveal the need for engineers to communicate their knowledge effectively in the workplace (Bhattacharyya, Shahrina Mohd Nordin, & Rohani Salleh, 2009; Noor Raha Mohd Radzuan, Fatimah Ali, & Hafizoah Kassim, 2008). Despite such awareness of graduate skills requirement, industry practitioners continue to voice dissatisfaction over graduates' communication skills (Bernama, 2010; Gray, Emerson, & MacKay, 2007; Tan, 2009).

The study of communicative competence from the linguistic and rhetorical dimension requirement is thus timely as it allows greater understanding of the notion so that each participant can attain their goals and participate effectively in the said COP. The study is aimed at providing CLT educators and curriculum designers a linguistic and rhetorical framework of CC in technical oral presentation embedded within ESP and communication related courses.

1.5.2 Skills in Technical Oral Communication

Oral communication output is part of an engineer's everyday activity. Studies identified presentation as one of the various workplace oral communication activities (Bhattacharyya, Shahrina Mohd Nordin, et al., 2009; Tenopir & King, 2004). Engineers spend almost 60% of their time in various communicative events (meetings, discussions, presentations, advice) at both formal and informal settings in the workplace (Tenopir & King, 2004; Trevelyan, 2009).

Engineers need to possess "knowledge, skills and attitude" for effective participation and function in the professional community (Rugarcia, Felder, Woods, & Stice, 2000, p. 20). Hissey (2002) goes a step further by saying that engineers require "specialized skills to be independent, capable and resourceful in the organisation and society" (Hissey, 2002, p. 1367). Whiteside augments the need for scientific and business acumen knowledge in "business operations, project management, problem-solving skills and scientific and technical knowledge" (Whiteside, 2003, p. 303).

Clearly, engineers need to have a mix of technical and non-technical skills for effective workplace participation. Thus, what skills augment communicative competence? Knowledge of such salient features act as a catalyst for enhanced oral communicative competence in various professional and workplace setting.

1.5.3 Outcome Based Education

The importance and need for engineers to communicate effectively is intensified with the implementation of the Outcome Based Education (OBE) by the Engineering Criteria 2000 (EC 2000) of the Accreditation Board for Engineering and Technology (ABET) in the engineering curriculum. The ABET Engineering Criteria 2000, requires that prospective graduate students become aware of the social impacts of their professional work as well as be able to "communicate effectively" (Hovde, 2005, p. 1).

In Malaysia, the certification and accreditation of higher education programs initially handled by the National Accreditation Board or "Lembaga Akreditasi Negara" (in Malay language), in 1996 was subsequently managed by a Quality Assurance Division (QAD) of the Ministry of Education (MOE) in April 2002 to manage and coordinate quality assurance system in public universities (Ministry of Higher Education, 2011).

In 2007, the Malaysian Qualifications Agency (MQA), a statutory body was set up under the Malaysian Qualifications Act (2007) to accredit academic programs proposed by institutions of higher education for various degree, master or postgraduate program. Essentially, the MQA implements the Malaysian Qualifications Framework (MQR) and acts as a reference point and accreditation center for national qualifications where issues such as learner outcomes and credit outcomes based on student academic load are scrutinized (Ministry of Higher Education, 2011).

The implementation of OBE coincides with the review of the engineering curriculum syllabus which requires a global address of enhancing institutions of higher learning to that of Accelerated Program for Excellence (APEX) university status. According to Ministry of Higher Education (MOHE) Action Plan (2007 - 2010), apex universities reflect the "nation's centers' of academic distinction" which eventually entrusts independent decision making, planning, selection and direction to leaders academic institutions of higher learning in the governance of the institution (Chapman & Simrit Kaur, 2008).

With such agenda in place, Apex universities will be given the "autonomy to select the best students based on academic merit and other holistic criteria" and "focus on becoming the best" within the 9th Malaysia Plan (2006 - 2010) period (Ministry of Higher Education, 2007, pp. 34-36). In line with Apex university student criteria requirement, higher education authorities such as educators and curriculum designers need to realign and improvise OBE student performance or learner outcome where learning is "learner-centered, result-orientated education system where individuals have the capacity to learn, as well as to demonstrate learning after having completed an educational activity" (Fakier & Waghid, 2004, p. 55).

Learner outcomes reflects the learner's ability to carry out expected roles and functions in the society such as the ability to "demonstrate communication skills" (Malaysian

Qualifications Agency, 2011). One such outcome stipulated in ABET EC 2000 is learner's ability to communicate effectively (Rajala, 2012). The said learner outcome on effective communication is resounded in Board of Engineers (BEM) Malaysia, as one of the necessary attributes of would-be professional engineers (M. M. N. Megat Johari et al., 2002; M.Johari, M.R.Osman, & A.Abdullah, 2004).

Thus, the investigation on communicative competence requirement in technical oral presentation from a linguistic and rhetorical perspective is timely to understand and provide communicative competence input as stipulated in OBE and ABET requirements.

1.5.4 National Higher Education Action Plan 2007 – 2010

To ensure that the nation is able to keep up with globalization and technological advancement, the National Mission and Ninth Malaysia Plan of Malaysia (2006 - 2010) stipulated various national development measures where one of its main thrust was "the development of first-class human capital" to ensure the nations' advancement from that of a "developing nation to a knowledge based economy" (Ministry of Higher Education, 2007, p. 3).

As reiterated by the former Prime Minister of Malaysia, The Honorable Datuk Seri Ahmad Abdullah Badawi, the success of attaining a "first class human capital" lies as a shared responsibility of all concerned parties with the government and nation to spearhead an effort to "transform the national education system at all levels, from preschool through higher education" to "create a first-class human capital and realize the national education agenda" (Ministry of Higher Education, 2007, p. 3).

Thus, to encapsulate government efforts in enhancing human capital as resounded in the Ministry of Higher Education (MOHE) National Higher Education Action Plan (2007-2010), the study on communicative competence is timely as communication skills is deemed necessary for effective workplace participation.

1.5.5 Malaysia – Vision 2020

Vision 2020, which takes its cue from two major national development plans of Malaysia (the First Industrial Master Plan 1986 -1995 and Second Industrial Master Plan, 1996 - 2005) saw its inception with the launching of the Third Industrial Master Plan (IMP3), 2006 - 2020. Vision 2020, the brainchild of one of the former Prime Ministers of Malaysia, Dato Seri Dr Mahathir Mohamad, saw the need for economic nation building and advancement from that of a developing country with agricultural reliance to that of a technologically advanced competitive nation (Ministry of International Trade and Industry, 2006, p. 12).

As reiterated in the National Higher Education Plan, Vision 2020 seeks to establish "a scientific and progressive society that is innovative and forward looking – one that is not only a consumer of technology but also a contributor to the scientific and technological progress" (Ministry of Higher Education, 2007, p. 10). Vision 2020 aspiration for a nation stipulates the need for

> "a diversified and balanced economy with a mature and widely based industrial sector;… an economy that is technologically proficient,…technology intensive;… strong and cohesive industrial linkages…; an economy driven by brain-power, skills and diligence in possession of a wealth of information, with the knowledge of what to do and how to do it…"
>
> (Mahathir Mohamad, 1991, p. 23)

Thus, the most important resource for a nation lies in its workforce equipped with necessary skills needed to handle and develop high-tech industries and capability to produce required research and development necessary for nation building. For a research and technology driven economy to succeed, the pivotal factor lies in human capital equipped with the right expertise and skills.

1.5.6 The 9th Malaysia Plan 2006 – 2010

The importance of marketable skills such as communication skills is stressed and highlighted in Malaysia's 9th Malaysia Plan (2006 - 2010). The governmental awareness to enhance soft skills among graduates is mirrored in two blueprints by the Ministry of Higher Education (MOHE) in September 2007 which was launched by the then Prime Minister of Malaysia, Datuk Seri Ahmad Abdullah Badawi. The government blueprints such as the National Higher Education Strategic Plan and National Higher Education Action Plan (2007 - 2010) accentuated the need to instill and enhance soft skills among undergraduates of today.

As stated in the National Higher Education Action Plan (2007 - 2010), the seven thrusts of the said plan are broadly based which includes widening access and enhancing quality, improving the quality of teaching and learning; enhancing research and innovation; strengthening institutions of higher education; intensifying internationalization; enculturation of lifelong learning; and reinforcing the ministry's delivery system.

One particular area of interest to academicians as outlined in the Strategic Action Plan (SAP) is the need to address graduate unemployment which stems from the lack of cohesiveness education and training imparted to the nation. It is mentioned in the strategic plan that "while education should provide general skills and a good orientation towards work, particularly in the context of building positive attitudes, specific skills fall within the range of training" (Ministry of Higher Education, 2007, p. 13). This indicates that better cohesiveness is required among various stakeholders involved in the education and training programs to mold prospective undergraduates' marketability and competitiveness in the future workplace.

1.5.7 The Bleak Unemployment Scenario

Despite the importance of communication skills, employers continue to lament over graduates' communicative competency (Hafizoah Kassim & Fatimah Ali, 2010). Global concerns on unemployment are mirrored in the local scenario. Deputy Prime Minister of Malaysia and Malaysian Education Minister, Tan Sri Muhyddin Yassin, voiced the need to improve the use of English Language despite the 13 years exposure to the language at Malaysian primary and secondary school (Benjamin & Mohd Farhaan Shah, 2011).

Statistical records from the Economic Reports of the Prime Minister's department clearly show the alarming rate of unemployment in 2000 from 3.5% to 3.6% (Abdullah Bin Haji Ahmad Badawi, 2008). Subsequently, in 2004 and 2005, unemployment rate was 3.5% with majority new graduates and diploma holders lacking in soft skills such as English language proficiency. In fact, the Tenth Malaysia Plan (2011-2015) recorded youth unemployment range from 10.5% to 10.9% in 2001 to 2008. This accounted for 62% of total unemployment in 2008.

The Economic report indicated the 3.5% rate for unemployment in 2011 with an estimated unemployment rate of 3.1% in 2015 (The Economic Planning Unit Prime Minister's Department, 2010). A debate on the actual number of unemployed graduates ensued. In November 2006, the ministry revealed that nearly 60,000 graduates were unemployed (Wong, 2008). Unemployment reports by the Malaysian Institute of Economic Research (MIER) mentioned that Malaysia's rate of unemployment could even surge to 4.2% in 2010 (Hunt, 2010).

Clearly, unemployment rate if left unchecked would affect nation building plans like the Third Industrial Malaysia Plan (2006 - 2020) and Vision 2020. Thus, the study on understanding the notion of communicative competence is timely as it will eventually lessen the academia-industry practitioner divide over communicative competence among prospective graduates. Such insight is necessary to groom prospective graduates for effective workplace participation and add to the pool of manpower capital necessary for nation-building.

1.5.8 Competency Gap between Academia and Workplace: Communication Skills

Existing communication studies indicate discussion on various generic workplace skill requirements like communication skills and the need to innovate engineering education curriculum to bridge the disparity between academia and industry practitioners' divide on communication needs and challenges (Borrego & Bernhard, 2011; Hafizoah Kassim & Fatimah Ali, 2010).

Continued concern over technical and soft skills mismatch is reported (Bernama, 2010, 2011) despite efforts by the Ministry of Higher Education (MOHE) directive in 2007 to incorporate "finishing schools" to conduct soft skills courses in all public universities (Yaqin Ching Abdullah, 2009). Despite such measures, soft skill competency issue continues to be a national concern on Malaysian shores.

Left untapped, the continued lack of research on communicative competence will leave a gap in the teaching and learning of communication skills in language and communication classrooms in an ESL context within a Malaysian setting. In addition, the lack of input over the sub-sets considered necessary in communicative competence will continue to impede the knowledge on communicative competence among tertiary students in the Malaysian tertiary education context and in the science and engineering profession.

1.6 The Rationale of the Study

The following sections provide an overview of the rationale of the study and its significance in contributing to an understanding of communicative competence in technical oral presentation from a linguistic and rhetorical dimension. The study is essential as the findings can aid different stakeholders, such as tertiary students, lecturers, language lecturers as well as professional engineers from the South East Asian region, in particular, Malaysia, toward an understanding of the notion of communicative competence and its linguistic and rhetorical features required in technical and scientific presentations as used in the Malaysian tertiary education and ESL context.

Such a study contributes to lessening the gap between academia-industry practitioners' communication skills requirement expected in professional technical oral presentations at the workplace (Nguyen, 1998; Hafizoah Kassim & Fatimah Ali, 2010). At the same time, the study is worthy as it contributes to the understanding of communicative competence as perceived by professionals in the science and engineering profession.

1.6.1 Background of the University

The study is located at a private technical university located at Bandar Seri Iskandar, Perak Darul Ridzuan, Malaysia. The university, a wholly-owned subsidiary of a national oil company, was established on January 10, 1997. The university was invited by the Malaysian government to set up a university to meet government national requirement of developing an educational hub.

Initially, the university started as an Institute of Technology in April 1995 in response to the government's call to provide workforce to meet the government's initiative of attaining a developed nation by year 2020. The institute was established for the purpose of providing education at the tertiary level to contribute to developing a strong and technically skilled workforce in the country via active participation of the private sector.

With an initial intake of 65 students, the first academic session commenced in July 1995 in rented premises. In July 1996, the institute relocated its operation to Perak Darul Ridzuan, (some 250 km north of Kuala Lumpur, Malaysia) at the newly acquired campus after building temporary offices, hostels and laboratories. It co-existed with a local university for five years prior sole ownership in 1997.

With the enactment of the Private Higher Learning Institution Act in December 1996, the Government officially invited the national oil company to set up the university on 10 January 1997. The university has been in operation since 1997 and continues to strive for educational excellence.

At the time of the study, the university had a population of about 6000 students comprising selected local and international students who focus on engineering and business and information technology programs. All the degree programs offered are technically inclined to meet future workplace needs. In the said university, various engineering and technology courses are offered at foundation, undergraduate and postgraduate level.

For the purpose of this study, the focus is on final year engineering students as they form the bulk of the student intake. Details are provided in Chapter 3 (section 3.6 on research participants).

1.6.2 University's Vision and Mission of Graduate Attributes

The University's Vision themed as "A Leader in Technology Education and Centre for Creativity and Innovation" is aligned toward attaining a creative, innovative workforce to meet the nation's call of "world-class human capital" (Ministry of Higher Education, 2007). In accordance with the University's vision, the university orchestrates its mission to support the vision of the university.

As a provider of advanced technology and center of education for creativity and innovation, the university is committed to provide opportunities for the pursuit of knowledge and expertise for the advancement of engineering, science and technology to enhance the nations' competitiveness. The university's vision and mission is in accordance with meeting the Strategic Plan thrust of the providing "creative, innovative and competitive" workforce to the nation (Ministry of Higher Education, 2007).

As indicated in the university's homepage, the university's mission is "to produce well-rounded graduates who are creative and innovative with the potential to become leaders of industry and the nation". In meeting the vision of the university, the aim is to "nurture creativity and innovativeness and expand the frontiers of technology and education for betterment of society". The vision and mission of the university clearly sets forth the direction and leadership of all stakeholders (academic and business/professional community members) involved in the administration of the university.

1.6.3 Well Rounded Graduate Skills and Attribute

In emerging as one of the university provider of efficient workforce for the nation, the university worked within certain guidelines provided by the university Research & Development (R & D) Master Plan to ensure the quality and effectiveness of graduates who enter the future workplace.

In line with the university's vision and mission, the seven attributes stressed in the academic curriculum include "communication skills, lifetime learning capacity, solution synthesis ability, business acumen, critical thinking and practical aptitude" (Little, 1997). The deliverables of the said attributes are delved through all programs implemented via the Outcome Based Education (OBE) learning outcomes in the university. The present study contributes to the notion of communicative competence in workplace related event, the technical oral presentation.

1.6.4 Communication Skills Requirement Component

With emphasis on the university's graduate attribute and with the inclusion of OBE approach in the engineering curriculum, communication skills is accentuated in all programs at all levels (foundation, undergraduate and postgraduate) offered in the university. At the university, an English language oral presentation course is offered by the English Language unit to undergraduate students' prior entry to student Industrial Internship Program at selected companies.

Learning outcomes of all courses as approved by the National Accreditation Board stipulate the need for students to "…communicate confidently, accurately, fluently and effectively in a variety of professional and business settings…" (LAN document, 2009). The said language course provides students language input and practice on individual and group presentations.

In addition, students need to participate in various oral presentation sessions specified within the degree requirement. In this context, final year students are required to present their project findings to a panel of examiners from the academic and professional engineering community who evaluate the students' presentation.

1.6.5 Technical Communication

Technical communication, an offshoot of English for Specific Purpose (ESP) pedagogy, can be defined as a process "of gathering, organizing, presenting and refining information" (Collier & Toomey, 1997, p. 1). DiSanza & Legge (2002) define technical communication as "scientific, engineering, technological, business, regulatory, legal, managerial, or social scientific information" (DiSanza & Legge, 2002, p. 198).

Technical communication includes various forms of internal and external written and oral communication information like correspondence, short reports, long reports (feasibility study, project report on field or laboratory work) and others (proposals, abstract, summaries, technical article, technical presentation, operation manual or website). In this context, the final year project presentation is noted as a technical presentation, a sub-set of technical communication. The final year project presentation, undertaken in the first semester of a students' final year engineering program, encompasses technical and scientific findings obtained from the students' research. The student is expected to deliver the findings to a panel of examiners during the final semester in the final year of the engineering graduate degree program.

1.6.6 Technical Oral Presentation (TOP)

Engineering professions while highly technological, are highly communicative in practice as engineers are engaged in various communication practices such as presentations (Danilova & Pudlowski, 2007; Tenopir & King, 2004). Oral presentations can be classified into two types - informal and formal where although both presentations differ in "scope, complexity, style, and format", both types of presentations require effective communication and the desire to respond to the audience's needs (Dobrin, Weisser, & Keller, 2008, p. 665).

Workplace presentations can occur as informal, formal or a combination of both types of presentations presented to a varied audience comprising either experts, non-experts or a blend of both. For the purpose of the study, focus is centered on formal presentations as engineers' accord high importance to such communicative activity (Bhattacharyya, Shahrina Mohd Nordin, et al., 2009).

Formal presentations are longer and more complex. Examples of such presentations include "briefings, sales meetings, product demonstrations, training seminars, workshops, panel and conference discussions, and speeches" which utilise set-aside spaces like "offices, auditoriums, conference rooms, training rooms, science labs or even outdoor amphitheaters" (Dobrin et al., 2008, p. 665).

A variety of presentations that fit under the rubric of technical communication, include "laboratory presentations, feasibility reports, progress/status reports, survey presentations, training lectures, and business reports" (Dobrin et al., 2008, p. 665). The final year engineering project presentation denotes a formal technical presentation embedded with specific technical and engineering genre utilised in technical communication.

1.6.7 Final Year Project 2 (FYP 2)

All final year engineering students in the university are required to register for the final year project presentation. The students are required to participate in the final year project 1 (in semester 1) and final year project 2 (in semester 2) which are both three-credit hour courses. The final year project 1 (FYP 1) includes project selection, preparation and literature review. The final year project 2 (FYP 2) centers on implementation, experimentation, testing, evaluation and analysis of the project. It is this presentation that becomes the focus of investigation in the study.

During FYP2, students present their project findings to a panel of examiners from the academic community (lecturers) and professional engineering community (engineers). The FYP 2 captures "real time" authentic technical workplace formal presentation of companies and organisations which mirrors similar workplace environment. The FYP2 is an apt academic platform to capture the various stakeholders' notion of communicative competence.

1.7 Definition of Key Terms

The key terms used in this study include Communicative Competence, Linguistic Competence, Rhetorical Competence, Technical Oral Presentation (TOP), Community of Practice (COP), Legitimate Peripheral Participation (LPP), Critique sessions, Communicative Language Teaching (CLT), Situated Learning Theory (SLT), Stakeholder and Perception.

Communicative Competence – Seen as a " relative and dynamic, interpersonal construct among individuals with focus on functionality and adequacy of communication, sufficiency of knowledge, judgement, and skills in linguistic competence, operational competence, social competence, and strategic competence. Linguistic and operational competencies refer to knowledge and skills in the use of the tools of communication; social and strategic competencies reflect functional knowledge and judgement in interaction" (Light, 1989).

Linguistic Competence – Linguistic competence refers to the tacit knowledge of language structure used in an ideal speaker-listener context. Such forms of competence posits ideal objects in abstraction from sociocultural factors (Hymes, 1972b).

Rhetorical Competence – Ability of a presenter to deliver the message that creates meaning, understanding and impact to an engaged and captivated audience (Morton, 2009).

Technical Oral Presentation (TOP) – A final year engineering project presented by final year engineering students to a panel of examiners during the final year of the engineering program.

Communities of Practice (COP) – Members of a community are informally bound by what they do together and by what they have learned through their mutual engagement in common activities. A community of practice defines itself along three dimensions, i) what it is about – its joint enterprise as understood and continually renegotiated by its members; ii) how it functions mutual engagement that bind members together into a social entity, and iii) what capability it has produced – the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, etc.) that members have developed over time (Wenger, 1998).

Legitimate Peripheral Participation (LPP) – is an analytical perspective on learning in communities of practice provided by the situated learning perspective (Lave & Wenger, 1991).

Critique sessions – Question and answer sessions within the Technical Oral Presentation. In this study, the critique session is the unit of analysis.

Communicative Language Teaching (CLT) – Refers to the ability to negotiate meaning to successfully combine a knowledge of linguistic, sociolinguistic and discourse rules in communicative interactions (Savignon, 1972).

Situated Learning Theory (SLT) – How social engagements provide the context for learning to occur rather than cognitive processes. Focus on the relationship between learning and the social situation on how it occurs (Lave & Wenger, 1991).

Stakeholder – Stakeholders include "students, society, and government participating in or benefiting from the provision of education" (Campbell & Rozsnyai, 2002).

Perception – Perception deals with the state of "consciousness", a mental image and concept: direct or intuitive or cognitive" (Jung, 2005, p. 12).

1.8 The Significance of the Study

The study seeks to provide some input useful to the teaching and learning of technical oral presentation, a workplace related event, left much unexplored due to its finite nature in workplace oral communication context. The study is useful as it addresses the current global concern of graduates' and engineering professionals discord over graduates' apparent lack of communication skills (Bhattacharyya, 2014 ; Louhiala-Salminen & Kankaanranta, 2011; Rusinaru, Popescu, & Nistorescu, 2010; Whitcomb & Whitcomb, 2013).

Communication skills among graduates if left unchecked, affects the nation's aspiration to attain a "world-class human capital" as envisioned in a country's nation building plans. The study contributes to a relatively unexplored area in engineering communication studies in identifying stakeholder perceptions on communicative competence of technical oral presentation unique in its technical setting from a social-practice perspective. In addition, the study is significant as it endeavors to bridge that academia-industry practitioner divide and provide relevant input on the construct of communicative competence in engineering education practice and to the workplace community.

Firstly, the study aims to uncover the construct of communicative competence from a linguistic and rhetorical dimension in CLT of technical oral presentations in the Asian region, specifically in Malaysia. Next, the study is significant as it aids in the teaching and learning of communicative competence in technical oral presentations among tertiary engineering students, engineering lecturers and language lecturers in the Malaysian ESL context. In addition, the study also contributes to the promotion of communicative competence among the science and engineering professions in Malaysia.

The study contributes to literature on the teaching and learning of communicative competence in ESL and ESP context and language communication related course(s) prior to the students' entry to the workplace. The findings are also significant to language and communication curriculum designers to enhance the linguistic and rhetorical dimension in the teaching and learning classrooms as well as adapt such criteria in the evaluation task sheets.

In addition, the study is significant as it contributes to the linguistic and rhetorical framework of Technical Oral Presentation evaluation task sheets. Examiners from both the academic and professional engineering community involved in the business of evaluating engineering students communicative competence can now consider the linguistic and rhetorical competency features in such oral presentation sessions (Morton, 2009, 2012).

1.9 The Limitation of the Study

In terms of limitation, language lecturers are not directly involved in the evaluation of the presentation. The study does not compare within groups (such as distinction between female and male participants) but only between groups of stakeholders (academic and professional engineering community). The findings of the study are not conclusive but provide an insight to the notion of communicative competence from a linguistic and rhetorical perspective.

1.10 The Organisation of the Thesis

This thesis has seven chapters in entirety. Chapter 1 is about the significance, scope, rationale and background of the study. It also addresses the research questions of the study. In addition, it briefly describes the notion of communicative competence in technical oral presentations, its relevance and contribution to the promotion of communicative competence to the ESL context, Malaysian tertiary education in the South East Asian region, the discourse community from both the academic and engineering profession and limitations of the study.

Chapter 2 describes the theoretical underpinnings of the notion of communicative competence from Hymes (1972c) to Celce-Murcia's (2007) definition of communicative competence in CLT and communication studies from a linguistic perspective. Although various communication experts focus on various sub-sets of competence (i.e. linguistic, pragmatic, socio-cultural and discourse), the studies remain inconclusive as to the salient linguistic and rhetorical features that define the notion in technical oral presentations.

It is this lack of definition that propelled the focus of the study to contribute an understanding of the notion from a linguistic and rhetorical perspective from an ESL context within a Malaysian setting. It sheds light to the notion of communicative competence and its importance among the various stakeholders involved in technical oral presentations. The chapter concludes with a suggested conceptual and theoretical framework for the study.

Chapter 3 provides an insight of the research methodology from a communicative approach framework with focus on critique sessions in technical oral presentation as the unit of analysis. The chapter discusses ethical considerations as well as the two-phase sequential explanatory design involved in mixed method as the methodology to explore the research questions. This chapter discusses the multiple research tools employed at different phases of the study.

Chapter 4 describes the quantitative data collection on essential communicative competence requirement from both the academic and professional engineering community. It seeks to provide response to Research Questions 1 and 2.

Chapter 5 describes the qualitative findings on stakeholder perceptions of communicative competence and linguistic and rhetorical features in technical oral presentations. It mentions the similarities and differences (if any) on the perceptions as held by respective groups of stakeholders. It seeks to provide responses to Research Questions 3 and 4. The findings can possibly be theoretically indicative of the learning theory.

Chapter 6 discusses the actual practice of linguistic and rhetorical features deemed necessary for successful presentations. It seeks to provide feedback to Research Question 5. The chapter aims to gauge possible similarities and differences between these stakeholders. The findings accentuate the emphasis on different sub-sets of linguistic and rhetorical competence by the practitioners. It also lends possible support to the learning theory.

Chapter 7 presents an overview of communicative competence construct as viewed by the stakeholders involved in technical oral presentation. It suggests recommendations and provides conclusions of the research findings on communicative competence in technical oral presentation. The study concludes by proposing a linguistic and rhetorical framework necessary to address the communicative competence in technical oral presentation. This framework is intended to provide that “magic” or interactivity so necessary for prospective graduates of today to converse as engineers of tomorrow in the 21st century. The chapter also provides suggested recommendations to enhance the linguistic and rhetorical framework and concludes by providing suggestions for future researchers to further the study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter provides a review of communicative competence studies within the engineering curricula according to Accreditation Board for Engineering and Technology (ABET) and university requirements. The chapter also discusses the significance and role of communicative competence in Communicative Language Teaching (CLT) in English as a Foreign Language (EFL) and English as a Second Language (ESL) studies.

Incorporating the theoretical underpinnings of the Celce-Murcia's communicative competence model (Celce-Murcia, 2007), the study initially attempts to investigate the notion of communicative competence in technical oral presentation based on five sub-sets of communicative competence constructs namely strategic, socio-cultural, interactional, linguistic and discourse competence to achieve a unified coherent text.

Celce-Murcia's model (2007) is selected as it represents one of the current contributions to the notion in CLT. Communicative competence from the CLT perspective is viewed as a "way of communicating with people in a variety of settings and situations" (Hedge, 2000, p. 45). Subsequently, the notion is investigated from the linguistic and rhetorical dimension required in critique sessions within the technical oral presentation, an area deemed lacking in research (Morton, 2009).

Thus, in line with the paradigm shift toward CLT, communicative competence cannot be solely considered from a linguistic frame of reference but as a communicative or speech activity situated in the flux and pattern of communicative activities, settings and situations as originated in Hymes SPEAKING framework on communicative competence (Hymes, 1977). Thus, it is consistent that the notion incorporates linguistic and rhetorical elements to depict an oral communicative event delivered by a presenter to an audience in an interactive context.

The focus of communicative competence has shifted away from "a narrow focus on language as a formal system to the socio and cultural context knowledge of language use in communication" (Hedge, 2000, p. 45). To Hymes, one must consider communicative competence "as context of a community, or network of persons, investigating its communicative activities as a whole" (Hymes, 1977, p. 4). It is through communication that forms of reference within which language, culture and society is assessed (Hymes, 1994). In other words, communicative competence embodies language, context, persons, event, situations and setting.

The discussion provides a brief glimpse of several definitions and models associated with the term communicative competence in the sociolinguistic and second language acquisition context spanning from the 1960's to the present day. The study seeks to summarize the evolution of the term "communicative competence" starting from its original source through contributions of Chomsky (1965), Hymes (1964, 1972b), Canale and Swain (1980), Canale (1983), Bachman (1990) and Celce-Murcia (2007). In addition language assessment studies on performance in oral presentation sessions are also discussed (Roe, 1994). In tracing the historical development of communicative competence, the study seeks to identify the different communicative competence criteria applied to the context of communication skills in the field of general and applied linguistics.

The chapter also discusses existing communicative competence research findings in presentation classrooms within the language and communication discipline. Prevalent literature indicates the lack of research in language and rhetorical features necessary for communicative competence in critique sessions within technical oral presentations. It is this gap that the study seeks to fulfill.

2.1 Communicative competence: Origins and interpretation

"Communicative competence" or "the competence to communicate" remains a controversial and fuzzy term in the field of general and applied linguistics (Jablin & Sias, 2001; Leung, 2005). To date it lacks definitional consensus in its construct and theoretical underpinning (Lailawati Mohd. Salleh, 2007). The said construct becomes even more debatable in its definition when used within a speaking context such as the technical oral presentation, a workplace related technical communicative event. Despite the lack of operational definition, a theoretical analysis of its content and boundaries in language use is provided in order to enhance language and pedagogical implications in language and communication classrooms.

In 1965, Chomsky published *Aspects of the Theory of Syntax* where he suggests the linguistic knowledge an ideal presenter has of his or her language. His most over-quoted statement states,

> Linguistic theory is concerned primarily with an ideal presenter-listener, in a completely homogeneous speech-communication, who know its' (the speech community's) language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of this language in actual performance.
>
> (Chomsky, 1965, p. 3)

Chomsky was interested in the abstract knowledge of the ideal presenter-listener communication within a homogeneous society. He termed this knowledge as linguistic competence. To Chomsky, linguistic competence refers to the perfect, unconscious, abstract rules of grammar in mind of an ideal presenter or listener. He was more concerned with knowledge as a mental abstract. In this framework, the ideal presenter is unaffected by memory limitations or distractions that usually arise when a presenter performs the language.

In Chomsky's notion, linguistic competence (or tacit knowledge) and performance (language in use) were distinct. Performance or the "actual use of language in concrete situations" is an imperfect reflection of linguistic competence and therefore not considered as part of linguistic competence (Chomsky, 1965, p. 3). Chomsky's concept of language was a mental, abstract, scientific attribute and he ignored the socio-cultural significance of any human interaction. In fact, Chomsky's structural interpretation of language knowledge caused tension among the sociolinguists who defined language from a structural (grammatical) and functional (communicative aspect) role in society.

The Chomskyan notion of linguistic competence was refuted by American anthropologist and sociolinguist, Dell Hymes who coined the term communicative competence (Hymes, 1964, 1972b). Hymes went a step further and translated Chomsky's notion of linguistic competence into "systemic potential" and took it "as the most general term for the capabilities of a person"(Hymes, 1972b). To Hymes, appropriacy of every grammatically correct utterance is taken into consideration as human interaction occurs in a heterogeneous speech community.

Hymes in his collaboration with Gumperz (1964) expanded the Chomskyan notion of linguistic competence in a study of communication from an ethnographic slant. In Hymes' study of communication, communicative competence is analyzed as a communicative event complete with its communicative components particular to the communicative habits of a community within a particular setting (Hymes, 1964). In Hymes *Ethnography of Speaking,* the notion of communicative competence is perceived as a communicative event which embodies several components in the context of communication (Hymes, 1964). The *Ethnography of Speaking* integrates multiple factors such as patterns of linguistic form, pragmatic usage, and social function.

Among the ethnographic components listed in the SPEAKING anagram include Setting (as environment), Participants (presenter and audience involved in a speech), Ends (outcome of the speech), Act sequence (order of events of the speech), Key (overall tone or manner of the speech), Instruments (the form and style of the speech being given), Norm (socially acceptable at the event) and Genre (type of speech that is given). These key components are crucial to the formulation of rules of language use and to the analysis of social meaning of utterances (Hymes, 1967). It is for this reason that the unit of analysis investigated is the critique session within the technical oral presentation. The critique sessions reflect interactive sessions between participants in a particular setting who share a common knowledge and interest in the said event.

Hymes considers communicative competence “as the interaction of grammatical (what is formally possible), psycholinguistic (what is feasible in terms of human information processing), socio-cultural (what is the social meaning or value of a given utterance), and probabilistic (what actually occurs) systems of competence” (Hymes, 1972b, p. 286). This implies communicative competence as an investigation of language use that is systematically possible, feasible, appropriately produced, linked and interpreted within certain socio-cultural context.

In the context of this study, for presenters to be considered competent, presenters need to exhibit knowledge of the syntax and appropriate language use required in the context of a presentation integrated within socio-cultural boundaries. In other words, presenters need to exhibit both knowledge of presentation competence, mastery of presentation language exhibited with socio-cultural awareness of the audiences’ needs. In fact, Hymes’ notion of communicative competence (1972b) is mirrored in Celce-Murcia’s (2007) model of communicative competence which restates the need for linguistic, strategic and socio-cultural competence.

From Hymes’s (1972c) conceptualization of communicative competence as both linguistic competence and performance, the notion of communicative competence was later expanded by Canale and Swain (1980), Canale (1983), Bachman (1990) and Celce-

Murcia (2007) which included other components of communicative competence. Moreover, in Roe's (1994) communicative competence descriptor the inclusion on testing a learner's ability language performance assessment is also discussed. This component is deemed necessary as an essential criterion in the evaluation of communicative competence in an oral presentation.

2.2 Components of communicative competence

Canale and Swain (1980), Canale (1983) expanded the notion of communicative competence to incorporate other components to meet the communicative needs of learners in the early stages of second language learning. For the said linguists, communicative competence comprised two levels the linguistic and psycholinguistic competence. Within the said competence, different competence features existed.

The linguistic competence includes four competencies such as grammatical, sociolinguistic, strategic and discourse competence. Grammatical competence refers to knowledge of the language code while sociolinguistic competence is the knowledge of the socio-cultural rules of use in a particular context. It takes into account the contextual factors such as participants, norms of interaction and purposes of interaction. Strategic competence or verbal and non-verbal communication strategies refers to knowledge of how to use communication strategies to handle breakdowns in communication while discourse competence is knowledge of achieving coherence and cohesion in a spoken or written text.

The psycholinguistic competence level included two constructs of communicative competence namely a knowledge and skills component. Knowledge denotes what one knows (consciously and unconsciously) about language and other aspects of communicative language use. Knowledge in this aspect is in line with Chomskyan notion of competence as an innate ability of individuals. Skills on the other hand, refer to how well one can apply one's theoretical knowledge in everyday situations (i.e. speaking, listening, reading and writing). Clearly, this aspect relates closely to the Chomskyan notion of performance. Suffice to say that despite the identification of the different types of sub-sets of competence by the said linguists i.e. Canale and Swain (1980) or Canale (1983), there is limited literature on construct of communicative competence from a linguistic and rhetorical dimension in technical oral presentations as used by engineering students in the Malaysian setting.

To Canale and Swain (1980a) "communication competence resides in the human cognitive domain, but both the process and product is demonstrated through the use of skills in the expression of verbal and non-verbal behavior" (Michael Canale & Swain, 1980a, p. 29). The communicative notion of language competence therefore identifies the knowledge and skills component as an integral part of competence. This implies that there is the interaction between the theories of human action with the systems of human knowledge and skills.

In the context of presentation, the notion implies that learners of the language are expected to integrate and exploit second language use through communicative strategies coupled with knowledge and skills on grammatical, socio-cultural and discourse competence based on the learners' experience in the first language. Communication results when there is a balance between the knowledge and skills components of competence.

Following Canale and Swain's (1983) definition of communicative competence, other models like Bachman's (1990) model of communicative competence ensued. Bachman (1990) used the term "Communicative Language Ability" (CLA) instead of communicative competence with language assessment rather than language teaching in mind. In the said model, the components include language competence, strategic competence and psychological mechanisms. Figure 2.1 on Bachman's Model on "Components of CLA in communicative language use" is illustrated below:

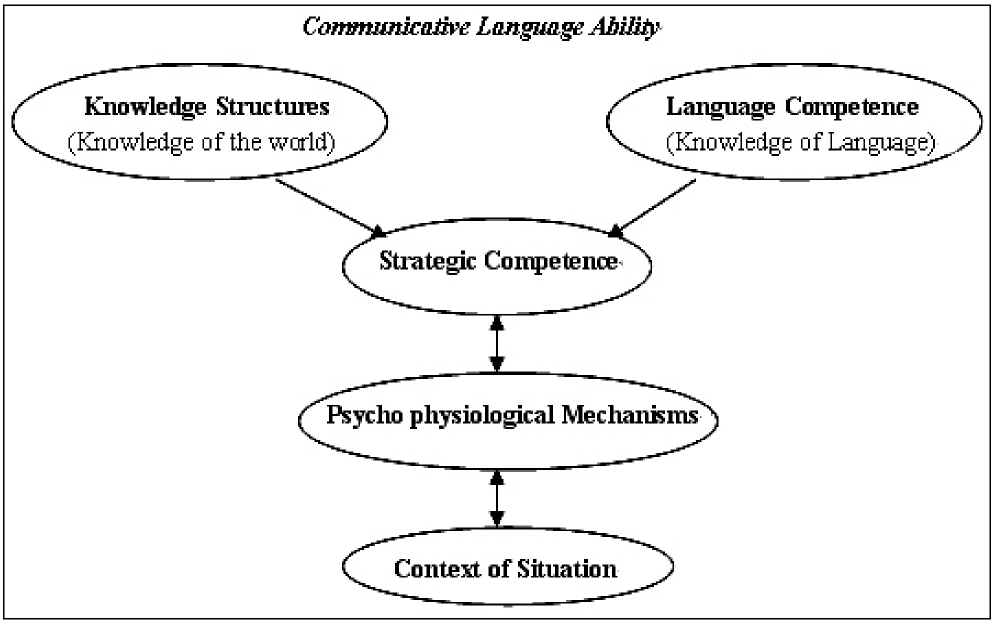


Figure 2.1: Components of communicative language ability in communicative language use

(Bachman & Savignon, 1990, p. 95)

In Bachman's (1990) model of communicative language ability, language competence comprises organisational and pragmatic competence. Organisational competence consists of grammatical and textual competence (parallel to Canale's (1983) discourse competence). Pragmatic competence includes illocutionary competence and sociolinguistic competence. Illocutionary competence refers to speech acts and language functions while sociolinguistic competence refers to the knowledge of how to use language functions appropriately in a given text. This definition echoes Hymes notion of communicative competence as a functional role in a social context.

Strategic competence refers to a set of meta-cognitive strategies that enable language users to engage in goal setting, assessment and planning to implement language competence appropriately in task related situations. Psychological mechanisms imply neurological and psychological processes that are involved in language use.

In the context of this study, the said components within the theoretical framework provide language and communication users the ability or capacity to create and interpret responding tasks on measurement, development or theoretical perspective of language tests or even discourse performances. This implies that the components are utilised for presentation assessment or performance purposes. To Bachman and Palmer (1996), communicative language ability essentially deals with language ability in language test performances. The said theoretical model of language ability provides a valuable framework for guiding the definition of constructs for any language testing development situation.

In Bachman and Palmer's (1996) model of communicative language ability, language is assessed according to the areas of knowledge. Language ability tested is dependent on the knowledge tested. Language knowledge is categorized to organisational and pragmatic knowledge which takes into account the structural and interactive component of language performance. Bachman and Palmer’s (1996) model of communicative language ability is illustrated in Figure 2.2 titled “Areas of language knowledge”.

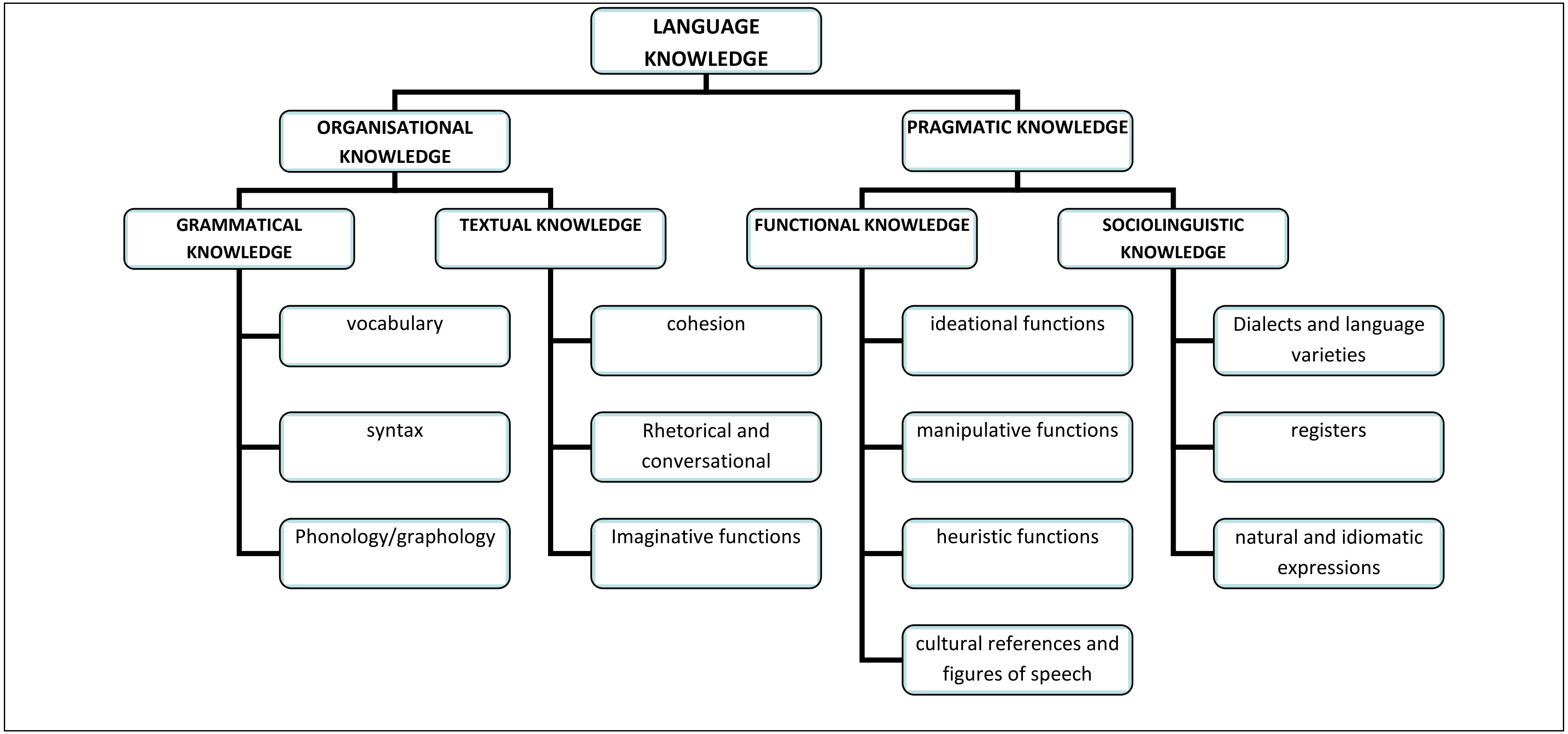


Figure 2.2: Areas of language knowledge

(Bachman & Palmer, 1996, p. 68)

Although the model provides cues on the types of knowledge necessary to communicate competently, it however, does not provide specific examples that can be utilised to accentuate the language component in technical oral presentations. What exactly entails "vocabulary" or any other sub-items listed? Thus, despite the clarity provided on the possible linguistic dimension, specific details grounded in a particular context are required to describe the notion of communicative competence from an ESL context within a Malaysian setting.

Moving on from Bachman's model of communicative language ability, the components within the said construct were maintained in the pedagogically motivated model of communicative competence proposed by Celce-Murcia, et. al., (1995). Among the components proposed in this model include linguistic, socio-cultural, strategic, discourse and actional competencies.

Celce-Murcia et al. (1995) recommended changes to the Canale-Swain model where sociolinguistic competence be modified to socio-cultural competence (the cultural background knowledge needed to interpret and use a language effectively) and that grammatical competence be re-labeled as linguistic competence to include the sound system and the lexicon as well as the grammar (Celce-Murcia et al., 1995, p. 11). Celce-Murcia's (1995) study accounts for competence from a cultural perspective and includes the phonological details in linguistic competence features. The study, however, does not address the notion of communicative competence in technical oral presentation within a Malaysian ESL context.

Discourse competence was concerned with the selection and sequencing of sentences to achieve a unified whole. This means it deals with syntax, coherence and cohesion of a text. It also includes turn taking as part of discourse competence feature. Actional competence included the performance and understanding of speech acts while strategic competence indicated the knowledge and application of communication strategies within a communicative event. However, details are not provided on the sub-items that constitute these competency dimensions.

Celce-Murcia, et al., (1995) continued further improvements on the existing communicative competence construct in 2007. As indicated in Figure 2.3 on Chronological evolution of communicative competence, Celce-Murcia, et. al., (1995) illustrated the chronological evolution from that of a linguistic focus to the inclusion of other competency skills and attributes (from Chomsky 1972 until Celce-Murcia, et al., 1995).

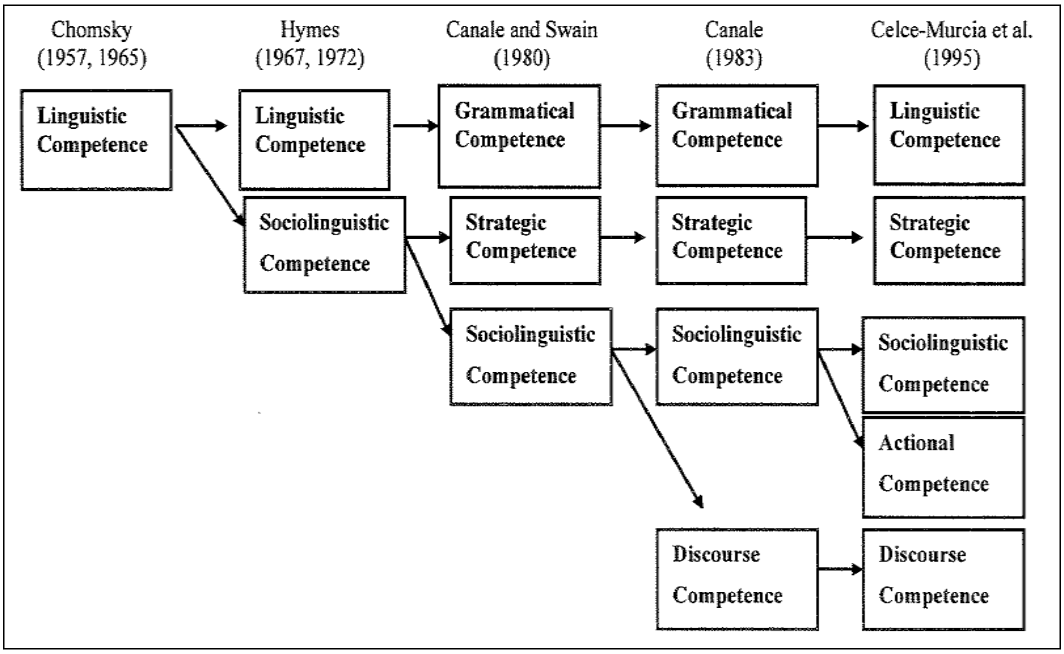


Figure 2.3: Chronological evolution of communicative competence

(Celce-Murcia et al., 1995, p. 12)

In the revised version (Figure 2.4), discourse competence takes the central focus while five other competencies radiate from and interrelate to discourse competence. Both Figures 2.3 and 2.4 indicate the chronological development and revision of the communicative competence construct from the perspective of language teachers (2007). Formulaic competence is an added new component in this model. The revised model proposed by Celce-Murcia (2007) is indicated in Figure 2.4 titled "Revised schematic representation of communicative competence".

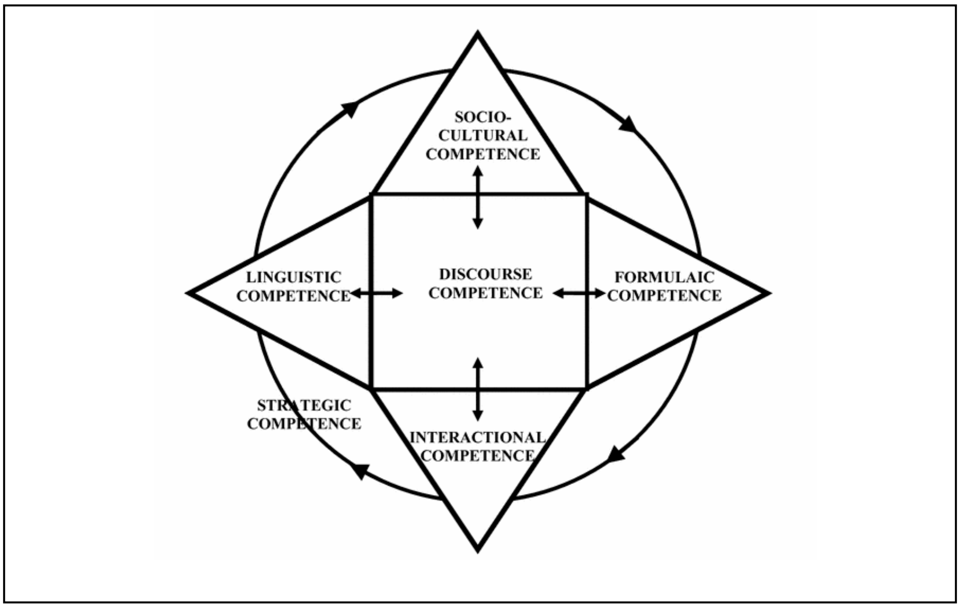


Figure 2.4: Revised schematic representation of communicative competence

(Celce-Murcia, 2007, p. 45)

In Celce-Murcia's (2007) revised schematic representation of communicative competence, socio-cultural competence refers to the presenters' pragmatic knowledge i.e. how to express messages within a socio-cultural context and knowledge on language variations in such contexts. This mirrors Bachman's (1990) CLA model. This communicative competence component is acquired through a learners' immersion in the target language community. Such experience enables a learner to be exposed to both the linguistic and socio-cultural competence of a target language.

In the said model, discourse competence refers to the selection, sequencing and arrangement of words, structures and utterances to achieve a unified spoken message. This component is similar to language knowledge and discourse competence by Celce-Murcia, et.al., (1995). Four important sub-areas included are cohesion, deixis (use of personal pronouns, spatial terms, temporal terms and textual reference), coherence and generic structure.

As for linguistic competence, the four types of knowledge associated with the said component include phonological, lexical, morphological and syntactic knowledge of sentence structures and other aspects of syntax in language use. Formulaic competence includes fixed and prefabricated chunks of language use such as routines (fixed phrases like *of course*, or *How do you do*?), collocations (verb-object: *spend the money*; adverb-adjective: *statistically significant, mutually intelligible;* adjective-noun: *tall building*), idioms and lexical frames (*See you later/tomorrow* etc). All of these forms of syntactic and linguistic features add to the interactional features of a unified spoken message. Such phrases may possibly be evident in critique sessions in technical oral presentations.

Interactional competence includes actional competence where evidence of knowledge on interactions such as information exchanges, interpersonal exchanges, expressions of feelings and opinions, problems and future scenarios are expressed. Interactional competence also includes conversational competence such as turn-taking and other dialogic genres such as opening and closing a conversation, holding and relinquishing the floor, establishing and changing topics, interruption. It also includes non-verbal or paralinguistic features such as non-verbal turn-taking signals, backchannel behaviors, gestures, affect markers and eye contact.

Strategic competence incorporates specific behaviors or thought processes that students use to enhance their own second language learning. Among the language strategies included are cognitive (logical analysis), meta-cognitive (self-evaluation) and memory related strategies. Communication strategies include achievement, stalling, self-monitoring, interacting and social strategies to enhance communicative competence of a presenter.

Thus, the concept of communicative competence includes language proficiency and the verbal and non-verbal behaviors required to verbalize the language. Despite the chronological evolution of the notion of communicative competence as propagated by Celce-Murcia (2007), the context and linguistic and rhetorical dimension as utilised in scientific and engineering profession in the South East Asian region remains lacking in current language and communication studies.

Despite Celce-Murcia's (2007) limited operational definition of communicative competence, the model has been selected as the theoretical framework that underpins this study as it represents the latest contribution to the notion in language and communication studies. The notion of communicative competence construct indicates the significance of socio-cultural competence, discourse competence, linguistic competence, interactional or actional competence and strategic competence to achieve a unified coherent text. In the context of this ESL study set within a South East Asian region, the notion of communicative competence in technical oral presentation is initially investigated with the five sub-sets of competencies as propagated in Celce-Murcia's (2007) model of communicative competence.

This study, aimed at contributing to the notion of communicative competence in technical oral presentation within the scientific and engineering profession, has worded the five sub-sets of competencies as i) presentation skills and attribute construct (strategic and socio-cultural competence); ii) behavioral skills and attribute construct (strategic and interactional competence); iii) content construct (linguistic and discourse competence); iv) language competency construct (linguistic competence) and v) non-verbal skills construct (interactional competence). These competencies are worded accordingly for ease of participants' understanding and familiarity with the said terms for quantitative data collection purposes.

Subsequent to the quantitative findings on communicative competence in technical oral presentations from an ESL context, the qualitative phase investigated the notion from the linguistic and rhetorical dimension as perceived by selected participants of the academic and professional engineering community within critique sessions in technical oral presentations. This investigation is necessary as it contributes to the notion of communicative competence from the perspective of end-users such as students, lecturers, language lecturers and engineers involved in technical oral presentations within the ESL context which inadvertently is beneficial to the scientific and engineering profession in the Malaysian setting. An investigation of the notion attempts to fill the prevalent gap within the ESL context and its users such as tertiary students involved in such presentations in the South East Asian region.

2.2.1 Oral communicative competence performance/task descriptor

As part of the communicative competence descriptor, language proficiency and performance assessment criteria of the speaking component in presentations cannot be overlooked. Roe (1994) indicates that a stark demarcation of communicative competence criteria in testing language assessment is identifying the notion to "the ability to perform a task" (Roe, 1994, p. 10). Figure 2.5 on "Specifying communicative competence descriptors" indicates competence descriptors in testing language assessment based on the learners' ability to perform a task.

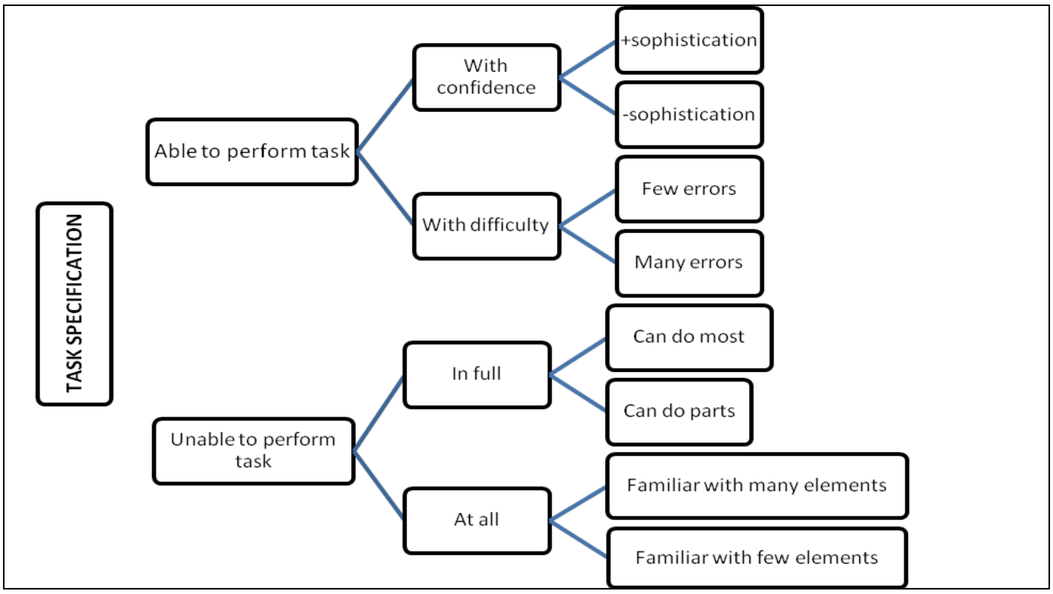


Figure 2.5: Specifying communicative competence descriptors on task specification

(Roe, 1994, p. 10)

Roe's (1994) model on communicative competence descriptor generates eight notional levels of communicative competence descriptor. Each task identified can be interpreted in terms of job-related competence descriptor. The above literature on language assessment model provides an indication of communicative competence descriptors in language assessment performances. A task performance is indicated by a learner's ability to perform a speaking task either with confidence or with difficulty. In evidently, this descriptor on communicative competence indicates a learner's dependence and mastery of language proficiency and its contextual usage. Roe's model indicates the importance of language proficiency features but does not provide detailed explanation of items within the said linguistic features. Moreover, Roe's model does not relate to specific oral communicative event such as technical oral presentation within the ESL context.

Once again the said models on language assessment and testing of speaking performance point toward the need for students to possess required language and rhetorical competence to complete a particular communicative task. In this context, the need is targeted toward ESL students' capability of communicating competently during technical oral presentation sessions. In addition to the knowledge on components that form the communicative competence construct, it is also essential to identify the levels of speaking descriptors that describe and assess language performances. This framework enables examiners to determine the confidence and speaking ability of learners to perform a task.

What is implied from the said model is the reliance on language needs to perform and complete the task with confidence. Roe implies that higher costs are incurred when higher levels of expertise (with sophistication level) are required to complete a said task. In particular, the study seeks to identify the linguistic, discourse and pragmatic competencies in a technical oral presentations in a Malaysian ESL setting, an area considered less explored in the field of technical communication (Orr, 2005).

2.3 Communicative competence in Communicative Language Teaching

In addition to understanding the chronological development of communicative competence construct, it is essential to realize how this construct is viewed within the Communicative Language Teaching (CLT) and in English as a Second Language (ESL) context. CLT, a communicative language teaching approach, emerged as a teaching methodology as a result of changes from the British Situational Language Teaching approach dating from the late 1960s (Richards & Rodgers, 1986).

In the said approach, some theoretical characteristics of the language theory include:

i. language is a system for the expression of meaning
ii. the primary function of language is for interaction and communication
iii. the structure of language reflects its functional and communicative uses
iv. the primary units of language are not merely its grammatical and structural features, but categories of functional and communicative meaning as exemplified in discourse

(Richards & Rodgers, 1986, p. 71)

In other words, CLT promotes activities that involve real learning as well as meaningful tasks. In CLT, the desired goal is communicative competence (i.e. the desire to use the linguistic system effectively and appropriately). Communicative competence includes the following aspects of language knowledge:

- knowing how to use language for a range of different purposes and functions
- knowing how to vary our use of language according to the setting and the participants (e.g., knowing when to use formal and informal speech or when to use language appropriately for written as opposed to spoken communication)
- knowing how to produce and understand different types of texts (e.g., narratives, reports, interviews, conversations)
- knowing how to maintain communication despite having limitations in one's language knowledge (e.g., through using different kinds of communication strategies)

(Richards, 2006, p. 3)

In other words, language when investigated from a functional perspective, takes into account the behavorial and grammatical meaning of language within the linguistic system (Halliday, 1973). The functional approach founded by Firth (1930,1937) views language as an interpersonal activity with distinct relationship with the society. Firth takes into account the “context of situation” which brings together participants, objects and effect of verbal action (Firth, 1957, p. 182). The functional approach draws itself away from the Chomskyan concern with linguistic competence and is more concerned with viewing language as a form of interaction and interpersonal activity with society (Firth, 1957). However, examples of interactive or interpersonal competence items required for a speech activity are not specified.

Taking on Firthian view of language as an interpersonal activity within a context, Halliday views language as a meaning potential construct which serves three broad functional options - the ideational, interpersonal and textual function (Halliday, 1975, p. 17). The ideational function refers to the physical environment where a linguistic activity is performed; interpersonal component reflects the social functions of language and textual function acts an as enabling function in a text or speech act (Halliday, 1975).

To Halliday, a speech act is essentially a complex behavior pattern which combines both ideational and interpersonal functions within language use. Halliday’s theory of language learning centres more on content and expression of language learning and pedagogy. Language is explained in reference to its function in the total linguistic system (Halliday, 1985, p. xiii). A functional theory of language is a theory about meanings, not about words or constructions (Halliday, 1973, p. 110).

What can be inferred from Halliday's description is that teaching language infers teaching language as systemic functions within the linguistic system. Language is not taught in grammatical isolation but as functional units used within a context to be understood by members of a society. In this context, Halliday does not provide specific examples of functional units within a speech context. In the technical oral presentation context, language is to be understood within the engineering education context and engineering community. Language use in the presentation context is understood by members who share similar technical knowledge. In addition, laguage used in this study is based on ESL speakers in a Malaysian setting.

Thus, what can be inferred from the said framework of communicative competence within the CLT and language context is the need for language knowledge and proficiency to be utilised in various contexts and situations. With CLT, the teacher is seen to take a secondary role as "needs analyst and task designer" while students engage in primary roles as "improviser or negotiator" (Richards & Rodgers, 1986, p. 77). The teacher is not the focus but facilitates students in discussion and authentic tasks. Grammar input does not become the main focus of a classroom activity but the focus is more toward communication.

The shift in teaching paradigm indicates emphasis from that of the audio-lingual or grammatical approach (1960's) to a communicative approach (1970's) where functional and communicative purposes are exemplified. The notable change implied from such CLT paradigm shift is the move from positivism to postpositivism and from behaviorism to cognitivism (Jacobs & Farrell, 2003). This means to say that in the communicative view of language and language learning principle, learners now are encouraged to learn a language through authentic and meaningful communication, which involves a process of creative construction, to achieve fluency. However, what remains lacking is specific competency features required in scientific and engineering oral presentation context.

In tandem with such pedagogical paradigm shift, present day linguists like Spitzberg and Cupach offer a comprehensive view on the communicative competence construct from an interpersonal perspective (1989; 1984). They maintain that competence is manifested in effective and/or appropriate behavior as the basis of communicative competence. Effectiveness is associated with "successful task accomplishment" while appropriateness reflects "politeness and avoidance of violating social or interpersonal norms, rules and expectations" (Spitzberg & Cupach, 1989, p. 7). In other words, for a presenter to communicate competently, certain communication behaviors and choices are exhibited by the presenter.

To Spitzberg and Cupach stresses the importance of three important themes in communicative competence literature such as control, collaboration and adaptability (1989; 1984). Control allows a presenter to be able to handle and accomplish a communicative task by several presenter traits such as autonomy, creativity, empathy, intelligence, judgment, self-esteem, assertiveness and others. Skills associated with such nature include empathy, role-taking, listening, attentiveness, social confirmation and interaction involvement.

What can be ascertained from Spitzberg and Cupach’s themes on communicative competence is the need for presenter composure and interactive competence of the presenter with the audience. The presenter ensures that some form of communication or interaction occurs with the audience. This is in line with Hymes' analogy on the ethnography of speaking (Hymes, 1972b). Presenter composure is associated with the behavioral flexibility and adaptation of actions by the presenter to fit to a given context. Presenters must be sensitive and be able to adapt their behavior to audiences needs’ so that a conducive and non-threatening atmosphere is attained during any communicative event, situation or setting.

In other words, the concept is associated with a set of appropriate behaviors within a communicative context. A competent presenter is one who attains a conducive and cooperative environment which is attained by the presenter’s adaptability to a given communicative context. Thus, communicative competence is not only a verbal performance but interplay of behavioral and cognitive skills. It is for this reason that the present study emphasises on linguistic and rhetorical competence in technical oral presentations in an ESL setting.

Others like Wiemann and Backlund (1980) denote that cognition and behavior form part of the communicative competence construct as competence in the communication literature is mainly situated in the behavioral category. Arguing that competence should involve both cognition and behavior, Wiemann and Backlund continue to suggest that one needs to *know* (have knowledge) and *know how* (have the skills) to demonstrate the appropriate behavior to be perceived as communicatively competent. One not only needs the language competency but the skill to use the language appropriately. It is in this light that the study posits to understand the skills, attribute, linguistic and rhetorical features required in scientific and engineering technical oral presentations in an ESL setting.

McCroskey (1984) concurs with Wiemann and Backlund on the importance of cognition as a sub-set of communicative competence. For McCroskey, a competent presenter is one who “acquires certain behavioral skill, cognitive understanding of the communication process, behaves in communicatively competent manner and uses competent communication behaviors” (McCroskey, 1984, p. 267).

What these theorists essentially confer on the said construct is that communicative competence essentially refers to appropriate knowledge (cognitive ability) and appropriate use of behavioral skills adapted to a given situation or context. Said differently, to be competent, one has to have the communication knowledge in order to develop the appropriate skills that can be used to adapt to situational demands.

Competence resides in the human cogntive domain but such knowledge is exhibited by skills expressed through verbal and non-verbal communication behaviors. Simply put, communication behaviors take the messages beyond the cognitive domain. Yet specific examples of such communicative competence items in scientific and technical presentations remain limited in the ESL setting.

Although limited literature is available to indicate the direct relationship between cognition and communication, cognition studies on communication identify "cognitive or behavior factors with effective communication" (Jablin & Sias, 2001). Cognitive studies termed communication competence include "cognition (knowledge of communication rules, symbols, cognitive complexity) behavior/skill repertoire, and performance (actual display of communicative behavior)" (Jablin, Cude, House, Lee, & Roth, 1994, p. 270). This means that communicative competence construct encompasses a combination of thought processes verbalized in appropriate behavioral skill and performance such as in technical oral presentations.

What is implied from the findings of these studies is that these definitions seek to constrict the notion of communicative competence toward a combination of certain skills and behavior attributes within a certain social context. Communicative competence entails knowledge, cognitive and behavioral skills to indicate a presenters' competence in a certain communicative event bounded in certain social setting.

The above sections indicate specific criteria and skill requirement associated with the notion of communicative competence. Some sources emphasise linguistic competence, strategic competence, pragmatic competence and even language knowledge or linguistic competence. The studies indicate the lack of consensus as to the operational definition of the construct. Hence, the aim of this study is to determine the appropriate communicative competence features with particular emphasis on the linguistic and rhetorical dimension necessary for critique sessions within technical oral presentations.

For this study, Celce-Murcia's (2007) model of communicative competence was adapted as it encompasses the necessary features required to ascertain communicative competence required in oral communicative events.

2.4 Communicative competence within the Common European Framework (CEF)/ Common European Framework of Reference (CEFR) Model

All of the communicative competence models contribute to the Common European Framework (CEF) or Common European Framework of Reference (CEFR) which represents the nexus of theories for language teaching, learning and assessment of CLT in EFL/ESL programs (Longman, 2002). The CEF/CEFR model is an essential criterion on communicative competence descriptors benchmark for learners and practitioners involved in evaluating language and communication courses.

The CEF model contributes to the competency framework in assessing a learner's competence in listening, reading, speaking and writing skills of the language. Table 2.1 on "The Global Scale" provides a brief description of skill descriptors for communication and language use. The model divides learners to three broad divisions (A, B and C) where each division is further sub-divided into two levels each. These 6 levels benchmark the presenters' proficiency.

Table 2.1: The Global Scale

Broad Division	Level	The Global Scale
C: Proficient Presenter	C2	Mastery
	C1	Effective Operational Proficiency
B: Independent Presenter	B2	Vantage
	B1	Threshold
A: Basic Presenter	A2	Waystage
	A1	Breakthrough

(Language Policy Unit, 2001)

In accordance to the model, a proficient presenter is one who possesses a range of competencies in addition to knowledge on the use of four skills in language learning. A proficient presenter assessed at the level of "C2" is one who "can understand with ease virtually everything heard or read, summarize information from different spoken and written sources, reconstruct arguments and accounts a coherent presentation, express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in the most complex situations" (Language Policy Unit, 2001, p. 24).

An independent presenter is one who has lower threshold levels of reception, production, interaction and medication. A B2 presenter is decribed as one who, "can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialization; can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party; can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options"(Language Policy Unit, 2001, p. 24)

A basic presenter at A2 level, “can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment), can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters, can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need” (Language Policy Unit, 2001, p. 24). Essentially the global scale descriptor includes a learners’ ability to use the four skills coupled with meta-cognitive, linguistic and strategic competence.

Similar to the CEF model, the CEFR provides its own descriptors on the qualitative aspects of a spoken language. The CEFR model provides a comprehensive description of “what language learners have to learn to do in order to use a language for communication and what knowledge and skills they have to develop so to be able to act effectively”(Language Policy Unit, 2001, p. 1).

In the CEFR model, communicative competence is conceived as a combination of various competencies such as strategic, linguistic, sociolinguistic and pragmatic competence. Strategic competence is described as “part of language communication use” while linguistic competence indicates “knowledge and ability to use language resources to form well-structured messages”. Sociolinguistic competence refers to the “possession of knowledge and skills for language use in context”. Pragmatic competence which comprises discourse and functional competence, refers to “interactional and transactional schemata” (Language Policy Unit, 2001, p. 108).

The CEFR model on communicative task performance exhibit similarities to the Canale & Swain's (1983) model. In the CEFR context, communicative competence is indicated by mastery of linguistic knowledge, interactive and contextual use of language to perform a particular communicative task. In the CEFR model almost alike the CEF model, among the descriptors include range, accuracy, fluency, interaction and coherence. Thus, when describing the communicative competence of a learner, such as in the case of a C2 learner (mastery level), the descriptors for such a learner includes the following:

i. *range* - shows great flexibility reformulating ideas, differing linguistic forms to convey finer shades of meaning precisely, to give emphasis, to differentiate and to eliminate ambiguity and has a good command of idiomatic expressions and colloquialisms

ii. *accuracy* - maintains consistent grammatical control of complex language, even while attention is otherwise engaged (e.g. forward planning, in monitoring others' reactions)

iii. *fluency* - can express him/herself in spontaneously at length with a natural colloquial flow, avoiding or backtracking around any difficulty so smoothly that the interlocutor is hardly aware of it

iv. *interaction* – can interact with ease and picking up and using non-verbal and intonation cues apparently effortlessly, can interweave his/her contribution into the joint discourse with fully natural turn taking, referencing, allusion making

v. *coherence* - can create coherent and cohesive discourse making full and appropriate use of a variety of organisational patterns and a wide range of connectors and other cohesive devices

(Language Policy Unit, 2001, p. 28)

This implies the need for a presenter to possess knowledge and skills in various linguistic, strategic and pragmatic competences to be considered as having acquired a mastery level of the language. In fact, the said features are akin to Roe's (1994) model of communicative competence descriptors required to perform a task. Research is required to investigate if these descriptors constitute linguistic elements deemed necessary in technical oral presentation. In the context of this study, the researcher decided to focus on linguistic and rhetorical dimension as required in scientific and engineering technical oral presentation as used by ESL learners in the Malaysian setting. The insight into the Malaysian context will contribute to the literature on the notion of communicative competence used by practitioners from the academic community and that of the professional engineering community.

2.5 Communicative competence in Technical Oral Presentation

Literature on communicative competence from Chomsky (1965), Hymes (1972a), Canale (1983) to Celce-Murcia (2007) hinge on the importance of linguistic knowledge, interaction skills and cultural knowledge as essential features pertinent in effective communication. Chomsky associated “competence” with the presenter-hearer’s knowledge of his language, and performance was described as the actual use of language in concrete situations”. Chomsky was inclined toward grammatical or linguistic competence which focused on aspects such as grammar, syntax, vocabulary, phonology (Danilova & Pudlowski, 2007, p. 7). The issue on “competence” versus “performance” was also deliberated by Chomsky (Chomsky, 1965).

However, in the 70’s, the focus included behavioral and socio-cultural factors in a speech community (Hymes, 1971). The feature of “appropriateness” to the concept of notion of communicative competence was discussed by Hymes (1980) who argued that "appropriateness" concerned "shared understandings of rights and duties, norms of interactions, grounds of authority, and the like” (Hymes, 1980, p. 42). Jablin & Sias (2001) define communicative competence as “the ability to demonstrate appropriate communication in a given context” (Jablin & Sias, 2001, p. 820).

In the 80's, Canale (1983) added to Hymes interpretation of communicative competence which included the grammatical and behavioral aspects of competence. To Canale (1983), communicative competence entails four components namely, grammatical competence (knowledge of lexical items of morphology, syntax, semantics and phonology), discourse competence (ability to connect sentences to form meaning out of a whole series of utterances), sociolinguistics competence (involving knowledge of the socio-cultural rules of language and discourse) and strategic competence (verbal and non-verbal strategies that maybe called into action to compensate for breakdown in communication).

Canale's inclusion of various types of competence is concurred by Bachman (1990) who describes CC as a set of multi-faceted skills required for effective use of the language. Effective use of language requires both "organisational knowledge" (what is said) and "pragmatic knowledge" (how it is said) in real time conversations (Venema, 2002, p. 3). Although literature highlights the criteria, there is not much discussion on the linguistic and rhetorical features that embody the criteria.

Hirsch (2003) goes a step further to add "connection", "flow" and "reinforcement" as fundamental elements for success in communication. Presenters need to provide a "connection for communication materials to the audience's needs, take the audience effortlessly through the flow of the presentation, and provide solid reinforcement with the proper planning and right attitude" (Hirsch, 2003, p. 7).

The chronological account of various studies indicated the subjective interpretation of the said construct. One is unable to exactly pin-point what essential features constitute the construct. This study utilises Celce-Murcia's (2007) model of communicative competence as the theoretical framework of the study where the focus is directed toward understanding the notion from a linguistic and rhetorical perspective as perceived by various stakeholders involved in critique sessions within technical oral presentations.

2.5.1 Communicative competence in Presentation: Critique session

In attributing meaning and knowledge to a communicative event by a speech community, Hymes, introduced the mnemonic code word "SPEAKING" in communication. SPEAKING consists of the following components, Setting, Participants, Ends, Act sequence, Key, Instrumentalities, Norms of Interaction and interpretation, and Genre (Hymes, 1971) .

In the context of this study, the unit of analysis is the critique sessions within the technical oral presentation. Critique sessions refer to the 10 minute question and answer session during the evaluation session of the technical oral presentation where there is an exchange of views expressed between the presenter and the audience. The critique session takes into account participants who interact within a particular setting and share common knowledge on the said event. In this aspect, the critique session fulfills the SPEAKING components.

The unit of analysis is investigated as such interactive sessions enables one to understand the notion of communicative competence as held by varied stakeholders who share mutual interest in workplace related communicative event. With continued language and communication experts dilemma over the notion of communicative competence (Leung, 2005), an insight into the said notion enables educators to realign language and communication courses on the specific communicative competence input required in the teaching and learning approach of ESP related communication course(s) in the engineering curriculum (Dannels, 2002; Kaewpet & Sukamolson, 2011).

In addition, continued debate over the construct of communicative competence and lack of engineering students' communication skills ability accentuate the need for the said study (Bhattacharyya, Patil, & Sargunan, 2009; Mariana Yusoff, 2008; Norback & Hardin, 2005).

2.5.2 Communicative competence in FYP 2

In this context, final year engineering students are required to complete a final year project 2 (FYP 2) in the final year of the engineering degree curriculum. Communicative competence is determined by the presenters' ability to express proficiency in the technical content of the project, methodology of the experiment, explanation and verification of results and exhibit other skills in the presentation.

As indicated in the final year research project guidelines for supervisors and students, presenters or students should be able to:

a. verbally report the outcome of their final year project
b. demonstrate how well they are able to explain and understand the project that they have been working on and
c. utilise their skills in oral presentation.

(Adapted: ACA-PROG-FYP-01)

Clearly, communicative competence expectations indicate technical and linguistic mastery to deliver and explain technical findings of a presentation to a varied audience. Student presenters need to be able to explain, clarify and justify technical contents orally to an audience.

2.5.3 Communicative competence requirement in Technical Oral Presentation

Communicative competence in technical oral presentation highlights the importance to "anticipate audience's prior knowledge, hold attention, clear and organised presentation of messages, appropriate pace to accommodate most listeners, media to back up the verbal message, and to read audience response" (Renfrow & Impara, 1989, pp. 20-21).

Taylor and Toews (1999) add that a presentation framework lists the "context, presenter, audience, presentation, and response" as elements necessary for presentation effectiveness (Taylor & Toews, 1999, p. 411). Presentation framework also includes the structure of the presentation such as the "title, introduction, body and closing" of the presentation (Taylor & Toews, 1999, p. 412).

In addition, studies on spoken test performances indicate a range of measures like grammatical accuracy and complexity, vocabulary, pronunciation, and fluency

(Iwashita, Brown, McNamara, & O'Hagan, 2008). Thus, literature on communicative competence indicates a plethora of presentation and linguistic features necessary to create rapport and interaction in a presentation. These key features contribute to the effectiveness of technical oral presentation.

2.5.4 Presentation criteria in Technical Oral Presentation

Effective oral presentation entails several elements “technical content, organisation, presentation criteria, use of visuals or graphics, and group criteria” (Pappas & Hendricks, 2000, p. 13). Pappas & Hendrick (2000) mention technical content includes topic mastery, technical correctness, completeness of analysis and interpretation of data, clarity of purpose and approach, scientific tone/language, statistical analysis and visualization of results.

Organisation embodies structural coherence among paragraphs, clear technical transitions, skill in handling questions and clock mastery. Presentation criteria include eye contact, hand/body movement, overall vocal quality, and appropriate dress. Visual graphics imply clarity and ease in interpretation, relevance to topic, presents new information, technical correctness, and appropriate design while group criteria signify synthesis among presenters (Pappas & Hendricks, 2000, p. 13).

In other words, presentation entails elements of verbal and non-verbal skills structured within a specific format where points are coherently delivered with transitional ease among presenters. Details, transitions from presenter to presenter and overall group dynamics are items associated with the ABET Criteria 2000 (Williams, 2001).

In the university setting, the assessment elements in FYP 2 include elements like structural details, methodology, discussion, recommendation, clarity of presentation, non-verbal communication and question and answer session (see Appendix A on FYP 2 Part II Final Oral Presentation Task Sheet).

2.6 Communicative competence: Linguistic and presentation requirement

Orr mentions that technical communication remains a "seldom tapped" research area in Second Language Acquisition (SLA) and English Language Teaching in engineering communication studies (Orr, 2005, p. 51). A clear dissemination of message/content is required from the presenter(s) to the listener(s) who may or may not have similar technical background, technical or specialized language of a concept in discussion (Eunson, 2008, p. 349).

The effectiveness of presentations depends on the techniques and command of the presenter's oral communication skills and mastery of presentation contents (Cooper, 2005). In evaluating the effectiveness of students' presentation, Cooper lists "content and analysis; structure; equity and team linkages; non-verbal; verbal; outline and visual aids; and completion of student reflection sheet" as criteria in an oral presentation (Cooper, 2005, p. 131).

In the present research study, both linguistic and rhetorical elements were investigated to bridge the academia-industry divide on communication skills required for professional workplace environment (Norback & Hardin, 2005). The researcher is of the prerogative that communicative competence is championed by the mastery of linguistic and rhetorical competence. Non-verbal cues essentially support the presentation and rhetorical delivery. It is for this reason that the fundamentals in linguistic and rhetorical competence are acquired to create that “magic” or “interactivity” lacking in students’ presentations (Morton, 2009).

2.6.1 The Linguistic and Rhetorical Dimension

The linguistic aspect of technical oral presentation deals with linguistic elements such as genre and rhetoric competence expected of presenters. Linguistic aspect in Communicative Language Teaching (CLT) entails the “focus on the ways in which language is used in real communication” with variance in written and oral communication (Gatehouse, 2001, p. 2).

Linguistic aspect according to Telebaković (2009) entails linguistic accuracy and linguistic appropriacy. For Telebaković (2009), linguistic accuracy signifies control of vocabulary, grammar, pronunciation, spelling and punctuation while linguistic appropriacy refers to the use of language adequate to context, function or intention/purpose, vocabulary and text structures (Telebaković, 2009, p. 3). This means that linguistic accuracy infers correct use of language expressions.

Language requirement in technical oral presentation is the use of clear and concise language with minimum number of “nominalizations, tautologies and clichés” (Eunson, 2008, p. 660). Eunson (2008) states that language requirement is realized through use of “technical jargons, specialized language, technical terms, acronyms, slang, idioms, and figures of speech” in a presentation (Eunson, 2008, p. 660). The use of concrete language (that is language related to the real world rather than abstracts) enhances the effectiveness of a presentation. Analogies, metaphors, proportions, percentages and figures of speech contribute to linguistic competence (Eunson, 2008, p. 662).

Rhetoric implies the use of “audience awareness, sense of purpose, organisation, use of visuals, professional appearance, and style” in oral presentations (Ford, 2004, p. 302). This incorporates interactivity and two way interaction between presenter and audience. Thus, linguistic (linguistic and structural) and rhetorical (interactive) element are crucial communicative competence sub-sets in technical oral presentation. However, studies indicate the lack of research and pedagogical materials on specific language and oral communication from a linguistic perspective (Hyland, 2002; Morton, 2009). As such the research is intended to fill this void.

Mastery of such competency elements enable prospective graduates to overcome and handle challenges posed by examiners during the critique sessions. It is essential that prospective graduates are exposed and be able to apply the wide pool of genre and interactive elements in various contexts as expected in the workplace. Such knowledge and application enables the graduates to eventually participate and speak the language of engineers as practiced in the industry.

2.6.2 Content or Structural Dimension

Literature on content refers to the explanation and analysis of all concepts linked to the topic (Cooper, 2005; Dobrin et al., 2008; Eunson, 2008). The content indicates the explanation, definition, development, clarification, description, analysis of an object, idea, product and mechanism or process to be described.

The effectiveness of content criteria is exemplified through the organisation and management of a presentation coupled with a presenter's ability to link and demonstrate an understanding of all concepts linked to the topic. The emphasis of the content is determined by the presenter's intent to "inform, persuade, challenge or sometimes to entertain" crafted through the organisation of the presentation to pre-empt the audience of the gist of the presentation (Eunson, 2008, p. 346). Such features must be exemplified in a presentation.

2.6.3 Presentation Skills Criteria

Presentation skills which centers on the presenter's visual, verbal and vocal mastery of the content enhances the delivery and impact of a presentation (Adler & Elmhorst, 2008). A presenter needs to be enthusiastic and confident by getting set physically and engaging the audience throughout the presentation. This aspect of presentation skills is probed further through the qualitative phase of the study. In the context of the study, presentation skills are conceptualized in the linguistic dimension.

2.6.4 Non-Verbal Skills and Attributes

Non-verbal attributes, which are usually ambiguous and culture bound, refers to attitudes and emotions conveyed through non-verbal messages which can be expressed vocally through appearance (physical stature and clothing), and through the face, eyes, posture, gesture, distance, physical environment and presenter management of time during the presentation (Adler & Elmhorst, 2008, p. 130).

This aspect is probed in the initial phase of the study to ascertain stakeholders' perception of essential communicative competence features necessary for technical oral presentation. In the qualitative phase, the researcher investigated the linguistic and rhetorical dimension deemed necessary to enhance communicative competence in technical oral presentations.

In addition, the researcher is of the opinion that students' communicative ability stems from ones' mastery of the linguistic and rhetorical competence. Non-verbal cues reinforce the students' linguistic and rhetorical competence. As such, the emphasis is toward the linguistic and rhetorical competence. Non-verbal elements such as stance, gesture, eye contact, and other forms of body language are not part of the unit of analysis in the study.

2.7 Stakeholders in Technical Oral Presentation

In higher education quality, stakeholders are those groups who have an interest in the quality of provision and standards of outcome of the university. Stakeholders include "students, society, and government participating in or benefiting from the provision of education" (Campbell & Rozsnyai, 2002). In this study, the stakeholders are groups of individuals who are commonly engaged and share interest in the quality and standard of outcome of technical oral presentations. For this purpose, the stakeholders include selected participants from the university (academia) and professional engineering company (industry).

The university participants include students, lecturers, and language lecturers. The professional engineering community refers to engineers selected from various oil producing units of a national oil company. These engineers have been selected by the university panel based on their work expertise and area of specialisation in the technical field. All stakeholders share a common interest and are engaged in the linguistic and rhetoric of the technical oral presentations.

2.8 Discourse Community

Flowerdew (2000) defines discourse community as "a group of people who share a set of social conventions that is directed towards some purpose (Flowerdew, 2000, p. 129). Discourse community members are characterized by practitioners' commonality in “language, beliefs, and practices” as a result of “similar educations and professional initiations” (Flowerdew, 2000, p. 129).

In this context, the discourse community refers to participants from the academic and professional engineering community who share a common interest in enhancing communicative competence in technical oral presentations. Identifying the stakeholders’ perceptions of technical oral presentation will allow the researcher to gain an insight of the stakeholders’ past and present experience in technical oral presentations.

2.8.1 The Students

The students as part of the academic discourse community are involved in the final year engineering project presentation. The researcher has focused on engineering students as they form the bulk of the student intake. The students are final year engineering students who deliver the final year engineering project findings in the second semester of the final year engineering degree program. During the second semester, research findings and analysis are delivered by the students to a panel of examiners from the academic and professional engineering community.

2.8.2 The Lecturers

The lecturers are part of the academic discourse community. The lecturers are final year engineering project lecturers who supervise and assess the students’ final year engineering project presentation. They are involved in the oral evaluation of the said students.

2.8.3 The Language lecturers

Language lecturers are not directly involved in the assessment of the project presentation but have contributed to presentation input in the students' foundation years of the engineering program. Language lecturers are from the language unit of the management and humanities department. Language lecturers conduct the speaking course offered to students in the undergraduate program. The course is a compulsory subject for all students enrolled at the university.

2.8.4 The Engineers

Engineers are part of the professional engineering community. This group comprises engineers from various departments in the national oil company. The engineers were screened and selected by the university panel committee. The engineers hold various executives position and possess specialisation in the related engineering discipline. Many of the engineers hold more than 5 years of professional working experience at their own workplace.

2.9 Gap in communicative competence studies

Prevalent communicative competence studies investigate the said construct as a language or assessment tool in the context of capstone or design presentation classes. At the same time, some of these competency studies have taken different approaches such as the sociolinguistic, language or applied linguistic approach to study the notion of communicative competence. Limited mention is made of the linguistic and rhetorical features necessary to enhance communicative competence in technical oral presentations.

Existing studies include Usó-Juan and Martínez-Flor's (2008) study on communicative competence in Communicative Language Teaching (CLT) which indicates the need to increase learners' communicative competence by use of the four macro skills with emphasis on intercultural competence for English as Foreign Language (EFL) or English as Second Language (ESL) learners. The study does not provide genre or rhetorical features in the speaking sample activities nor is there any mention of the type of oral communicative event being investigated.

Dannels (2011) suggests the use of relational genre knowledge in online design critiques. The study emphasises the discord prevalent in pre-professional versus authentic genre learning in online design critique sessions. Dannels (2011) accentuates the difficulty faced by students in trying to mimic the genre sentence structures which are deemed as "social, dynamic, regulated and improvisational" by selected research participants of the academic and workplace. This implies that students struggle during such language communication tasks as they are unable to prioritize genre structures.

Students are often left confused over the type of genre structures (academic or professional) to mimic in presentations (Artemeva, 2008; Dannels, 2000). This suggests that students are still struggling on the appropriate use and choice of genre in presentations.

Studies indicate that students tend to revert to academic norms and roles rather than professional genre structures when faced with conflicting expectations (Artemeva, 2008; Dannels, 2000; Dannels & Norris Martin, 2008). Gaps provided in such studies amplify the need to identify the linguistic and rhetorical dimension of communicative competence in scientific and engineering technical oral presentations. Further investigation is required to infer the genre and linguistic features expected by both academic and professional settings (Dannels, Gaffney, & Martin, 2008). Some methodology studies merely mention the use of sequential explanatory design adopted in language policies pertaining to communicative competence but lacks further elaboration on any specific sub-set of communicative competence (Glasgow, 2012).

Studies by Dannels (2009) and Morton (2009) indicate the need for enhanced linguistic and rhetorical knowledge required in presentations. Dannel’s study indicated the importance of rhetorical strategies, oral styles, and organisational structures necessary to negotiate the real and simulated relational and identity nuances of the design presentation genre. Morton’s (2009) study on the other hand, indicated the lack of genre and disciplinary competence necessary for a presentation. Morton mentioned the lack of research in interactional genre competence that essentially creates that “magic” in presentations. The “magic” essentially refers to the interactive element and engagement component between the presenter and the audience during a scientific or engineering technical oral presentation (Morton, 2009). The review of competency studies indicate the lack of research in linguistic and rhetorical competency features that constitute the notion of communcative competence in technical oral presentations among ESL learners in the Malaysian setting.

In addition, Hyland (2002) study on architectural presentations accentuates the need for specificity in disciplinary genres as recent ESP literature imply the trend toward generic language features and discourse practices transferable across different disciplines or occupations. Metaphorical images, narrative style and dynamic grammar were considered essential components during the academic assessment of students' architecture presentations. The finding points toward the need for specific linguistic and disciplinary competence in scientific and engineering technical oral presentations.

Rowley-Jolivet and Carter-Thomas (2005) echo the lack of research on spoken genre in comparison to written academic genre. In the said study, the researchers only focused on the rhetorics of introduction sections of scientific conferences. The study applied a contrastive analysis approach where contextually motivated features are compared with corresponding proceeding papers. It however, does not take into account the perspective of the presenters and audience on communicative competence construct required in a scientific conference presentation in the ESL context. The focus and context differed.

Rowley-Jolivet and Carter-Thomas's (2005) study indicates the linguistic disparity between Non-Native Speaker (NNS) and Native Speaker (NS) scientists in oral presentations. NNS scientists possess less grammatical adaptability in comparison to NS scientists. NNS scientists were deemed to have less rhetorical appropriacy and persuasiveness in their discourse competence. The study affirmed the difficulty faced by NNS scientists in acquiring syntactic competence in oral presentations. The finding warrants the need to investigate the communicative competence from the linguistic and rhetorical requirement as used in scientific and engineering technical oral presentations.

Studies by Brinkman and Geest (2003) indicate divergent views on the communicative competence required by engineers. Engineers not only need to be able to communicate competently within their own discipline in the realistic context of a design project but are required to communicate with colleagues from multidisciplinary fields" (Brinkman & Geest, 2003, p. 68). This means that engineers require more than just mechanical and grammatical correctness. Brinkman and Geest (2003) suggest "text craftsmanship, genres, strategic communication and feedback" as essential literacy components required for communicative competence construct. It is evident that further research is required to investigate communicative competence requirement from the linguistic and rhetorical dimension in engineering technical oral presentations.

Others like Anthony, Orr and Yamazaki (2007) focussed only on one type of linguistic feature, i.e. the use of transitions in oral presentations while Arnó Macià's (2009) study stressed on language proficiency requirement within the Common European Framework of Reference for Languages (CEFR, 2001) requirement. Clearly, knowledge of language proficiency and other competencies need to be accentuated for communicative competence purposes in professional and workplace setting.

Other communication studies differed in aproaches applied to the study of the communicative competence. Boiarsky (2004) utilised a metacognitive approach on rhetorical strategies required in technical communication; while Haber and Lingard (2004) applied a rhetorical analysis toward medical discourse. What is evident is the different approaches and context used in the said studies. Despite such methodology, there was limited focus on the linguistic and rhetorical competency requirement in engineering technical oral presentations as used by ESL learners in a Malaysian setting. The approach and context differed from the present investigation in that a socio-linguistic approach and focus on genre and linguistic features necessary for technical oral presentations remains the primary focus of the present study.

In terms of prevalent local communication studies, existing studies lend focus toward the industry's perspective and not that of the students (Azami Zaharim, Ibrahim Ahmad, Yuzainee Md Yusoff, Mohd Zaidi Omar, & Hassan Basri, 2012; Azami Zaharim, Yuzainee Md Yusoff, et al., 2009; Fatimah Ali et al., 2006; Hafizoah Kassim & Fatimah Ali, 2010). Differences occur with the existing study on the type of communicative event being investigated. Azami's (2009; 2012) studies focused on an overall engineering curriculum requirement while Hafizoah Kassim & Fatimah Ali (2010) focused on English communication syllabus for engineering students.

Others like Mohammad Ali Moslehifar & Noor Aireen Ibrahim (2012) focussed on English language communication needs of Human Resource trainees. It is evident that there is lack of emphasis on technically related oral communicative events. Thus, the present study differs from previous local communicative competence studies, as it investigated from a socio-linguistic approach which seeks to identify the selected stakeholders' perceptions on linguistic and rhetorical competence in technical oral presentations within the ESL context in a Malaysian university setting.

What can be concluded is that existing communicative competence studies have been conducted with differing context, focus and approach. What can be ascertained is the lack of research conducted from a socio-linguistic approach on linguistic and rhetorical features required in technical oral presentations, an area considered less explored in technical communication studies (Orr, 2005). The present study aims to fill the said gap on linguistic and rhetorical features required in technical oral presentations from a socio-linguistic approach.

2.10 Related Studies

Although various local studies have been conducted on the students' communication skills ability, there was limited focus on the linguistic and rhetorical dimension necessary in technical oral presentations (Azami Zaharim, Yuzainee Md.Yusoff, Mohd. Zaidi Omar, & Hasan Basri, 2009; Hairuzila Idrus & Rohani Salleh, 2008; Mariana Yusoff, 2008). Recent studies also indicate the importance of identifying the interactive features deemed missing in engineering oral presentations (Azami Zaharim, 2008; Bhattacharyya, 2010; Hyland, 2005; Lailawati Mohd. Salleh, 2008).

Thus, the present study is carried out to investigate the communicative competence features deemed necessary to create that interaction and engagement in technical oral presentations set within an ESL context in the Asian region. The study seeks to lessen the academia-industry practitioners divide on the construct of communicative competence in scientific and technical oral presentations, an essential workplace oral communicative event in the professional engineering community.

2.11 Competency skill requirement of engineers

In meeting global and workplace demands, engineers of the 21st century need to be empowered with a combination of "hard" (technical) and "soft" (non-technical) skills for effective workplace participation (Roselina Shakir, 2009, p. 310). Hard skills refer to knowledge on scientific, mathematical, engineering design, problem solving skills and research capabilities while soft skills encompass communication skills, management competence, engineering ethics, and issues on sustainability (Patil, 2005). While these skills are vital to enhance communication skills, graduates' communicative competence is left much to be desired.

ABET and Engineering Criteria 2000 specify one of learner outcomes is for students to "communicate effectively" (Hovde, 2005). Communicative competence is essential for engineers as they are required to work in the global arena in order to gain a competitive edge in the professional workplace (Eisner, 2010). The job expectation of modern-day engineers far differ from the traditional roles where once engineers could focus primarily on the area of specialisation (Bhattacharyya, 2012).

Figueiredo (2008) aptly states the diverse roles endured by modern-day engineers includes that of a "scientist, sociologist, designer and an achiever"(Figueiredo, 2008, p.

94). In other words, engineers need to multi-task and possess a mix of both technical and non-technical competence to be an effective member of the COP (Bhattacharyya, 2012). The need for competent engineers is crucial in the Malaysian setting to meet human capital needs necessary for nation-building purposes (Ministry of Higher Education, 2011). Engineers need to be competent "content specialists and be able to speak clearly and coherently" (Dannels, 2005, p. 137). As such linguistic and rhetorical competency requirement cannot be left unchecked as language competency is an integral component of an engineers' successful integration in the professional workplace.

Lappalainen's (2009) study on communication skills requirement among engineering students' states,

> The academia has awakened to the fact that graduating engineers, although skilful and knowledgeable in their subject matters, lack qualifications that provide them with prerequisites necessary when taking on working life duties.
>
> (Lappalainen, 2009, p. 123)

Lappalainen's study states the need for research efforts to relook at non-technical or communicative skill requirement to be part of the engineering community of practice. In other words, students require the linguistic and rhetorical input to utilise engineering language as engineers in the industry.

It is essential that research is attempted to investigate the specific linguistic and rhetorical dimension necessary in technical oral presentations to create that "magic" or interactivity deemed lacking in technical oral presentations (Morton, 2009). Such efforts if left unchecked continue to mar pedagogical efforts toward making students speak like engineers. The focus of the present study aims to narrow the said gap on linguistic and rhetorical competence necessary in technical oral presentations among ESL learners in Malaysian setting.

2.12 Communicative competence: The apparent academia-industry practitioner divide

Although various studies have been conducted to understand the communicative competence construct within the CLT context (Fraser, 2010; Spada, 2007), what remains a daunting challenge is its interpretation by different groups of people when contextualized against different setting (Leung, 2005). This implies that the same construct can imply different meanings to different focal groups (students, lecturers or employers). McGroarty (1984) aptly states,

> such concept, can mean different things to different groups of students: program planners, administrators, and teachers who will only be able to provide better instruction only after considering the specific communicative needs of specific learners in terms of specific purposes for which language is to be used.
>
> (McGroarty, 1984, p. 257)

Wye & Lim (2009) suggested that the design of courses should be practically inclined to cater to the academia and workplace expectations of the expanding academic-industry cooperation (Wye & Lim, 2009). Collaborative curriculum design studies between the industry and academia are encouraged to meet oral communicative needs (Hafizoah Kassim & Fatimah Ali, 2010). Greater collaboration is required to attain a holistic understanding of the notion of communicative competence in technical oral presentations as used by ESL learners in the Malaysian setting.

If competency skill requirements are identified, competency gap can be narrowed between "the needed and present skills levels required by higher education, workplace leaders and recruiters" to meet workplace communicative competence requirements (Ruben & DeAngelis, 1998, p. 2). In this context, feedback on communicative competency features on linguistic and rhetorical dimension in critique sessions within technical oral presentations as used by ESL learners within a Malaysian setting is aimed at bridging the apparent academia-industry practitioner divide on competency requirement in engineering technical oral presentations.

2.13 Conceptual Framework

The conceptual framework utilised in this study includes the use of mixed-method design where quantitative and qualitative feedback was obtained from different groups of stakeholders at different phases of the study. Although different groups were involved at different phases of the study, all groups shared a common interest, i.e. through their involvement in technical oral presentations.

The quantitative data sought generalized views on the notion of communicative competence among the end-users of technical oral presentations, i.e. the students and engineers. Qualitative queries were necessary to investigate the notion of communicative competence and the linguistic and rhetorical dimension within critique sessions in technical oral presentations which was not obtained from the quantitative analysis.

To ensure the reliability and validity of qualitative findings, multiple methods of evidence, i.e. interviews, observation of critique presentation sessions and written documents (students' evaluation task sheets) were analyzed to ascertain similarities and differences among stakeholders' on the said notion. The conceptual research framework is illustrated in Figure 2.6.

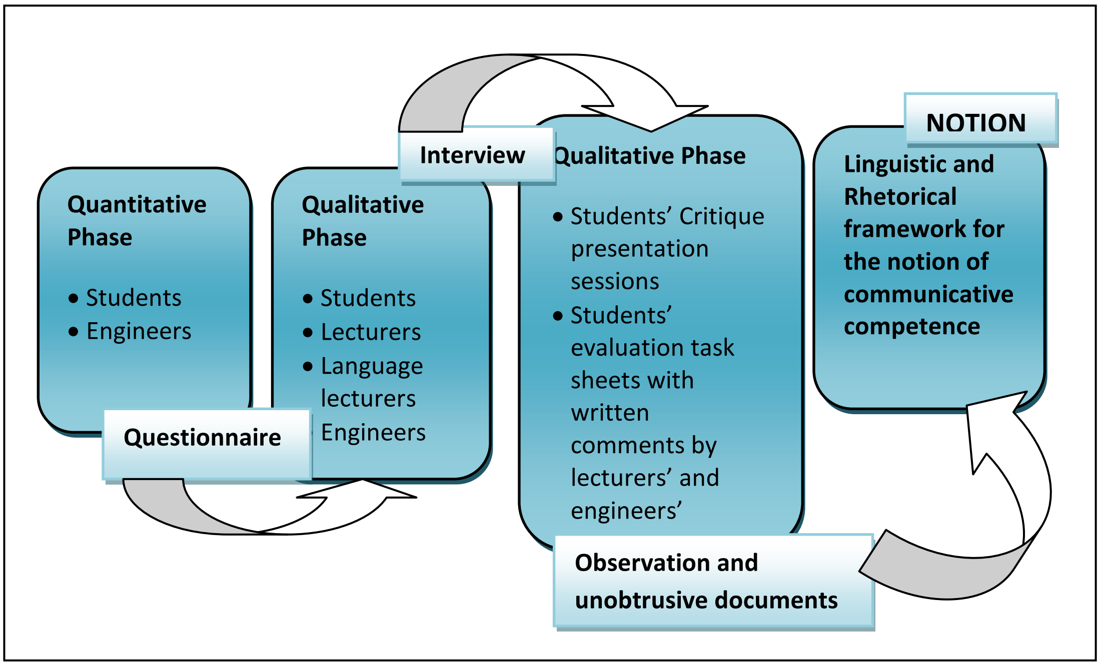


Figure 2.6: Conceptual Framework

The conceptual framework indicates the use of the quantitative and qualitative phases to obtain findings on the linguistic and rhetorical dimension of the notion as perceived by ESL learners and stakeholders involved in the business or technical oral presentations in a Malaysian setting.

2.14 Theoretical Framework

The study utilised Celce-Murcia's (2007) model of communicative competence which specifies the inclusion of five sub-sets of communicative competence constructs namely, i) strategic, ii) socio-cultural, iii) interactional, iv) linguistic and v) discourse competence required to achieve a unified coherent text. This model was selected as the theoretical framework as it essentially addresses the vital features expected of an oral communicative event such as technical oral presentations. The said model accounts for knowledge, skills, interactivity as well as proper use of language expressions necessary expected of a presenter when required to speak within a particular socio-cultural setting. It addresses the essential elements of linguistic and rhetorical skills required in communication. It is for this reason that the said model is chosen.

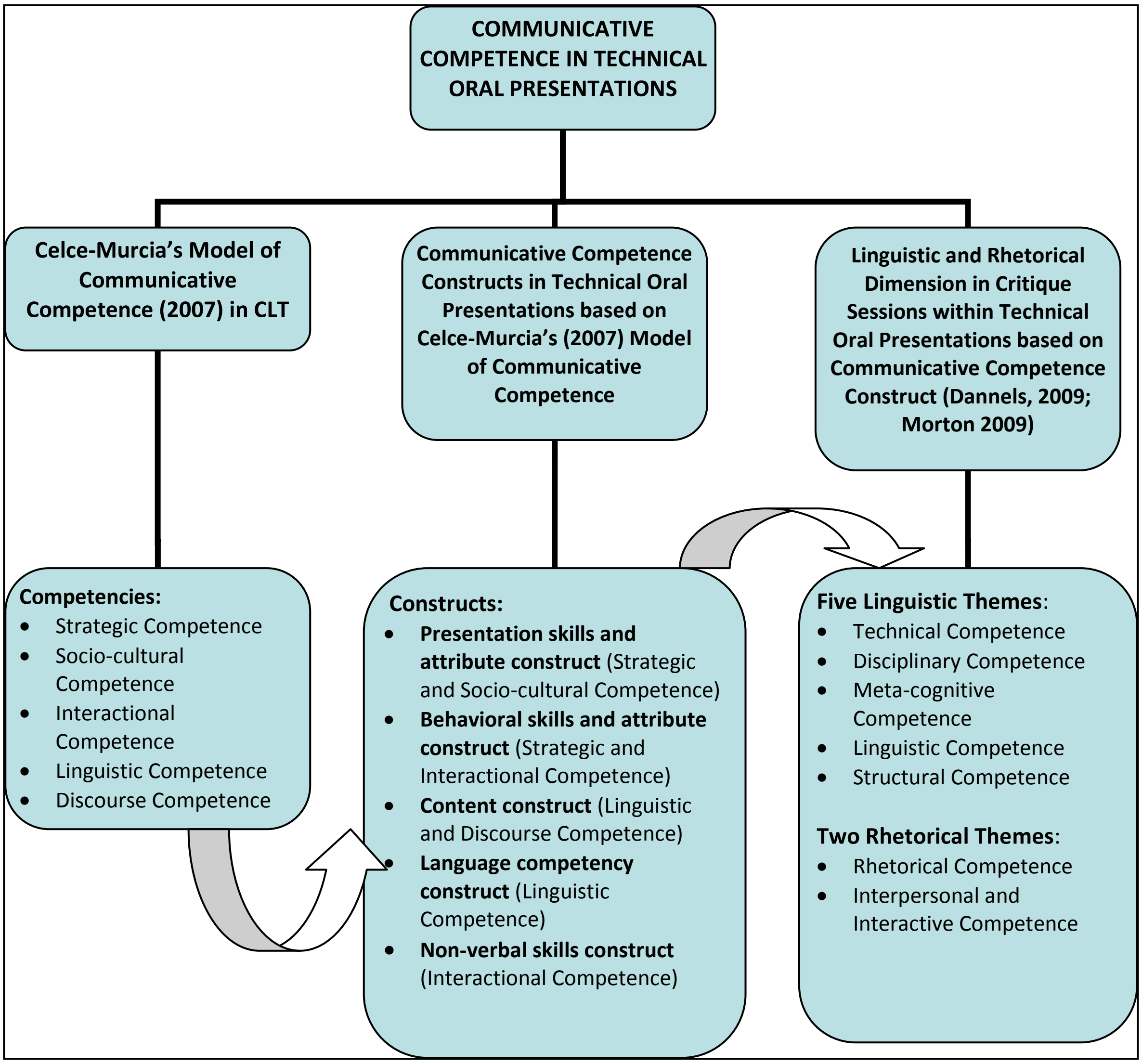
In the context of this study, these five sub-sets are termed as presentation skills and attribute construct (strategic and socio-cultural competence); behavioral skills and attribute construct (strategic and interactional competence); content construct (linguistic and discourse competence); language competency construct (linguistic competence) and non-verbal skills construct (interactional competence). The said sub-sets have been termed accordingly for ease of reference and understanding of participants involved in the study.

The notion of communicative competence is further investigated from the linguistic and rhetorical dimension as perceived by selected participants of the academic and professional engineering community within critique sessions of technical oral presentations. The linguistic and rhetorical dimension mirror Dannels' (2009) and

Mortons' (2009) genre and rhetorical framework in engineering design presentations. Dannels' study focused on rhetorical strategies, oral styles, and organisational structures used in mechanical engineering presentations (Dannels, 2009). Mortons' study emphasised the genre and rhetorical language used in architecture presentations (Morton, 2009).

Thus, it is evident that limited linguistic and rhetorical input is available on oral communicative events, such as technical oral presentations. Such communicative events remain lacking in research due to the finite nature of complexity in investigating oral communicative events such as technical oral presentations. Limited research is available on oral communicative events as such events are spoken events which cannot be repeated unlike written events which can be repeatedly referred to as the event is in writing. An understanding of communicative competence requirements in technical oral presentations in a Malaysian technological university is a relevant platform to gain an insight into the perceptions of selected members of a COP on essential linguistic and rhetorical features.

Figure 2.7 shows a model of communicative competence in technical oral presentations which derives its origins from Celce-Murcia's model of communicative competence in CLT. These features termed as constructs are then explored within the context of the technical oral presentation among ESL learners in the Malaysian setting. The said construct is then further explored in critique sessions within the technical oral presentations. In this study, an added competence, i.e.Information Technology Competency (ICT) construct is added as part of the competency requirement for graduates of the 21st century.



**the arrows in the Figure 2.7 indicate the progression of items/themes investigated in the phases of the study*

Figure 2.7: A Model of Communicative Competence in Technical Oral Presentations

The above figure 2.7 on Model of Communicative Competence in Technical Oral Presentations illustrates the theoretical research framework of the study. The study investigates the linguistic and rhetorical dimension necessary to create that interactivity and engagement between the speaker and the audience.

2.15 Summary

This chapter described the chronological development of the communicative competence construct, the outcome of various communicative competence models and as propagated by various scholars from its origins to the present day context. It also broached on the construct within the CLT and CEFR/CEF framework in language teaching, learning and testing framework. The chapter clarifies the issue of communicative competence in Technical Oral Presentations. The chapter elaborates on the prevalent literature on communicative competence construct and communication ability among engineering students in TOP.

The chapter highlights the lack of linguistic and rhetorical features in TOP as perceived by ESL learners in the Malaysian setting. As such, the present study is justified as the investigation leads to knowledge contribution in CLT on the notion of communicative competence in ESP scientific and engineering presentations, relevant for ESP and ESL learners, language and communication experts, curriculum designers and engineering professionals in the Asian region.

The study enhances the communicative competence construct based on the perceptions of the academia-industry practitioner in the Asian region. The findings also can aid students to be competent participants in prospective professional engineering COP. Engineers will also understand the construct from the academia perspective. The chapter concludes with a discussion on the rationale of the conceptual and theoretical framework of the study.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter describes the methodology utilised to conduct this study. In the following sections, the research purpose and methodology are described. The section clarifies the objective of the study, research context, research paradigm and participants chosen for the study. Explanation is provided on data collection methods, procedures, data analysis and the validity and reliability of the data findings.

The intent of the study is that of an intrinsic case study. The study is single, within site, and focused on an issue (Creswell, 2008). The single entity refers to the said communicative event, i.e., the technical oral presentation. It is “bounded” as the study investigates stakeholders’ views toward a single communicative event. Stakeholders or participants (such as students and examiners) convene and examiners evaluate the students’ presentations. The unit of analysis or event investigated is the critique session or question and answer session. These sessions are apt platforms to investigate stakeholders’ perception of communicative competence as such sessions mirror workplace related events in “real-life context” (Duff, 2008, p. 22).

It is also during such sessions that perceptions of various stakeholders can be obtained as all relate to a common oral communicative event. In this context, views shared by the stakeholders relate to the technical oral presentation as delivered by final year engineering students.

Mixed methods best serve to achieve the purpose of this study and answer the research questions while filling contextual and methodological gaps in the topic. In the light of the study, perceptions toward communicative competence needs and its interpretation when assessed as a social interpretive act in higher education, cannot be explored solely from a quantitative slant (Shay, 2004, 2008). Instead, a qualitative feedback is required to provide “insider and real-lived experiences” from multiple perspective (Creswell, 2008).

3.1 Research Objective

With resounding woes expressed over graduates’ lack of communication skills and apparent academia-industry practitioner divide over communicative competency requirement, the study attempts to identify the selected stakeholders’ perceptions of communicative competence requirements expected of engineering undergraduates in technical oral presentations. The relevance of the study is situated on technical oral presentations as engineers’ work specification include involvement in various oral communicative events (Tenopir & King, 2004).

As a language and communication lecturer in a technical university, the researcher was curious to identify the communicative competence requirement of selected participants from the academic and engineering professional community in oral communicative events like technical oral presentation within an ESL context. The research is timely as despite the need for professionals to communicate in “highly technical environments”, technical communication remains a “seldom tapped area of research” in the field of ESP studies (Orr, 2005, p. 51).

In identifying the perceptions on communicative competence requirements through critique sessions in technical oral presentations with the use of Celce-Murcia’s (2007) model of communicative competence as the theoretical framework, the researcher attempts to investigate if the stakeholders’ feedback indicates similarities and differences in the notion of communicative competence. Such critique sessions are noteworthy as it “brings together colleagues with interest in engineering, engineering education, rhetoric and professional communication, and assessment” (Burnett, 2003, p. 2). In addition, an off shoot of the research objective is to ascertain if such perceptions held by the participants mirror the theoretical underpinnings of the situated learning theory (Lave & Wenger, 1991).

In this context, technical oral presentation sessions delivered by engineering students to a panel of examiners (i.e. lecturers and engineers) provide that opportune moment to ascertain the notion of communicative competence requirement in technical oral presentations. It is during such presentation sessions that students deliver their project presentation to a panel of diverse audience, a feature similar to that of workplace presentations (Koch, 2010).

3.2 Mixed Methods Design

As indicated in Teddlie & Tashakkori (2009), "data collection for case study research typically involves a variety of sources that may include quantitative data relevant to the case or cases. However, many mixed method studies employ case studies as the qualitative component of the overall design" (Teddlie & Tashakkori, 2009, p. 25).

For this study, the researcher chose *eclectic* methods (Greene, 2000) by mixing quantitative and qualitative methods to attain a more comprehensive and in-depth understanding of the research context. The researcher supports the following position presented by Lincoln & Guba (2000):

> At the paradigmatic or philosophical level, commensurability between positivist and post-positivist worldviews is not possible, but that within each paradigm, mixed methodologies (strategies) may make perfectly good sense.
>
> (Lincoln & Guba, 2000, p. 169)

To Greene (2000) both quantitative and qualitative methods provide the flexibility to a researcher to investigate a research problem according to the research objective and purpose of the study. Quantitative methods suggest different layers of data, enriches the study and allows a researcher to study a large sample of participants which otherwise may not be feasible (Greene, 2000). On the other hand, qualitative methods allow researchers to better understand the research context, insider experiences, and perspectives in their own words and provide close and direct engagement with the participants and settings (Creswell & Clark, 2007).

Therefore, rather than competing with each other, quantitative and qualitative methods can complement each other and make the research more credible when they are effectively used (Creswell, 2003, 2008; Johnson & Onwuegbuzie, 2004). Thus, it is for this reason that a mixed-method design was employed to obtain views with selected participants on communicative competence requirement in technical oral presentation.

In this study, students as participants from the academic community and engineers from the professional engineering community were required to provide their feedback to the questionnaire. The said participants from the focal groups as they represented participants from different communities of practice involved in a common unit of analysis, i.e. the technical oral presentations. However, although commonly involved in technical oral presentations, demographic details (age, educational background and experience) differed between the participants of the two said groups. As end-users of the said oral communicative event, data findings from the two diverse focal groups will indicate the groups' legitimate peripheral participation in their respective community (Lave & Wenger, 1991). The understanding of the focal groups' quantitative feedback will enhance our understanding of the communicative competence needs of the two said groups.

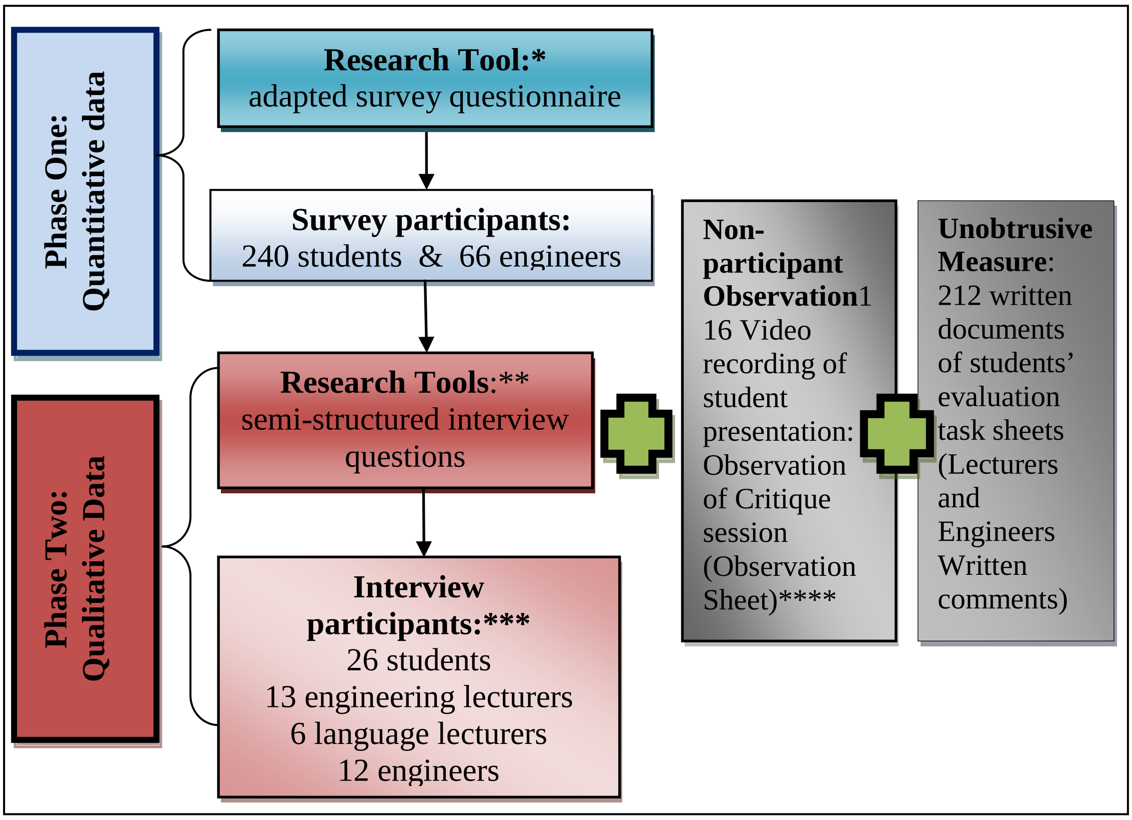
3.2.1 Mixed Methods Design: Two-phase explanatory design

For the current study, a "two-phase explanatory design model" was utilised as the research design for the study (Creswell, Fetters, & Ivankova, 2004, p. 11). The mixed methods design applied in this study took on a sequential approach. In such an approach, “an initial quantitative phase is conducted to gain statistical results while in a second phase, the investigator gathers qualitative data to help explain the quantitative results” (Creswell et al., 2004, p. 11).

Such approach is characterized by two distinct phases, the quantitative and qualitative phase. In this research design, a researcher first collects and analyzes the quantitative data. The qualitative data is then collected and analyzed to help explain and elaborate on the quantitative results obtained in the first phase of the study (Ivankova, Creswell, & Sheldon, 2006).

The priority typically is given to the quantitative data where the two phases are integrated during the interpretation phase of the study (Creswell, 2003). Data analysis/interpretive procedures in explanatory studies are to either “follow up on outliers or extreme cases, explain results, use typology or examine multi-levels” (Creswell, 2008, p. 565). Boeije (2010) suggests that, the combination of methods allow researchers to understand the results of precise, instrument-based measurements by contextual, field-based information” (Boeije, 2010, p. 159).

In the context of this study, quantitative data from a survey questionnaire (see Appendix B and Appendix C) was collected in Phase I. Quantitative data aims to test pre-determined hypotheses and produce generalizable results. Such data answer the “what” questions in a study (Marshall, 1996). Interviews conducted in Phase II (see Appendix F, Appendix G, Appendix H and Appendix I) aim to help explain and elaborate the quantitative data findings obtained in Phase I (see Appendix P). Phase II provides elaboration on the notion of communicative competence from a linguistic and rhetorical perspective. Such data could not be explained in the quantitative data. Phase II provides a "real-life contextual understanding and multilevel perspective" on the said notion of investigation (Creswell, 2008) (see Appendix J and Appendix O). The diagrammatic illustration Figure 3.1 on "Flow Chart of Sequential Mixed Method design" elucidates the steps taken by the researcher in the present study.



Details of Adapted Questionnaire (refer to Appendix B and C); **Details of Semi-structured Interview (refer to Appendix F, G, H and I) ***Details of Interview participants (refer to Appendix D; ** Details of Technical Oral Presentation Observation Sheet (refer to Appendix K)*

Figure 3.1: Flow Chart of Sequential Mixed Method Design

The first stage, in which a quantitative approach is dominant, 240 final year engineering students and 66 engineers (engaged as external lecturers in the final year project presentation), participated as survey participants on the overall perception of communicative competence in terms of presentation skills and attributes necessary in technical oral presentation. Subsequent to the quantitative data, qualitative data was collected from multiple sources of evidence to triangulate the data available. The research instruments used included interviews, observation of student presentation critique session and use of supporting documents such as evaluation task sheets with written evaluative comments provided by the examiners. Different groups of participants were involved in the qualitative phase.

Statistical Package for the Social Sciences or SPSS Version 11.5 (2002) was used to provide descriptive statistics to ascertain if communicative competence gap existed between engineering students and employers at the workplace. Descriptive statistics refers to “a collection of quantitative measures and ways of describing data which includes frequency distributions and histograms, measures of central tendency (mean value, median, mode, proportion) and measures of dispersion (range, variance, standard deviation)”(Evans & Olson, 2003, p. 45).

In Stage II, qualitative data through semi-structured interviews were utilised to explore the participants’ in-depth perceptions and experiences on linguistic and rhetorical input required within critique sessions in technical oral presentations (see Appendix F, Appendix G, Appendix H and Appendix I).

Prior to collecting qualitative data from participants’ semi-structured interviews, the researcher initially interviewed and collected primary data from two members of the university who are lecturers in technical oral presentation. Qualitative data enables one to gain an “emic” or “insider perspective” of the project presentation, its requirements and university expectation for the project (Patton, 2002, p. 84).

Patton (2002) fittingly notes the significance of such perspective as:

> People who are insiders to a setting being studied often have a view of the setting and any findings about it quite different from that of the outside researchers who are conducting the study.
>
> (Patton, 2002, p. 267)

During the interview, issues and concerns on technical oral presentation, presenter skills and attribute, linguistic and structural competence, challenges and solutions related to enhance communicative competence in technical oral presentations were raised (see Appendix J and Appendix O). The interview session enabled the researcher to gain the students, lecturers, language lecturers and engineers' perspective.

Creswell (2007) states that it is during such interview sessions "that the researcher can listen carefully to what people say or do in their life setting" and "position themselves" in the research to "acknowledge how their interpretation flows from their own personal, cultural, and historical experiences" (Creswell, 2007, p. 21). Creswell (2008) reiterates the benefit of qualitative data as "actual words of the people in the study offer many different perspectives on the study topic and provide a complex picture of the situation" (Creswell, 2008, p. 552). In other words, according to Creswell, "the researcher's intent, then, is to make sense (or interpret) the meanings others have about the world" (Creswell, 2007, p. 21).

It is for this purpose that semi-structured interviews were carried out with selected participants from the academic and professional engineering community. Follow-up loosely structured interviews were later carried out with two individuals where clarification was required. The research tools and stages are illustrated in Figure 3.2 "Research Tools and Stages in sequential explanatory study".

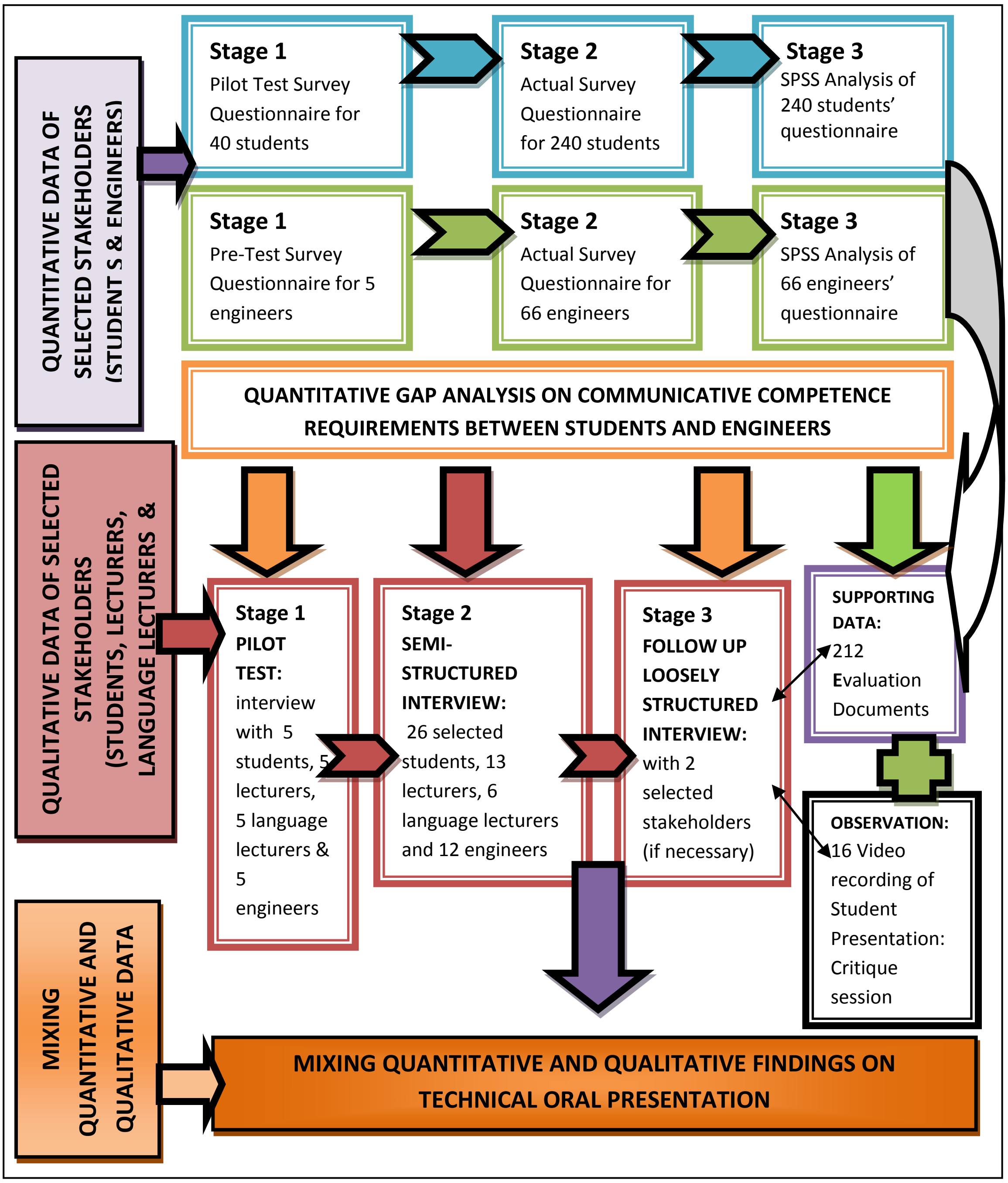


Figure 3.2: Research Tools and Stages in Sequential Explanatory Study

The interview allows participants to express their perceptions, feelings, opinions, thoughts and views of a community of practice (Madriz, 2000; Morgan, 1988). Bauer & Gaskell (2000) state that "the real purpose of interviewing in qualitative research is not counting opinions or people but rather exploring the range of opinions, the different representations of an issue” (Bauer & Gaskell, 2000, p. 41). The technique is effective to minimize the voice and influence of the researcher and to uncover specific and little-researched aspects such as conducted in this study (Madriz, 2000). Mixed method research entails the mixing of the quantitative and qualitative data to provide answers to the research questions which includes “integration of thematic and statistical analysis, including a number of other unique strategies such as triangulation and data conversion” (Teddlie & Tashakkori, 2009, p. 27).

Various modes of qualitative data collection were used in the study to overcome logistics and distance between the researcher and the interview participants. Interview protocol was observed and qualitative data was obtained via face-to-face interviews and telephone interviews (Seidman, 1998). In all cases, face-to-face interviews were conducted (see Appendix F, Appendix G, Appendix H and Appendix I). In cases where logistics posed an issue, telephone interviews were set. Input from either form of interview did not affect data findings.

Video recording of critique sessions as a non-participant observer (Teddlie & Tashakkori, 2009, p. 218) between the student presenters and lecturers and engineers was also utilised as one of the research tools for qualitative data. Participant-observer dimension refers to “how much the observer is actually part of the social situation” (Teddlie & Tashakkori, 2009, p. 219). In this study, the researcher was a detached observer during the 16 video recording sessions of the presentations. 16 critique sessions within the presentations were transcribed using Creswell’s (2003) generic process of qualitative data analysis (see Appendix O).

The researcher also used “data documented by others” as part of the mixed method data collection strategy to ensure data quality in terms of data validity and reliability in mixed method research (Tashakkori & Teddlie,1998 as cited in Teddlie & Tashakkori, 2009, p. 206). 212 written documents of students’ evaluation task sheets with lecturers and engineers written comments were selected as part of the qualitative data findings. Findings from multiple sources (interviews with selected stakeholders; written documents and observation of critique sessions) were triangulated to ensure the trustworthiness of the data (Creswell, 2007).

3.2.2 Ethical Consideration

Like any other research, prior consent and permission is required before conducting the study (Creswell, 2008). In this study, the researcher obtained an official letter (see Appendix R) signed by both the supervisor and the researcher, explaining the research objectives, purposes and intention of the study. An official email was sent to the respective Deputy Heads of Department of all programs with the details of the study.

Once sanction was obtained from the Heads of Department of the Engineering Programs and the Management and Humanities Department, emails were forwarded to relevant lecturers who met the criteria required in the study. If lecturers expressed their reluctance to be part of the study, the researcher would request for names of other relevant lecturers who could be involved in the study.

In cases where lecturers indicated their consent, personal emails ensued forth and specific date, time and venues were arranged for interview sessions. Prior to the interview session, a letter of consent (see Appendix E) was provided to the participant. The same procedure was utilised for students, language lecturers and engineers. As for the critique presentation sessions, emails were sent to respective lecturers to obtain permission for recording the presentation sessions. Video recording of the 16 sessions (see Appendix O) were conducted which had the consent of both lecturers and students.

As for the written documents, consent was obtained from the coordinator of the final year project presentation of the university. Anonymity was accorded to all participants for all verbal or written responses (see Appendix R). Coding was utilised as a form of anonymity in the data analysis (see section 3.4.1.7 and section 3.4.1.8).

3.3 Multiple Methods of Evidence

Multiple sources of evidence is considered as an effective strategy as "the combination of multiple methodological practices, empirical materials, perspectives, and observers adds to the rigor, breath, complexity, richness, and depth to any inquiry"(Denzin & Lincoln, 2005, p. 5). In this study, both verbal and textual data were corroborated to seek possible participant interpretations to Research questions 3, 4 and 5. Silverman (2005) states similar research methodology by Miles & Huberman (1984) .

As part of validation and reliability in qualitative data research (Creswell, 2007), multiple methods of qualitative data was used to "collect and build rapport and credibility" with the participants in the study (Creswell, 2003, p. 181), and more importantly "build convergent lines of inquiry" to determine the accuracy of a corroboratory mode of case study research (Yin, 2003, p. 98).

In fact, social science research describes the qualitative researcher as the "bricoleur and quilt maker" which can be defined as one who "uses the aesthetic and materials tools of his or her craft, deploying whatever strategies, methods and empirical are at hand"(Denzin & Lincoln, 2005, p. 4). This study has utilised a combination of verbal (interviews) and textual data (questionnaire; written comments and observation of critique technical oral presentation sessions).

3.3.1 Interviews

While the quantitative paradigm is based on the "realist ontology", the qualitative paradigm is founded more on a "relativist ontology" which can be captured by individuals or groups construction of their own version of reality (Clarke & Dawson, 1999, p. 39). Interviewing provides that qualitative paradigm and remains a form of widely used research method to "try to understand our fellow humans" (Fontana & Frey, 2008, p. 118). Guba & Lincoln (1981) consider interviews as "the backbone of field and naturalistic research and evaluation" (Clarke & Dawson, 1999, p. 71). Yin (2003) resonates the importance of interviews as "one of the most important sources of case study information" (Yin, 2003, p. 89).

Interviews allow researchers to understand how interviewee “view their world, to learn their terminology and judgments, and to capture the complexities of their individual perceptions and experiences” (Patton, 2002, p. 348). Irrespective of having obtained “a rich, in-depth experiential account of an event…or garner a simple point”, interviews are intended to obtain an unbiased account of interview participants (Fontana & Frey, 2008, p. 120). In other words, the interview session provides interview participants that opportunity to “voice” their lived experiences of a said phenomenon (see Appendix J).

Interviews enable the researcher to elicit the “voice, opinion or perspective of one’s participants” (Butler-Kisber, 2010, p. 21). Qualitative findings allow the researcher to “look for complexity of views rather than narrow the meanings into a few categories or ideas” (Creswell, 2007, p. 20). In addition, interviews allow researchers “to follow up on confusing or significant responses” provided in the quantitative data (Driscoll, Afua Appiah-Yeboah, Philip Salib, & Rupert, 2007, p. 22).

In terms of interview format, Fontana & Frey (2008) point out that interviews involve a wide variety of forms and a multiplicity of uses. Some common forms include individual face-to-face verbal exchanges, face-to face group exchanges and telephone surveys. Interviews can be structured, semi-structured or unstructured (see Appendix F, Appendix G, Appendix H and Appendix I on sample of semi-structured interview questions).

Structured interview relies on a questionnaire or interview schedule, while a semi-structured interview is less rigid with a combination of “standardized and open-ended questions to elicit more qualitative information" (Clarke & Dawson, 1999, p. 72). Unstructured interview, on the other hand, "is a purely qualitative interviewing strategy where questions and follow-up probes are generated during the interview"(Clarke & Dawson, 1999, p. 73).

In the context of the present study, the researcher carried out face-to-face verbal semi-structured interview with selected participants to garner feedback on presentation skill requirement with a focus on the language and rhetorical dimension. Where logistics was a hindrance, the researcher would conduct telephone interviews (if necessary) with the said participants (see Appendix D for interviewee details).

3.3.2 Technical Oral Presentation Evaluation Task Sheets

Records, documents, artifacts and archives or "material culture" constitute a rich source of information about organisations or programs which may not be observable by the researcher (Patton, 2002, p. 293). In this study, the "material culture" refers to qualitative data obtained from written comments provided by examiners in the students' evaluation task sheets (see Appendix L, Appendix M and Appendix N). The written comments provide an insight of the lecturers and engineers' emphasis and comments of students' oral presentation. The written comments shed light on the possible linguistic and rhetorical perspective of the students' competency in presentation.

The evaluation criteria comprises eight sections, namely, Introduction (10%); Literature Review (10%); Methodology (10%); Results and Discussion (20%); Conclusion and

Recommendation (10%); Clarity of Presentation (10%); Non-Verbal (10%) and Questions and Answers (20%) (see Appendix A and Appendix L, Appendix M and Appendix N).

The following Table 3.1 on written documents by program indicates the total number of students' technical oral presentation evaluation sheets received.

Table 3.1: Written Documents by Program

ENGINEERING PROGRAM	MECHANICAL	CHEMICAL	CIVIL	ELECTRICAL AND ELECTRONICS
Total Number of Sets	46	76	62	28

The above Table 3.1 shows the number of written documents by program. The researcher was able to obtain a total of 212 sets of written documents: Mechanical Engineering (46); Chemical Engineering (76); Civil engineering (62) and Electrical and Electronics engineering (28).

3.3.3 Critique presentation session

As mentioned in Chapter 1 (section 1.7), the critique session or question and answer session is the interactive exchange between presenter (student) and audience (lecturers and engineers)(Dannels, 2011; Dannels et al., 2008). Questions posed by the lecturers and engineers would reverberate the views and beliefs held by academic and professional experts as indicated in the theory of situated learning (Lave & Wenger, 1991).

The researcher video-taped 16 student presentation sessions during the students' presentation schedule, which were then transcribed to record the question and answer responses between the presenter and the panel of examiners. Through such multiple methods of qualitative data the study seeks to gain possible "detailed specific information" of communicative competence and linguistic requirement in technical oral presentations within an ESL setting (Creswell, 2008).

3.4 Interview Protocol

In utilizing semi-structured interview format, the researcher designed certain questions following the interview protocol or interview guide to seek the views of interview participants on communicative competence requirement in technical oral presentation. An interview protocol or guide refers to some basic set of questions queried with each participant (Patton, 2002) (see Appendix F, Appendix G, Appendix H and Appendix I on Interview questions).

The interview protocol maximizes a researcher's limited time by keeping the interaction focused. The interview questions comprised standardized questions as well as open-ended questions to elicit qualitative information (Clarke & Dawson, 1999). Such interview questions allow researchers to have some liberty in the questioning structure where "questions need not adhere to a predetermined sequence" (Clarke & Dawson, 1999, p. 72).

In the context of this study, interview sessions conducted with selected interview students, lecturers, language lecturers and engineers included several items on demographics, opinions, feelings, knowledge and sensory data on technical oral presentations (see Table 3.2 on Matrix of Interview Question). Slight variations in questions occur among the four groups of interview participants (see Appendix F, Appendix G, Appendix H and Appendix I).

Table 3.2 on Matrix of Interview Questions illustrates the type of questions posed in the interview session. The dimension of questions asked may require participants to reflect on the past, present or future time period. As indicated in Table 3.2, participants were required to reflect on questions based on background, opinion, feeling, knowledge and sensory questions related to technical oral presentation skills and attribute requirement.

Table 3.2: Matrix of Interview Question

Questions/Focus	Past	Present	Future
Background	/	/	
Opinions/values	/	/	/
Feeling		/	/
Knowledge		/	/
Sensory	/	/	/

(Adapted: Patton, 2002)

The interview questions comprised 19 questions with two to six items on a particular aspect on technical oral presentation. The interview questions focused on issues like technical oral presentation elements, presentation skills and attributes, language and content requirement, community of practice expectation, challenges and suggestions for improvement in technical oral presentations (see Appendix F, Appendix G, Appendix H and Appendix I).

Interview questions 1 and 2 were based on the interviewee's educational background and experience in the student project presentation. Questions 3 to 6 represented opinion based questions on technical oral presentation. The next four items (question 7 to 10) clarified knowledge based questions on presentation skill elements and community of practice expectation in technical oral presentation.

Questions 11 to 15 required participants to comment on knowledge based question related to communicative competence (i.e. language and content construct) requirement in technical oral presentation. The remaining questions (question 16 to 17) verified items on the challenges in technical oral presentation session. Participants were asked to comment on two to three items (question 18 to 19) on opinions and aspiration for improvement in technical oral presentation.

Interview questions need to be "open-ended, neutral, singular and clear" to elicit the intended response (Patton, 2002, p. 353). In semi-structured interviews, clarity of interview responses is attained when interview questions are structured by the use of varied question types to gain "thematic and dynamic dimension" in an interview session (Kvale & Brinkmann, 2009, p. 131).

Thematic dimension essentially refers to "knowledge production questions" while dynamic dimension contributes to "good interview interaction" (Kvale & Brinkmann, 2009). To attain the thematic and interactive dimension, a researcher may decide to intercept a variety of question types like introductory, follow-up, probing, direct, structuring and interpretive questions (Kvale & Brinkmann, 2009). At times "silence" is considered as a useful strategy in eliciting interviewee response (Kvale & Brinkmann, 2009, p. 136). Patton (2002) reverberates where question forms can be worded as open-ended questions, singular questions, neutral questions, illustrative example like questions, role-playing and simulation questions, presupposition questions or follow up questions to attain clarity in an interview session (see Appendix L for an Excerpt of an Interview Session).

In the context of the study, the researcher attempted to use a variety of questions to enable interview participants to "talk freely and expose their feelings and experiences to a stranger" (Kvale & Brinkmann, 2009, p. 128). Introductory questions were worded as "Can you share with me some information related to your education background?" This was usually followed by question on the working experience of the interviewee. In the case of the student, the researcher would seek clarification on the area of specialisation in the engineering program while a professional would be asked to relate his or her working experience.

Singular questions include questions like, "What in your opinion is a technical oral presentation?" Wording of such questions enable an interviewee to focus on one idea in any given question (Patton, 2002). It is necessary that a researcher avoids reframes asking multiple questions which creates "confusion and tension as the person being interviewed doesn't know what is being asked" (Patton, 2002, p. 358).

Other types of interview questions include presupposition lead-in questions like, "In your opinion, what presenter skills and attribute sets a presenter apart from other presenters?" rather than dichotomous lead-in questions like, "Do you know of any excellent presentations?" This could be answered with possible one word answers such as a "Yes" or "No". Presupposition questions are more likely to generate open responses as an interviewee is required to think before a decision is made (Patton, 2002).

Probing questions follow interviewees' responses to singular questions like "What is the greatest challenge for a student in delivering a technical oral presentation?" When the interviewee completed his or her response, the researcher probed further by asking "Why is that so? Why do you think it occurs?" or "Can you explain this phenomenon with examples?" Such questions set as a conversational probe seeking to "deepen interviewee response to a question and increase the richness and depth of a response" (Patton, 2002, p. 372).

At times, specific questions are asked to elicit specific experiences of an interviewee such as reference to a particular event in seeking precise description (Kvale & Brinkmann, 2009). Questions can be worded as "Can you explain why you mentioned that the student was very well prepared?" In this context, such structured questions required interviewees to provide specific reasons to a particular subject in reference.

Alternatively, the phrasing of questions is sequenced with illustrative examples in questions like, "In some feedback given, some interviewees mention that lecturers focus on the methodology, while engineers focus on the cost factor…what is your opinion and comment to that?" Such questions attempt to indicate the interviewer's interest of “what the person’s genuine experience has been like” in comparison to views that have already been expressed (Patton, 2002, p. 367).

Thus, for any interview sessions, the researcher is required to word good interview questions and utilise varied questioning strategy to maximize qualitative findings. In addition, interview questions require careful sequencing and scripting as one research question can be investigated by a variety of research questions to obtain rich and varied experiences of the interview participants (see Appendix J).

3.4.1 Method of Analyzing Interview Data Response

The following section provides a description of the coding process, data analysis procedure, reflexivity, verification, generic analysis of qualitative data, demographic labeling and software analysis involved in the qualitative phase of data analysis of the research.

3.4.1.1 Coding Process

Similar to quantitative data analysis, a systematic means of multiple level analysis is required to examine the qualitative database (Creswell & Clark, 2007). Qualitative analysis begins with coding by dividing the text to small units (phrases, sentences, paragraphs), followed by “labeling the exact words of the participants (or referred to as in vivo coding process) by hand or electronically by software data analysis program"(Creswell & Clark, 2007, p. 132).

Coding to Saldana (2009) "is not precise science but an interpretive act"(Saldana, 2009, p. 4). In other words, although coding can sometimes "summarize or condense data" it can attribute to "more evocative meanings of data" (Saldana, 2009, p. 4). Coding is "the first step in moving beyond concrete statements in the data to making analytic interpretations of studied life" (Boeije, 2010, p. 95). Coding enables a researcher to "develop some manageable classification of raw field notes or verbatim transcripts" (Patton, 2002, p. 463) (see Appendix D on Interviewee Details with Codes).

Coding is important for two functions mainly, "data management and exploration as well as interpretation of qualitative data findings" (Boeije, 2010, p. 119). Coding enables a researcher to retrieve specific data by means of a specified code. Such coding system enables a researcher to "select relevant sections" and "make reference to a certain text which relate to a common theme" (Boeije, 2010, p. 119).

Coding forces a researcher to "generate, clarify, categorize and reassemble categories of qualitative findings" that aim to answer research questions in a study (Boeije, 2010, p. 119). In this study, a systematic approach to code, categorize and provide thematic analysis to an otherwise difficult qualitative analysis was utilised. NVivo Version 11.5 software analysis was also used to systematically analyze the qualitative data (see Figure 3.5 and Appendix O).

3.4.1.2 Data Analysis Procedure

Saldana's (2009) view of coding as a cyclical act or "iterative process" is resonated in Dey (1993) and Boeije (2010) where "recurrent phases may occur throughout the research process" (Dey, 1993, p. 273). In other words, "a qualitative research process does not have a linear course; it is more cyclical in nature and sampling, data collection and data analysis proceed simultaneously" (Boeije, 2010, p. 89).

Boeije (2010) mentions that as the analysis process is deemed to be "quite difficult and confusing, a step-by-step approach is needed" to structurally analyze qualitative research findings (Boeije, 2010, p. 89). Saldana mentions that it is essential for a researcher to be critical to "arrange things in a systematic order, to make something part of a system or classification, to categorize" (Saldana, 2009, p. 8) as coding is denoted as a "cyclical act" (Saldana, 2009, p. 8).

The cyclical act essentially refers to the "simultaneous data collection and analysis" or otherwise referred to as the "spiral of analysis" (Boeije, 2010, p. 119). The procedure is referred to as "cyclical, spiral-shaped, iterative or recursive" (Boeije, 2010, p. 119). The cyclical process is indicated in Figure 3.3 "Analysis as an iterative process".

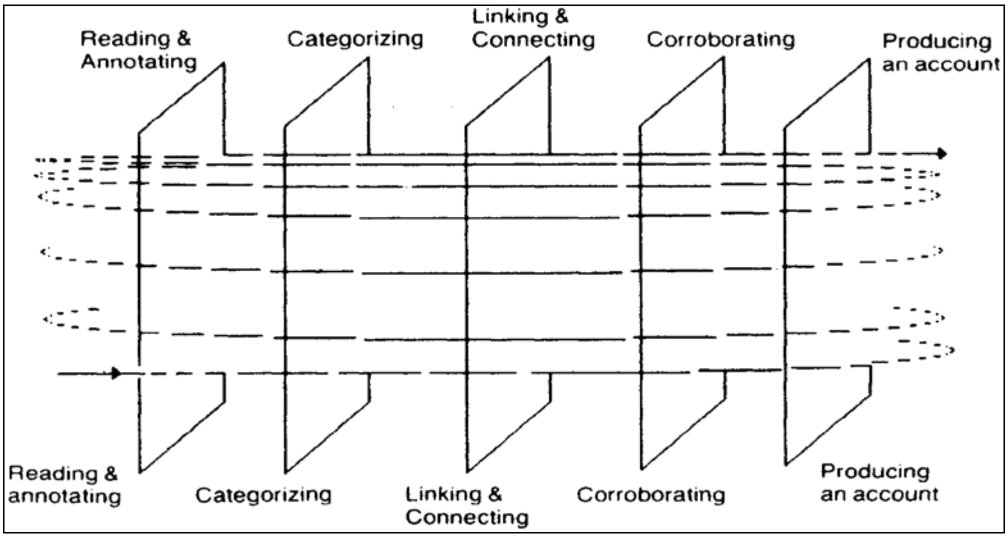


Figure 3.3: Analysis as an iterative process

(Dey, 1993, p. 273)

The process is said to be iterative as the process moves in analytical circles from one level such as the first level of reading and annotating the data, second level of categorizing, third level of linking or connecting data, fourth level of corroborating data and final level of producing an account or theme (Schilling, 2006). The process is cyclical as a researcher is “thinking and doing, (and vice-versa) all the time” and may make changes to “categorizing data, devising codes and discovering links between the categories” (Boeije, 2010, p. 89).

3.4.1.3 Reflexivity

In the process of qualitative data analysis, reflexivity enables a researcher to address issues “concerning the validation of research findings, as well as those questions concerning ethical and political questions which arise from relations between the researcher and the researched that are implicit to the research agenda and research methods” (Smyth & Shacklock, 1998, p. 7). Reflexivity essentially refers to the "research identity, wealth of research experience acquired as interpretive beings get involved in the research process" (Butler-Kisber, 2010, p. 19).

To Butler-Kisber (2010), reflexivity enables a researcher to interrogate and monitor their subjectivity with questions like "who I am, the beliefs I have that might impact on the work, and how will I account for my beliefs and assumptions during my study"(Butler-Kisber, 2010, p. 19). Studies indicate four types of researcher reflexivity which include "phenomenological inquiry, epistemological inquiry, political and social inquiry and reciprocal reflexivity" (Butler-Kisber, 2010, p. 19).

In this context, the researcher (being a novice in the field) attempted to "identify, question, acknowledge, analyze, interpret the strength and limitations of the research as critical as possible and make effort to account for participants' objective construction of knowledge in the said area of study" (Smyth & Shacklock, 1998, p. 7). When qualitative findings differ in interpretation or theoretical assumption, the researcher made attempts to further probe participant interpretations to avoid personal judgment, interpretation or biasness to a research finding. In this context, follow up interviews were held with the selected participants to clarify ambiguous statements (see Appendix J).

Reflexivity or otherwise viewed as "substantive validation" enables a researcher to understand "one's own understanding of the topic, understandings from other sources, and the documentation of this process in the written study" (Creswell, 2007, p. 206). Essentially, reflexivity contributes to the "validation of the research work" (Creswell, 2007, p. 206). Similarly, in the context of this study, qualitative findings were subjected to “ethical research practice” and objective inquiry to “judge the chain of interpretations and trustworthiness of the meanings arrived at the end” of the study (Creswell, 2007, p. 206).

3.4.1.4 Verification Procedure

Qualitative validation means “assessing whether the information obtained through the qualitative data collection is accurate” (Creswell & Clark, 2007, p. 134). In qualitative study, validation is crucial as it “determines whether the account provided by the researcher and the participants is accurate, can be trusted, and is credible” (Creswell & Clark, 2007, p. 134).

In the context of the study, the researcher embarked on various verification strategies to ensure the accuracy of the data collected (see section 3.10.2 on validity and accuracy). Qualitative validation by means of “member checking and triangulation” was conducted at various stages of the study, to determine the accuracy and credibility of the qualitative research findings gained from multiple evidence of data collection (Creswell, 2008, p. 266).

The researcher utilised triangulation as a research strategy to ensure internal validity and reliability of data findings. Triangulation essentially refers to the use of “multiple investigators, multiple sources of data, or multiple methods to confirm the emerging findings” (Merriam, 1998, p. 204). The present study embarked on utilizing member check and triangulation to check the reliability and validity of multiples sources of data findings in the study (see Appendix P and Appendix Q).

3.4.1.5 Generic analysis in Qualitative Research

In the context of this study, the researcher adopted Creswell's (2003) generic process of data analysis for analyzing qualitative data which includes six main steps like "organizing and preparing the data, reading through all data, coding, narrating descriptions and themes, and interpreting data" (Creswell, 2003, pp. 191-195). The said method was similarly utilised in Asmussen & Creswell qualitative gun study (1995) as cited in Creswell (2008) and in Witcher, Onwuegbuzie & Minor (2001) as cited in Onwuegbuzie & Teddlie (2003, p. 355).

A visual model of the coding process utilised in qualitative research is provided in Figure 3.4 on "Coding process in qualitative research" as shown below.

Initial read through data	Identify specific segments of information	Label the segments of information to create categories	Reduce overlap and redundancy of categories	Collapse categories into themes
Many pages of text	Many segments of text	30-40 codes	20 codes	5-7 codes/themes

Figure 3.4: Coding process in qualitative research

(Adapted: Creswell, Figure 9.4, pp. 251, 2008)

Coding enables the "process of grouping evidence and labeling ideas" to reflect broader perspectives captured by interpretative analysis of qualitative data (Creswell & Clark, 2007, p. 132). Such interpretations may for example, in grounded theory, be related or compared to theoretical underpinnings and may contribute to theoretical model or as in the case of narrative research, relate to research questions.

The coding process (as seen in Figure 3.4) facilitates a researcher toward eventually "counting themes" or "quantifying data" as this systematic analysis allow qualitative data to be "numerically coded and statistically represented" (Onwuegbuzie & Teddlie, 2003, p. 355). Such coding or thematization process ascertains that "a target phenomenon is fully described or interpreted" (Onwuegbuzie & Teddlie, 2003, p. 355) (see Appendix N and Appendix O).

The coding process allows the researcher to systematically analyze the qualitative data obtained from multiple sources of evidence to finally derive 5-7 themes related to the research question. In the context of the present study, the researcher attempts to merge broad thematic qualitative interpretative findings which may either confer or differ with the quantitative dimension obtained in the first phase of the research design (see Appendix N and Appendix O).

3.4.1.6 Demographic Code for Interview participants

A systematic data management is required when transcribing or "quantifying" qualitative data from multiple sources and sites of evidence for easy retrieval of key data findings manually or by Computer Assisted Qualitative Data Analysis Software (CAQDAS) (Saldana, 2009, p. 16).

In order to retrieve data interview transcripts, a demographic coding process or "pagination" was utilised to label and access identification of the interview participants. By "pagination" is meant the "use of unique numbers/letters as locators of specific material in field notes" (Miles & Huberman, 1994, p. 45). An example provided by Miles & Huberman (1994) of the locator "B J K 1 22" means location "Brookeside Hospital (B); the first interview (1) with Dr. Jameson (J) by researcher Kennedy (K) , page 22 (22)" (Miles & Huberman, 1994, p. 45).

In this study, identification of interview participants were specifically coded according to ethnicity, gender, program and numeric case study identification for coding purposes. Thus for example, a student interview participant code will be worded as "MMESCS6" where the initial item "M" represents gender, second item "M" indicates ethnicity, third item "E" represents program, "S" as vocation, "CS" for case study and the final item is the "numeric" identified for each case study. In this case, MMESCS6 represents "Male, Malay, Engineering, Student, Case Study, and Numeric 6" (see Appendix D).

In the case of lecturers from the academic community, these interview participants were categorically coded as "MMIELCS12" where the initial item "M" represents gender, next item "M" denotes ethnicity, "I" to indicate the placement of the participant, "E" represents the role of the participant as an examiner, "L" indicates the discipline of the lecturer and "CS 12" denotes "Case Study, Numeric 12". In all cases, the researcher labeled Lecturers as "L". Thus, the code "MMIELCS12" signifies "Male, Malay, Internal Examiner, Lecturer (engineering discipline) and Case Study Numeric 12". In the case of female lecturers, the code "FMIELCS2" denotes "Female, Malay, Internal Examiner, Lecturer and Case Study Numeric 2".

In the case of engineers who played the dual role as "external examiners" for the students' technical oral presentation, they were coded as "MMEEMCS10". This coding is transcribed as "Male, Malay, External Examiner, Manager, and Case Study Numeric 10". The coding is represented as "M" for gender, the second alphabet "M" refers to ethnicity, "EE" as the role as an external examiner, "M" as the designation in the company and "CS10" implies "Case Study Numeric 10". This coding process was utilised for all participants to ensure strictest confidence of participant background (see Appendix D).

3.4.1.7 Presentation Data Code

The video recording session utilised the Sony DCR-SR68E handy camera recorder version with 80GB digital specification as the recorder for all the video tape recording sessions. All 16 participants involved in the video recording sessions provided their consent for the recording (see Appendix E). If participants expressed the desire not to be video-taped, the researcher would proceed to the next presentation session. Upon completion of a video recording session, the researcher would digitally transfer the student presentation recording to the researcher's laptop. This procedure was necessary for limited space capacity storage of the video camera recorder.

Each presentation session was digitally coded sequentially according to the video recording number in each folder. Each folder was automatically labeled as “M2U00” as the initial identification recording code, followed by three digits of a number to indicate the running sequence of the video recording session such as “M2U00100” or “M2U00101” and so forth. Thus, the video session code “M2U00101” is read as “video session M2U00 recording numeric 101”. Each response is marked as a student or examiner response, where student is coded as “Ss”. Lecturers and engineers were coded as “E1” (Examiner One) or “E2” (Examiner Two) (see Appendix D and Appendix J).

All video presentation sessions were transcribed with focus on the critique session to gauge examiner perception and possibly make interpretations of belief and knowledge held by a community peripheral participation in a community of practice (Lave & Wenger, 1991). Deductive analysis of the student presentation data also attempted to provide an insight to the linguistic and rhetorical competence dimension expected in technical oral presentation sessions. Interpretative discussions on examiner perceptions are discussed in Chapter 6.

3.4.1.8 Written Document Code

The written documents of students’ evaluation task sheets were coded according to Gender to signify “Male” or “Female”, Ethnicity to mean “Malay, Chinese, Indian or Others”, Designation to indicate profession as a “Lecturer” or “Engineer”, followed by a numeric assigned to the lecturer or engineer, and finally a code indicating the area of engineering specialisation and a numeric of the “supporting document case study”. As the lecturers and engineers perform dual roles, the designation “Lecturer” implies

“Internal Examiner” and “Engineer” entail the role as an “External examiner” (see Appendix L, Appendix M and Appendix N on Sample of Examiners’ Written Comments).

For example the code “MML1ME1” provide the following clarification where the initial “M” refers to gender as “male”, the next letter “M” designate ethnicity as “Malay”, “L” implies the designation of the examiner as a “Lecturer” or “Internal examiner”, a numeric to identify the lecturer which is number one and “ME1” refers to “Mechanical Engineering supporting document case number 1”.

Another example is “FME21CV48” which refers to “Female, Malay, Engineer (External examiner), Examiner Numeric 21, Civil engineering supporting document case study number 48”. The coding enables the researcher to identify and trace written comments provided by the lecturers and engineers in the evaluation score sheet of the students.

In all coding evidence (for interviews and presentation data) the researcher would first quote the source of the qualitative evidence and include the code “RA#” to indicate a numbered response answer to a particular question and evidence of the line numbers to indicate the source of the quote cited. Thus, a quote from an interview source maybe coded as “MCESC1, RA 8, line 68 – 70”, indicates the source as “Male, Chinese Engineering Student, Case Study Numeric 1, Response Answer Numeric 8, Lines 68-70” of the said participant (see Appendix J).

3.4.1.9 Software Analysis

The CAQDAS software program used in this study was NVivo Version 11.5. The said electronic coding software analysis or NVivo was used to quantify qualitative findings and provide frequency count as well as thematic mappings, diagrams and illustration where necessary to interpret the qualitative findings used in the second phase of the study.

A visual illustration of the NVivo software coding analysis screenshot is provided in Figure 3.5 on Language Complaint. The respondents include students, lecturers and engineers. The visual screen shot allows a researcher to map the themes with evidence from one of the many sources of qualitative evidence.

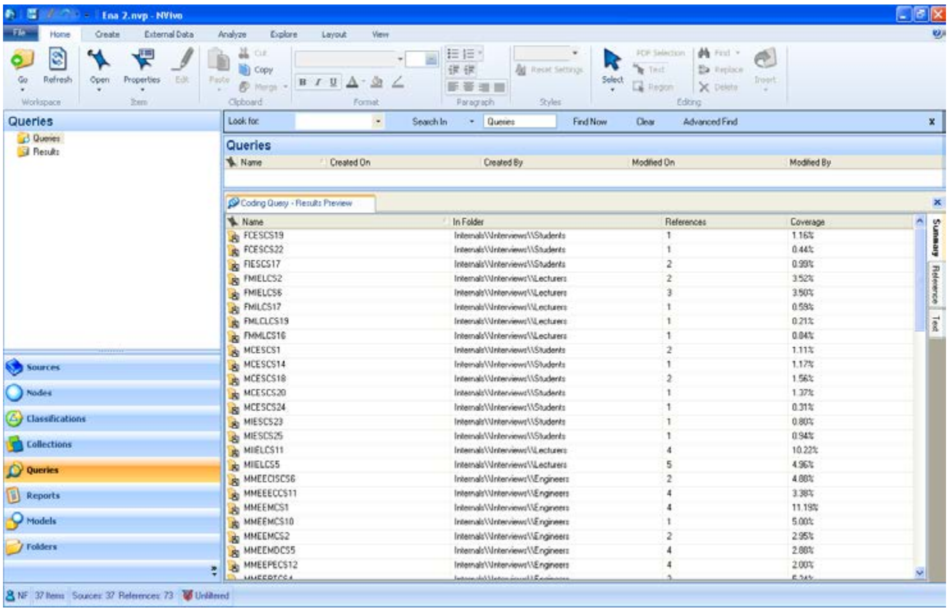


Figure 3.5: NVivo Screenshot on Language complaint

3.5 Research Site

The research site, a fairly new research-driven technological university situated in a northern state in Malaysia, is chosen as earlier studies show the gap between academic-industry practitioner divide over engineering students lack of communication skills in technical oral presentation sessions (Bhattacharyya, 2011; Bhattacharyya, Patil, & Sargunan, 2010; Bhattacharyya & Sargunan, 2009).

In addition, other studies conducted also indicate the stakeholder perceptions and the construct of communicative competence (Bhattacharyya, Shahrina Mohd Nordin, et al., 2009; Goh & Ku, 2010; Hairuzila Idrus & Rohani Salleh, 2008; Mariana Yusoff, 2008). It is for this reason that the research site is chosen as an initiative to enhance students' communicative ability and lessen the academia-industry practitioner divide over communicative competence among the stakeholders such as the participants from the academic community and professional engineering community.

At the time of the study, the university has an enrollment of approximately 6000 students comprising a majority of local and minority of international students enrolled in several engineering and information technology programs. Various engineering and technology courses are offered at foundation, undergraduate and postgraduate level. As part of the degree requirement, all graduates are required to enroll for various non-engineering subjects (like language, social science and management courses) offered by the management and social science department of the university.

The management and social science department of the university comprises three units - the business management, humanities and language unit. As part of the university requirement, these social science units offer various specialized core and elective subjects that support the engineering and information systems degree programs of the university. The language unit offers language and communication courses that supports the foundation, undergraduate and postgraduate level of both the engineering and information technology degree program.

At the point of the study, various engineering disciplines were offered at the foundation and undergraduate levels including Mechanical, Chemical, Electrical and Electronics and Civil Engineering programs. As Petroleum Engineering was newly introduced in 2006, this cohort was not included in the study as no final year Petroleum Engineering students were available at the time of the pilot and actual study.

In a similar context, the present study seeks to gain an insight of communicative competence requirement of stakeholders in the assessment session of the final year engineering project presentation. In the oral presentation session, students are assessed on their communicative competence ability and presentation skills by a group of panel lecturers and engineers made up of a number of selected members from the academic and professional engineering community. The selected panel is determined by the engineering project selection committee of the university. All final year engineering projects take a year for completion from its inception of the idea till the completion stage which includes submission of a written report and oral presentation session in the second semester of the academic program.

It is during this semester of the engineering academic program that oral presentations are delivered by the final year engineering students on the findings and results of the project. The study focuses on this oral presentation presented in the second semester of the final year engineering program. During such presentations, final year engineering students are expected to present their final year project presentation to a panel of lecturers and engineers. The panel will comprise two lecturers selected within the university and an engineer from a related engineering industry. The lecturers and engineers provide supervision and consultation in areas of specialisation for the research project.

The engineer is an industry practitioner in the related area of specialisation from the workplace. The engineer is an individual who meets the required qualification and possesses a minimum of five years of specialized industrial experience. The engineer (chosen by the panel of technical oral presentation selection committee) once appointed as an external examiner, provides guidance and evaluates the student technical oral presentation by virtue of the area of specialisation of the project. All participants are crucial in providing their responses on communicative competence in respective COP.

The common area of interest in the title of the engineering project presentation denotes the "common communicative event" as perceived by members from the various COP. Thus, the trio of panel of examiners comprise academic staff and industry practitioners i.e. lecturers and an engineer from the related engineering industry. The lecturers and engineers are involved from the conception till the completion of the project. This means to say that lecturers and engineers are involved in the presentation and in contact for an academic year (first and second semester of the engineering academic program).

This period of contact among members from the university and industry immersed in a situated event is noted as an essential COP feature in Lave & Wenger's theory of situated learning practice (1989).

During the first semester of the final year engineering academic program, basic issues and a written proposal on the intended project presentation is assessed by the lecturers and engineers. Literature review and methodology is briefly discussed. The student is required to submit the proposed title, literature review and methodology as a written component in the first semester of the engineering academic program. This enables a student to conduct substantial ground work and preparation in the first semester. The students then continue with the experimentation and result findings in the second semester of the engineering academic program. The results are tabulated as a written report and presented orally to the panel of lecturers and engineers at the university at a designated time and venue within the academic program and calendar.

3.6 Research Participants

In the context of this study, research participants are groups of individuals who are commonly engaged and share an interest in the quality and standard of outcome of technical oral presentations. The research participants include participants from the university and engineers from a national oil company (see Appendix D).

i) *Final year engineering students* - Final year engineering students who have to present technical oral presentations. As part of the oral presentation component, final year engineering students are required to deliver oral presentation to a panel of lecturers and engineers. These final year engineering students will henceforth be referred to as students.

ii) *Lecturers* - Lecturers are lecturers from the engineering faculty of the university who are also engineering lecturers and examiners for the students' technical oral presentations.

iii) *Language lecturers* – Language lecturers are lecturers from the management and humanities department who lecture a presentation course to the students. These lecturers contribute to the presentation input in the initial years of the engineering degree program.

iv) *Engineers* – Engineers from a national oil company who are appointed as external examiners are concerned about the quality and standard outcome of engineering graduates communicative competency in technical oral presentations. They convene at the research site and evaluate the students' technical oral presentation.

The responses from all focal groups contribute to the notion of communicative competence in technical oral presentation as viewed in the ESL context in an Asian region. In addition, the feedback aims at reducing the academia-industry practitioner divide on communication skills requirement for the workplace (Hafizoah Kassim & Fatimah Ali, 2010). In this mixed method design, quantitative data were obtained from the students and engineers. To explain and follow up the quantitative data, qualitative data were acquired from selected students, lecturers, language lecturers and engineers (see Appendix D).

3.6.1 The Students

The January intake of 2008 that enrolled for the engineering degree program formed 82% of the total student population. The following Table 3.3 provides a breakdown of the "enrollment of the students" for the said academic year.

Table 3.3: Student Enrollment at the University (January Intake 2008)

STUDENTS INTAKE		NUMBER	% OF TOTAL
Nationality	Local	285	90.5
	International	30	9.5
	TOTAL	**315**	**100**

Note: *University statistics of local and international undergraduate student population in January intake 2008 does not include foundation and postgraduate population.*

The student sample population involved in the study is pitched at the final year engineering program. It refers to students who had undergone the eight month industrial internship training program prior to the technical oral presentation. The technical oral presentation is conducted in the final year, second semester of the engineering academic program.

In this sense, the students would have attained valuable workplace industrial exposure and experience at various organisations. The background knowledge and experience as interns provided a social dimension on the perceptions and views of communicative competence of workplace related communicative event (Figueiredo, 2008). As such, the students were a valuable source of information on communicative competence required in technical oral presentations.

In the context of this study, only 87.3% students were deemed as valid participants of the study. 12.7% were involved in the pilot study and thus excluded in the actual study. The total number of students who participated in the study was 275. The researcher received response from 240 participants or 87.2% of the total engineering population. The response indicates significant student sample size for actual data collection (Sekaran, 2003). The following Table 3.4 depicts the number of technical oral presentation students at the University.

Table 3.4: Technical Oral Presentation students at the University

STUDENTS		NUMBER	% OF TOTAL
Nationality	Local	232	97
	International	8	3
	TOTAL	**240**	**100**

The participants comprised 97% Malaysians, while international students formed 3% of the respondent ethnic background. English language is regarded as the second language for these students. As depicted in Table 3.5, the racial composition of the students was 85.8% of Malays, 8.3% of Chinese, 1.7% of Indians while 4.2% involved others.

Table 3.5: Students' according to race and nationality

STUDENTS		RACE (in %)				TOTAL
		Malay	**Chinese**	**Indian**	**Others**	
Nationality	Malaysian	85.8	8.3	1.7	0.8	96.6
	International	0	0	0	3.4	3.4
	TOTAL	**85.8**	**8.3**	**1.7**	**4.2**	**100**

The following Table 3.6 provides the breakdown of the participants engineering background as per the program offered in the university.

Table 3.6: Students' according to gender and program

STUDENTS		BACHELOR OF ENGINEERING PROGRAMME				TOTAL
		ME	CHE	CVE	EE	
Gender	Male	79	26	30	17	152
	Female	8	40	26	14	88
	TOTAL	**87**	**66**	**56**	**31**	**240**

The largest respondent group is from the Mechanical Engineering (B Eng ME) program followed by Chemical Engineering (B Eng CHE), Civil Engineering (B Eng CVE) and Electronics and Electrical Engineering program (B Eng EE). Petroleum engineering students were not included as this cohort was in the foundation program. This phenomenon is indicative of the program intake during the enrolment period of the students in the university. The feedback from the said cohort allows the researcher to gain a perspective of engineering students' perception of communicative competence skills and attribute required in technical oral presentations.

This cohort was selected as 87.5% (210) of the said cohort had completed a presentation course offered by the language unit of the management and humanities department in the university. The remaining 12.5% (30) students were included as they were registered students enrolled in the said course at the time of investigation. The cohort was selected as all students were exposed to the presentation input.

The presentation course grade breakdown in Table 3.7 specifies the grade status of the student participants. Internal grading assessment accord a specific percentage range to the grading scheme. An "A" grade ranges from 75%-80%, A- is accorded a range from 70% to 74%, while B+ ranges from 65% to 69% and B grade ranges from 60% to 64%.

Table 3.7: Students' presentation course grade status

STUDENT GRADE STATUS AS PER ENROLLMENT (%)						
GRADE STATUS*	**A**	**A-**	**B+**	**B**	**currently enrolled**	**TOTAL**
Grade obtained	23.8	35	20.4	8.3	0	87.5
Grade to be determined	0	0	0	0	12.5	12.5
TOTAL	23.8	35	20.4	8.3	12.5	**100**

**Internal grading assessment conducted within the university.*

Table 3.7 indicates that 23.8% obtained an A grade, 35% obtained an A- grade, 20.4% scored a B+ while 8.3% scored a B grade. A total of 12.5% were currently enrolled in the course and had not obtained any grades. No students obtained an A+ grade (with mark range from 81% and above) in the speaking course.

The said composition of student exposure to the presentation input is a result of administrative regulation. At the point of investigation, the presentation course was not made a compulsory course prior the final year project presentation. Other cohorts were not selected as they did not meet the researcher's criteria where participants have registered or completed the technical oral presentation course at the time of the investigation. Feedback from the focal group will also contribute to limited literature on communicative competence among educators and the engineering professional community in Asian region.

For the qualitative feedback, the researcher initially approached five final year project students who had just completed their technical oral presentation at the presentation venue in the research site as per the student project presentation schedule. These students expressed their willingness to share their views on the said notion of investigation.

Subsequent to the interview session conducted with the first batch of five students, more names of possible willing participants were obtained by the snowball sampling technique. The snowball sampling technique meant that participants would suggest names of prospective interviewees. Thus, after each interview session, the researcher would ask the interviewee to recommend five names of friends who could be contacted to share their views on the said context.

Snowball sampling is a form of purposeful qualitative sampling that occurs when the “researcher asks participants to recommend other individuals to the study” (Creswell, 2008, p. 217). Although considered a tedious and time-consuming research technique, the snowball sampling was considered as the best approach to obtain willing and informative participants for the study.

Emails were sent to the students clarifying the purpose and objective of the study. Contact was established with students who were willing to share their experiences. Interview venues, dates and time were set to carry out subsequent interviews with the students. Through this method, the researcher was able to carry out face-to-face interviews with 26 (11%) out of the 240 students (see Appendix D).

Table 3.8 shows the racial demographic composition of the 26 student participants involved in the qualitative phase of the study. Malay and Chinese students (42.3%) form the bulk of the research participants. Indian students comprised 11.5% while others comprised 3.8% of the student population. Thus, the bulk of the students (96.2%) involved in the study were Malaysians while 3.8% were international students.

Table 3.8: Students' racial demographic (Interviewee)

STUDENTS		RACE (in %)				TOTAL
		Malay	**Chinese**	**Indian**	**Others**	
Nationality	Malaysian	42.3	42.3	11.5	0	96.2
	International	0	0	0	3.8	3.8
	TOTAL	**42.3**	**42.3**	**11.5**	**3.8**	**100**

The program background of students chosen for the qualitative phase is provided in Table 3.9 titled "Student Program Details". In this context, the bulk of the student interviewee participants were from the Civil engineering and Electronics and Electrical engineering program. The remaining smaller bulk of students were selected from the Mechanical and Chemical engineering program.

Table 3.9: Students' program details (Interviewee)

STUDENTS/ PROGRAM		BACHELOR OF ENGINEERING PROGRAM				TOTAL
		ME	**CHE**	**CVE**	**EE**	
Gender	Male	4	2	7	4	17
	Female	0	0	3	6	9
	TOTAL	**4**	**2**	**10**	**10**	**26**

These students were selected for the study as they fulfilled the research criteria requirement and were current students involved in technical oral presentations (see Appendix D). These students were selected based on their ESL background and involvement in technical oral presentation. Other students were not selected as they did not meet the researcher's criteria requirement.

3.6.2 The Lecturers

Lecturers involved in this study refer to the pool of lecturers who were engineering lecturers to the said cohort of students. With the assistance of technical oral presentation coordinators, the researcher was able to obtain the list of scheduled student technical oral presentations for each engineering program. The list provided the researcher with the names of lecturers allotted for each presentation slot.

The Mechanical Engineering program provided a list of 15 names while the Chemical Engineering program provided 12 names. The Civil Engineering program offered a list of 10 names while the Electronics & Electrical Engineering program provided 9 names. In this context, the researcher was able to draw upon a pool of 46 engineering lecturers. Emails were sent to this pool of lecturers.

The researcher received responses from 13 lecturers who were willing to share their perceptions on communicative competence requirement in technical oral presentations from a linguistic and rhetorical perspective (see Appendix D). The sampling strategy used for the selection of lecturers is "convenience sampling" as participants are selected based on their willingness and availability to participate in the study (Creswell, 2008, p. 155).

The demographic information of the lecturers is provided in Table 3.10 titled "Lecturers' area of specialisation". The bulk of the lecturers are from the Chemical engineering department. The next research participants include professionals from the Electronic & Electrical engineering department. The following pool of participants is from the Chemical and Mechanical engineering department (see Appendix D).

Table 3.10: Lecturers' Demographic and Area of Specialisation

LECTURERS/ SPECIALISATION		**AREA OF SPECIALISATION**				**TOTAL**
		ME	**CHE**	**CVE**	**EE**	
Gender	Male	1	4	3	3	11
	Female	0	1	0	1	2
	TOTAL	**1**	**5**	**3**	**4**	**13**

The 13 lecturers were university staff who held positions as lecturers, senior lecturers, Associate Professors and Professors within the engineering departments in the research university. One of the Associate Professors held a senior administrative position as Head of the Foundation and Applied Sciences department in the university. In this sense, the researcher was fortunate to obtain a varied spectrum of research participants for the study. Participants ranged from the MA1 grade as lecturer to MA4 grade as Professor.

The ranking of each staff was determined by the university senate and academic panel committee based on a lecturers' performance. The feedback is critical to enhance the understanding of communicative competence from the perspective of academics based on their legitimate peripheral participation in the said COP (Lave & Wenger, 1991). The demographics of the lecturers' designation is provided in the following Table 3.11 on Lecturers Designation.

Table 3.11: Lecturers' Designation

LECTURERS DESIGNATION		**AREA OF SPECIALISATION**				**TOTAL**
		ME	**CHE**	**CVE**	**EE**	
MA1	Lecturer	1	1	1	/	3
MA2	Senior lecturer	/	4	0	3	7
MA3	Associate Professor	/	/	1	1	2
MA4	Professor	/	/	1	/	1
TOTAL		**1**	**5**	**3**	**4**	**13**

These lecturers were selected as they performed roles as supervisors or internal examiners for the said cohort of students (see Appendix D). Other lecturers were not included as they did not fulfill the researcher's criteria required for the purpose of the study. In the context of this study, the lecturers' feedback was required in the qualitative phase of the study.

3.6.3 The Language lecturers

Language lecturers were required to provide their feedback on the notion of communicative competence in the qualitative phase of the study. At the point of investigation, a pool of 11 language lecturers was engaged as lecturers in the management and humanities department in the university.

Out of the total number of 11 language lecturers, only 9 language lecturers fulfilled the researcher's criteria as they taught the said cohort of students. Two language lecturers were unable to fulfill the criteria as they had just returned from their staff development program. As such the two language lecturers (by default) were eliminated as viable research participants because of no teaching contact with the said cohort of final year engineering students. They taught elective courses offered in the second year of the engineering program.

Having identified the pool of selected language lecturers, the researcher sent an email to the 9 language lecturers explaining the purpose of the study. 6 language lecturers expressed interest in sharing their views (see Appendix D). The 6 language lecturers were selected as they provided presentation input in the foundation years to the existing cohort of students. The participants were selected based according to convenience sampling strategy based on the willingness and availability of the participants to be studied (Creswell, 2008). The following Table 3.12 shows the "Language lecturers' Demographic and Area of Specialisation" evident in the research university.

Table 3.12: Language lecturers' Demographic and Area of Specialisation

LANGUAGE LECTURERS		AREA OF SPECIALISATION	TOTAL
		Language & Communication	
Gender	Male	3	3
	Female	3	3
	TOTAL	**6**	**6**

In terms of seniority and work experience, the participants held positions as senior lecturers and lecturers. One of the language and communications experts held a senior administrative position as the Head of the Student Affairs. Thus, feedback from the ESL language lecturers is critical to gain feedback on their perception of communicative competence as participants in their own COP (Lave & Wenger, 1991). Feedback from the language lecturers' provides an insight of the COP's perception of the notion from an ESL context in the Malaysian context. The demographics of language lecturers' designation is provided in Table 3.13 on "Language lecturers' Designation".

Table 3.13: Language lecturers' Designation

LANGUAGE LECTURERS DESIGNATION		AREA OF SPECIALISATION	TOTAL
		Language & Communication	
MA1	Lecturer	4	4
MA2	Senior lecturer	2	2
TOTAL		**6**	**6**

The demographics provided in Table 3.13 indicate that there were 6 lecturers from language and communication unit of the department. For each unit, both junior and senior participants were involved for the study. These language lecturers were selected as they provided presentation input to the foundation years of the said cohort. The experience of the language lecturers is critical in understanding the notion from the ESL perspective of the language experts.

3.6.4 The Engineers

Engineers identified for the study were determined from an existing pool of professional engineers who performed the role as external examiners for the existing cohort of students. These engineers who performed the roles as external examiners were selected by the panel selection committee of the university. All selected engineers were required to possess a minimum of five years of working experience. This was to ensure that the engineers possess adequate workplace experience to guide the final year engineering students on workplace expectations as required in technical oral presentations.

In this context, the researcher obtained the list of names of engineers provided by technical oral presentation coordinators from the four engineering disciplines within the university. Each program had an existing list of 20 names of engineers selected as external lecturers and engineers. The researcher identified this group of 80 engineers as the selected pool of research participants. These engineers were selected as research participants as they fulfilled the research criteria as external lecturers and engineers to the existing cohort of engineering students involved in technical oral presentation in the university.

For the purposes of this study, engineers were involved in both phases of the study. In the initial stage, the researcher emailed the pool of 80 engineers. The researcher received a response rate of 82.5% as 66 engineers responded to the questionnaire. Engineers were selected to contribute to the professional community expertise on communicative competence required in technical oral presentations. Their views are critical to contribute understanding from the professional engineering community perspective in the workplace. In addition, the insight aims at addressing the academia-industry practitioner divide on graduates communicative competence requirements (Azami Zaharim et al., 2012). The engineers' background details on the demographic and work experience are depicted in Table 3.14 on "Engineers' Demographic and position held in the company".

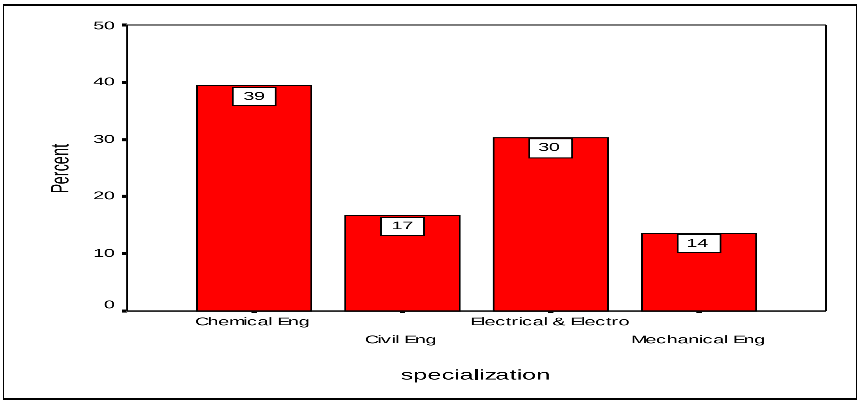
Table 3.14: Engineers' Demographic and position held in company

ENGINEERS		POSITION HELD IN COMPANY		TOTAL
		Technical	**Management**	
Gender	Male	40	18	58
	Female	6	2	8
	TOTAL	**46**	**20**	**66**

Table 3.14 shows that 66 engineers from technical and management positions were involved in the study. Out of the 66 engineers, 87.9% (58) were male while 12.1% (8) were female engineers. The demographics indicate that the said profession is predominantly male dominated.

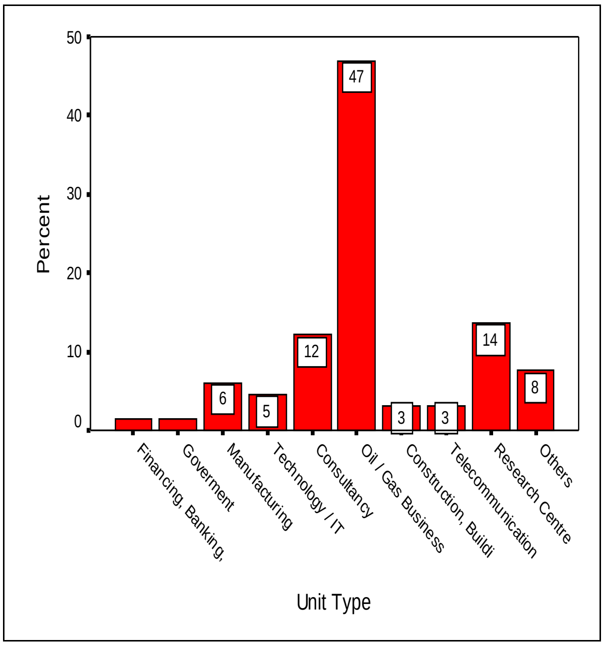
The following Table 3.15 on engineers' area of specialisation provides some background information on the area of specialisation. It shows a high percentage of Chemical (39%) and Electrical and Electronics (30%) engineers were involved in the study. At the same time, engineers from the Civil (17%) and Mechanical engineering (14%) were involved in the study.

Table 3.15: Engineers' Area of Specialisation



At the same time, Table 3.16 on Oil Producing Unit (OPU) indicates the type of units the engineers are involved in. Majority (47%) are in oil and gas business, research (14%), consultancy (12%), manufacturing (6%), technology (5%), and around 3% are from telecommunications, construction, finance and others within the national oil company. The background of the engineers is crucial as engineers from different OPU may stress on different areas of communicative competence as indicated in the theory of learning (Bhattacharyya, 2010). The national oil company also deals with the public and government sector.

Table 3.16: Oil Producing Unit



Subsequent to the questionnaire response, the researcher sent an email to the said pool of 66 engineers and obtained a response from 12 male engineers who volunteered to share their response on technical oral presentations from a linguistic perspective (see Appendix D). The engineer profile is indicated in Table 3.17 on "Engineers' Designation".

Table 3.17: Engineers' Designation

ENGINEERS' DESIGNATION	FIELD OF SPECIALISATION				TOTAL
	ME	CHE	CVE	EE	
Manager	1	1	/	/	2
Principal Engineer	/	/	/	1	1
Senior Head/Senior Manager or Consultant/ Senior Engineer/ Process Technologist	3	2	1	1	7
Chairman	/	/	1	/	1
Managing Director	1	/	/	/	1
TOTAL	**5**	**3**	**2**	**2**	**12**

The engineers involved include Managers, Principal Engineer, Senior Engineers, Consultants, Chairman and a Managing Director from diverse engineering background. Most of the engineers were ranked from middle management to senior management level. The varied engineers' rank and work experience provided the researcher a broad perspective of perception on communicative competence as held by the engineers. All of these engineers had more than 5 years of professional working experience.

The convenience sampling strategy was used to obtain willing and available participants to share their perceptions on the issue or phenomenon (Creswell, 2008) . The engineers were chosen for their involvement as research participants in the initial phase of the study and fulfillment of the researcher's criteria required for the study (see Appendix D).

3.7 Instruments used in the Study

The instruments used in the study include the use of questionnaire, interviews, observation and written documents of students' evaluation task sheets to validate data findings in the study. Questionnaire was used in the first phase of the study. Other research instruments were used in the second phase of the study. All research instruments will be discussed in the following sections.

3.7.1 Questionnaire

A questionnaire survey (see Appendix B and Appendix C) adapted from various sources of research instrument on communication skills and communicative competence was used in Phase I of the research methodology (see Figure 3.2 on Research Tools and Strategy in Sequential Explanatory Study). The questionnaire survey method is used to collect a large amount of data within a short time frame to understand the overall picture of the study (Dillman, 2002). The researcher adapted selected items from established research instruments and oral presentation rubric (see Table 3.18). The researcher was required to adapt from various established research instruments in order to address various dimensions deemed necessary in technical oral presentations.

For this purpose, the research instrument adapted several items from various established instruments and a presentation rubric (see Appendix P). The instruments include Communicative Competence Scale by Weinmann (1977), Personal Report of Communication Apprehension (PRCA-24) by McCroskey, Beatty, Kearney, & Plax

(1986) and Social Performance Survey Schedule (SPSS) Part A by Lowe & Cautela (1978). Competency factors itemized in *The Competent Speaker* also formed the basis of the adapted questionnaire (Morreale et al., 1991). Items were also adapted from the oral presentation rubric presentation criteria (Bradney, 2000).

The Self Rated Communicative Competence (SRCC) Scale (Weimann, 1977) measured communicative competence by reference to five dimensions of interpersonal competence (general competence; empathy affiliation/support; behavioral flexibility and social relaxation) with interaction management as the dependent measure (Weinmann, 1977). The study indicated that there was no change in the level of interpersonal competence during and after student interaction. The SRCC appeared to be internally consistent and was utilised in various studies (McLaughlin & Cody, 1982; Query, Parry & Flint, 1992) where college students' rate each other on communicative competence.

The reliability of SRCC Scale as indicated in the studies (McLaughlin & Cody, 1982; Query, Parry & Flint, 1992) enabled the researcher to improvise the use of 6 items on interpersonal competence like eye contact, speech choices marking relationship, non-verbal cues, relaxation cues, appropriate behaviors in any given situation, perceived active listening and use of pauses (see Appendix P). These items were selected over other items as considered essential communicative competence markers in technical presentation (Celce-Murcia, 2007).

PRCA-24 investigates the levels of anxiety one feels about participating in various oral communication situations such as group discussions or meetings. Certain items were selected from the said questionnaire as public speaking fears or communication apprehension are forms of generalized anxiety commonly felt by presenters in presentations (Bulca & Safaei, 2013; McCroskey et al., 1986). Anxiety stems from a presenters' lack of knowledge or preparedness of a certain topic in an oral communication situation. Higher anxiety is related to not knowing how to prepare for the situation. Presenters need to experience various presentations in varied oral communication situations (McCroskey et al., 1986).

Among the 6 items selected from PRCA-24 are confidence in expressing ideas, speaking up in conversations, being calm and relaxed in conversations, confidence in speech presentations, clarity in thoughts while speaking and memorization ability during a speech presentation (see Appendix P). These items were selected as one's ability to communicate competently is the ability to verbalize contextualized genre within the specific fields to experts within the field (Morton, 2012).

The Social Performance Survey Schedule (SPSS) Part A was utilised as part of the research instrument to construct the questionnaire as SPSS Part A addressed the descriptors to measure the social behavior traits i.e. verbal and non verbal skills, of individuals and that of others (Lowe & Cautela, 1978). Studies have utilised the said instrument as psychometric measures among college students to measure the social performances or behaviors among female and male students (Gesten, 1976) as well as personality variables (locus of control or anxiety). The study indicated reliability in individual scores as well as that of in groups. The SPSS tests could be used in therapy where social behaviors determine the type of training required or in interpersonal interactions. Essentially, the test evaluates individuals' personality and level of social interaction.

As such 12 items were adapted from the Social Performance Survey Schedule (SPSS) Part A which included markers on positive behavior such as eye contact, posture, smiles, humorous, listens when spoken to, admittance to mistakes, receptivity to other opinion and provides apology if an error is committed (see Appendix P). The said items were chosen as deemed essential verbal and non-verbal elements in any presentation guideline (Fraile et al., 2010). The communicative competence of any presenter is a result of mastery of both technical and soft skills (Martins et al., 2007).

As for *The Competent Speaker,* the 8 competency factors include i) statement of topic, ii) thesis statement/specific purpose, iii) supporting materials, iv) organisation pattern, v) language relevancy, vi) vocal variety, vii) pronunciation, grammar and articulation and viii) physical behaviors appropriate to support a presentation. For the purpose of the questionnaire (see Appendix P), all the said competency factors were included in the questionnaire being fundamental criterion in communication (Morreale et al., 1991).

The questionnaire (see Appendix B and Appendix C) adapted the organisational elements discussed in Bradney's (2000) technical presentation rubric. Items in the said rubric were categorized into nine sections namely, introduction to presentation, body of presentation, summary of presentation, summary of presentation, question and answer, general, presenter and materials, overall rating of presentation and evaluator category

(Bradney, 2000). Bradney’s rubric was used in the questionnaire as deemed essential in contributing to organisation and structure layout of technical presentation.

For the purpose of the questionnaire, 36 items were selected (see Appendix P). The items were utilised to formulate the structural organisation of the questionnaire. Similar questionnaire format and items were used for both the students and engineers. The format mirrors questionnaire format in other sequential explanatory studies (Ivankova et al., 2006). It is for this reason that Bradney (2000) rubric on technical presentation was utilised as part of the research instrument in the study.

Following the pilot test (see section 3.8.1) the numbers of items listed in the questionnaire were reduced to 65 items from an initial list of 72 items following results of the reliability tests. Table 3.18 provides a brief summary of the questionnaire content with the type of questions listed for each section in the questionnaire (see Appendix B and Appendix C). As indicated in Table 3.18, the survey required participants to provide demographic details, presentation skills, behavioral skills, content dimension, language skills and non-verbal elements in a technical oral presentation. Both students and engineers utilised a similar questionnaire format. Demographic details were improvised for the engineers who were required to comment on their work experience in technical oral presentations.

Table 3.18: Summary of Source and Questionnaire Items

Questionnaire Content	Source & Items (Adapted From Various Instruments)	Type Of Questions
Section A	Sample Questionnaire on demographic information (Pintrich, Smith, Garcia, & McKeachie, 1991)	Demographic Type - short choice one answer background information questions (student: 6 items; engineers: 12 items)
Section B	Bradney (2000) – 4 items; PRCA-24 (McCroskey, Beatty, Kearney, & Plax , 1986) – 2 items; SRCC Scale (Weimann,1977) – 2 items; SPSS (Lowe & Cautela 1978) – 5 items	Presentation Skills and Attribute Construct: -13 likert scale questions
Section C	PRCA-24 (McCroskey, Beatty, Kearney, & Plax , 1986) – 4 items; SPSS (Lowe & Cautela 1978)	Behavioral Skills and Attribute Construct: -9 likert scale questions
Section D	Bradney (2000) – 22 items Morreale et al. (1991) – 3 items	Content Construct: (Introduction, While and Conclusion Stage) - 25 likert scale questions
Section E	Language Construct: Morreale et al. (1991) – 1 item; Bradney (2000) – 7 items Non-verbal construct: SRCC Scale (Weimann,1977) – 2 items; SPSS (Lowe & Cautela 1978) – 7 items; Morreale et al. (1991) – 1 item	Language and Non-Verbal Skills Construct: -18 likert scale questions (i.e. 8 language items and 10 non-verbal skills items)

In the present study, the questionnaire survey consists of the following two parts: (a) survey participant background and (b) communicative competence requirement. The participant background comprised 6 questions on student demographic while engineers had 12 questions. The researcher referred to sample questionnaire on demographic information (Pintrich et al., 1991).

The communicative competence dimension comprised five sections, namely, i) presentation skills and attribute requirement, ii) behavioral skills, iii) content requirement, iv) language and v) non-verbal skill requirement. The questionnaire contains two types of items. For students, it was a total of 71 items: (a) 6 choice one answer questions and (b) 65 likert scale questions using a rating scale of 1 (strongly disagree) to 5 (strongly agree). For engineers, it was a total of 77 items of which were 12 items on background information and similar 65 likert scale questions.

1. The first part of the questionnaire survey in Section A was related to demographic questions. A higher education study with sample questionnaires on demographic information was adapted for this section. (Pintrich et al., 1991). As for the students' questionnaire, it was based on the students' demographic details such as gender, nationality, racial background, academic program, participant registration status of English speaking course and grade obtained for the said course (see Appendix B and Appendix C at Section A, items 1 to 6). A similar format was provided to the engineers.

2. Sections B C, D, and E of the questionnaire was formulated to answer Research Questions 1 & 2. The researcher asked questions to identify (a) the presentation skills and attribute construct, (b) behavioral skills and attribute construct, (c) content construct, (d) language competency construct, and e) non-verbal skills construct. The items selected for the Sections B, C, D and E were adapted from the various research instruments and oral presentation rubric.

In Section B, there were 13 items listed in the presentation construct. The items were based on Bradney (2000); PRCA-24 (McCroskey et al., 1986); SRCC Scale (Weimann, 1977) and SPSS (Lowe & Cautela, 1978). The presentation skills construct adapted 4 items (purpose, objective, logical organisation and maintained control throughout) from

Bradney (2000), 2 items (confidence and speaking up) from PRCA-24; 2 items (relaxed and receptivity) from the SRCC Scale and 5 items (receptivity, humor, facing conflict, admit to errors and resolving problems) from the SPSS (1978). The items listed are as follows:

Presentation Skills Construct (13 items):

- purpose of presentation
- scope of presentation
- organisation skills
- keeping within time frame
- analytical and interpretation skills
- memorization skills
- self-development skills, like anticipating possible questions
- clarification skills when technical terms are used
- audience receptivity to technical knowledge
- audience receptivity to non-technical knowledge
- project humor (where applicable)
- maintain composure when questioned by the audience
- willingness to accept criticisms posed by audience

In Section C, there were 9 items listed in the behavioral skills and attribute construct. The items were based on Bradney (2000), PRCA-24 (McCroskey et al., 1986) and SRCC Scale (Weimann, 1977). The behavioral and attribute construct adapted 3 items (audience time to reflect, audience invited to comment and respond clearly) from Bradney (2000), 4 items (confidence in expressing ideas, shows interest in what others say, considers opinions of others and listens when spoken to) from PRCA-24 and 2 items (flexible and right thing said at right time) from the SRCC Scale. The section was also based on Morreale et al., (1991) competency factor on use of physical behaviors in presentations. The items listed are as follows:

Behavioral Skills and Attribute Construct (9 items):

- analytical skills in fielding questions posed by the audience
- flexible in meeting audience's viewpoint
- courteous while presenting
- audience sensitive - allow audience time to reflect
- interactive skill – invite audience participation
- listening skills
- incorporate audience feedback
- quick thinking when responding to questions
- defend skills when questioned

In Section D, there were 25 items listed in the content construct. Items were adapted from the oral presentation rubric Bradney (2000) and Morreale et al., (1991). The questionnaire based 22 out of the 25 items from Bradney (2000) and 3 items from Morreale et al., (1991). The construct adapted 7 items for the introduction stage (introduction, subject of presentation, importance established, clear objectives, adhered to agenda, content appropriate and familiar with topic).

There were 10 items adapted for the while presentation stage (clear content, smooth transition, visual aids effectively used, good verbal communication techniques, organisation of transparencies, format, appropriate numbering, length appropriate, content appropriate and summary in one or two points). The conclusion stage comprised 5 adapted items (clear summary, purpose reiterated, importance repeated, each section summarized and closing statements). The remaining 3 items were chosen from Morreale et al., (1991) such as competency factor 1, 2 and 3 on topic, thesis statement and use of supporting details. The items listed are as follows:

Content Construct - Introduction stage (7 items):

- introduction statement in a presentation
- title of project presentation
- identification of problem statement
- relevance of presentation

- statement to indicate research methodology used
- clarification of objective of presentation
- state the source of literature review (where necessary)

Content Construct - While presentation stage (10 items):

- correct delivery style
- provide supporting materials
- check the visual presentation of all materials
- visual presentation is appealing
- use of gannt charts for explanation
- right selection of color for wording
- right font size for wording
- limitation on the use of words in each slide
- simple analogy
- ensure coherence in points delivered

Content Construct - Conclusion stage (8 items):

- state key milestones (where necessary)
- apply creativity in presentation
- inclusion of cost factor analysis
- discussion of findings related to the topic of the project presentation
- restate the purpose in the conclusion
- provide concise closing statement
- restate the relevance of the presentation
- propose suggestions relevant for considerations

Section E of the questionnaire required participants to comment on language competency and non-verbal elements deemed essential for effective technical oral presentation. Out of the 18 items, 8 items were listed for language competency skills while 10 items were assigned for non-verbal skills. These items were adapted from Bradney (2000), SRCC Scale (Weimann, 1977) and Morreale et al., (1991). The 8 language items are comprised 7 items (presentation was clear and concise, appropriate language level use, verbal communication techniques, demonstrated enthusiasm for task, responded clearly, smooth transition from topic to topic and clear introduction, body and summary) from Bradney (2000) and 1 item from Morreale et al., (1991).

As for the non-verbal construct, 7 items (eye contact, shows enthusiasm, smiles, listens when spoken to, show interest in what another is saying, makes facial gestures and sensitive to others) from SPSS (Lowe & Cautela, 1978), 2 items (use body and voice expressively and I let others know I understand them) from SRCC Scale (Weimann, 1977) and 1 item on non-verbal competency factor from Morreale et al., (1991). The items listed include:

Language competency Construct (8 items):

- use of correct grammar at all times
- use appropriate language throughout the delivery
- ensure language is easily understood
- avoid use of complex language
- articulation of words
- enunciation
- pronunciation
- appropriate choice of words or diction

Non-verbal skills Construct (10 items):

- speak at an appropriate rate
- use appropriate volume for the size of room
- use of vocal fillers in the presentation
- pause to ensure message is understood
- use vocal variety
- use appropriate non-verbal gestures for emphasis
- stance
- use of facial expressions to reinforce the message
- appear extemporaneous
- culturally observant in code of conduct

The illustration of mapping the questionnaire items with the source of the research instrument is provided in Appendix P (Mapping Research Items to Research Instrument). The researcher utilised findings from the questionnaire to structure interview questions with selected participants from the academic (26 students; 13 lecturers and 6 language lecturers) and professional engineering community (12 engineers) (see Appendix D). Feedback from interview sessions held between the researcher and voluntary interview participants attempted to seek answers to Research

Questions 3 and 4 (see Appendix B on Questionnaire for Students and Appendix C on Questionnaire for Engineers).

3.7.2 Interviews

Besides the use of survey questionnaire, the researcher used interviews as part of the data collection technique. The integration of both quantitative and qualitative data is a common feature in mixed method design (Creswell, 2008). Interviews explores the "range and different representations of an issue" which would be possible in a quantitative survey (Bauer & Gaskell, 2000, p. 41).

Interviews provide "actual words of people in the study, offer different perspectives and provide a complex picture of the situation" (Creswell, 2008, p. 552). Interviews were conducted until saturation point is achieved. Saturation is the point where no new information is added to the list of themes or to details of existing themes (Creswell, 2008).

Various interview modes such as face-to-face and telephone interviews were conducted (Seidman, 1998). Interviews allow the researcher to probe "unexpected results that arise from a quantitative study"(Creswell, 2003, p. 215). Qualitative data such as interview findings provide "more detailed, specific information" than results of statistical tests (Creswell, 2008, p. 552).

In the context of this study, semi-structured interviews were conducted with selected research participants to seek answers to Research Questions 3, 4 and 5. Semi-structured interviews provided the researcher the flexibility to rephrase questions to ensure correct interpretation of the questions.

The interviewees included selected students, lecturers, language lecturers and engineers (see Appendix D). All interviewees were informed that the sessions would last for 40 minutes to an hour. Interviewees were informed that interview sessions would be tape-recorded for transcription purposes. Interview sessions were located at office rooms or scheduled venues on the research site. Confirmation on the time, date and venue was agreed by the interviewees and researcher prior to the interview session. All participants indicated their willingness to be interviewed and were free to reframe from being part of the study at any point in time.

In cases where clarification was required for certain responses, follow up interviews were held with selected participants. For cases where logistics was posed as a hindrance, telephone interviews were held with the selected participants. The different interview mode used did not affect data collection (see Appendices F to I) on Student, Lecturer, Engineer and Language lecturer Interview Questions). Prior to the start of any interview session, the researcher would provide the Interview Consent Form (see Appendix E) to be signed by the interviewee.

3.7.3 Observation of student presentation

In order to validate the quantitative feedback, different kinds of data were used to understand the said phenomenon. In the context of this study, the data findings obtained from observation of student presentation sessions provided an insight of the type of questions posed by the panel of lecturers and engineers. It also enabled the researcher to thematically analyze the student presentation data for linguistic and rhetorical features deemed necessary in technical oral presentations.

For the purpose of the observation, prior consent was obtained by the researcher from the Program Head, lecturer and engineer involved in the presentation. If permission was approved, email confirmation would be sent to the researcher. The researcher would not observe presentations which do not provide their consent for recording purposes. In this study, the researcher utilised a handy camera to record the students' presentation. The researcher would enter the presentation venue and be seated a few rows away from the panel of lecturers and engineers. The researcher would usually enter the venue 10 minutes prior to the students' presentation. Once a student begins, the researcher would record the presentation.

The researcher conducted 16 video tape observations. Each student presentation session lasted 30 minutes. Students were required to present for the first 20 minutes. This was followed by a 10 minute critique session posed by the panel of lecturers and engineers. Among the 16 video-taped presentation sessions, 11 presentation sessions had questions posed at the end of the student presentation while 5 sessions had questions posed in the midst of the presentation.

Bradney’s presentation rubric (2000) was adapted and utilised as an observation sheet and checklist to tabulate the presentation outline. The criterion listed in the observation sheet was validated by experts in the field (see Appendix K on Technical Oral Presentation Observation Sheet). The researcher was able to record the responses exchanged between the student and examiners (see Appendix O on Excerpt of Student Presentation Critique session).

3.7.4 Written Document: Students’ evaluation task sheets

As part of multiple data collection strategy, the researcher obtained the student presentation evaluation score sheets (see Appendix A) which included written comments provided by the lecturers and engineers (see Appendix L, Appendix M and Appendix N). The researcher was interested to document the linguistic and rhetorical comments of various lecturers and engineers involved in the evaluation of students’ technical oral presentation.

In the context of this study, the researcher was able to obtain a total of 212 evaluation score sheets from the combination of all four engineering programs such as Mechanical Engineering, Chemical Engineering, Civil Engineering, and Electrical and Electronics engineering program conducted in the university. The breakdown of 212 sets of score sheets is listed in Table 3.19 on Expected Written Comments by Program.

Table 3.19: Expected Written Comments (Program)

ENGINEERING PROGRAM	MECHANICAL	CHEMICAL	CIVIL	ELECTRICAL AND ELECTRONICS
Total Number of Sets	46	76	62	28
Expected Number of Written Comments*	138	228	186	84

**Each program is assessed by a panel of 2 lecturers and 1 engineer*

The breakdown on number of evaluation score sheets obtained from each engineering program is itemized as Mechanical Engineering (46), Chemical Engineering (76), Civil Engineering (62), and Electrical and Electronics Engineering (28). Each student was examined by a panel of two lecturers and an engineer.

Thus, the expected number of written comments for the Mechanical Engineering program is 138 (made up of 92 lecturers and 46 engineers). The Chemical Engineering program was expected to provide 228 comments (comprising 152 lecturers and 76 engineers). Civil Engineering program was projected to meet 186 comments (from 124 lecturers and 62 engineers). The Electrical and Electronics Engineering program was supposed to provide 84 written comments (56 lecturers and 28 engineers).

However, in actual practice, what actually occurred differed as not all task sheets indicated written comments by the lecturers and engineers. Thus, in practice the actual number of written comments provided by lecturers and engineers differed. Table 3.20 indicates the actual number of written comments by the lecturers.

Table 3.20: Lecturers' Actual Practice of Written Comments

ENGINEERING PROGRAM	EXPECTED NUMBER OF WRITTEN COMMENTS	ACTUAL NUMBER OF WRITTEN COMMENTS*	% OF TOTAL
Mechanical	92	55	60
Chemical	152	40	26.3
Civil	124	37	30
Electrical and Electronics	56	10	18

**Actual practice differs as some examiners do not write any written comments*

In actual practice, Table 3.20 indicates that not all lecturers provided comments in the evaluation task sheets. From the total number of lecturers' written comments (137), the actual number of written comments accorded as per program include i) Mechanical Engineering (60%), ii) Chemical Engineering (26.3%), iii) Civil Engineering (30%) and, iv) Electrical and Electronics Engineering (18%).

Table 3.21: Engineers' Actual Practice of Written Comments

ENGINEERING PROGRAM	EXPECTED NUMBER OF WRITTEN COMMENTS	ACTUAL NUMBER OF WRITTEN COMMENTS*	% OF TOTAL
Mechanical	46	30	65.2
Chemical	76	41	54
Electrical and Electronics	28	15	54
Civil	62	31	50

**Actual practice differs as some engineers do not write any written comments*

Table 3.21 indicates that not all engineers commented in actual practice on the evaluation task sheets. Out of 212 task sheets, only 117 indicated evidence of engineers' written comments. The actual number of written comments provided by the programs include i) Mechanical Engineering (65.2%), ii) Chemical Engineering (54%), iii) Electrical and Electronics Engineering (54%) and, iv) Civil Engineering (50%).

3.8 Pilot Study

A pilot study was conducted among the selected members of the focal groups. For the quantitative analysis, the questionnaire was piloted among selected students and pre-tested among engineers. Engineers were only required to pre-test the questionnaire as a similar format was used for the engineers. The pilot study was conducted among students prior to actual dissemination of the research instrument. As the research intention was to identify the oral communicative competence practiced by end users at the workplace, students and engineers were selected as questionnaire participants.

In the qualitative stage, interview questions were piloted among selected members of all focal groups, i.e. students, engineers, lecturers and language lecturers. Language lecturers and lecturers were required to provide their feedback on communicative competence requirement in technical oral presentation. Subsequently, selected participants from all focal groups were required to elaborate further on the linguistic and rhetorical perspective. The following section will elaborate the pilot study of both research instruments, i.e. questionnaire and interview questions.

3.8.1 The Students

This section describes the pilot study on questionnaire and interview conducted with the students. A description of the sample size, piloting of both research instruments and recommended amendments is discussed.

3.8.1.1 Questionnaire

As mentioned earlier, 40 students from the total sample population of 315 students were exempted from the actual study. The engineering students of a management class fulfilled the researcher’s criteria to be selected as research participants for the pilot study. They were final year students involved in technical oral presentations and have been exposed to the speaking course on technical oral presentation, offered in the university.

The class was selected as it fulfilled the research criteria requirement and due to its convenient sample size, common for pilot test studies. Sekaran (2003) indicates that a convenient sample size can comprise 30 students. Other studies suggest sample size ranging from 10 to 40 participants as adequate measurement for pilot studies (Hertzog, 2008; Johanson & Brooks, 2009).

Prior to carrying out the pilot study, the researcher obtained feedback from five students in the management class who volunteered to provide their feedback on the items listed in the survey questionnaire. These participants were willing and eager to provide feedback on the pre-testing of questionnaire.

The students expressed difficulty on the use of jargon words like “extemporaneous”, “sexist language” and “stance”. They requested that the researcher made modifications to these terms. There was an error in a repeat item. The researcher made the necessary revision and provided brief descriptors to simplify the word.

For the term “extemporaneous” the researcher added “appear not memorized” to clear confusion over the said word. The term “sexist language” was changed to “appropriate language”. The term “stance” was changed to “stand and move in distracting ways”. Following the pilot study with the 40 students, various recommendations were suggested as indicated in Table 3.22 on Cronbach Alpha Values obtained for certain constructs in the pilot test.

Table 3.22: Cronbach Alpha Values of Construct in the Pilot Test

CRONBACH ALPHA VALUES OF CONSTRUCT IN PILOT TEST			
CONSTRUCT	Presentations Skills and Attribute Construct	Content Construct – Introduction Stage	Content Construct – While Presentation Stage
Inclusion of items	15 items 0.80	9 items 0.87	13 items 0.86
Exclusion of items	13 items 0.87	7 items 0.93	10 items 0.89

7 items were excluded as they were considered redundant for the purpose of the study. Students complained that there were too many items in the questionnaire. As stated in section 3.71, the initial student questionnaire comprised 72 likert scale items which was reduced to 65 likert scale items after the reliability tests. As indicated in Table 3.22, improvisations to the number of items was reduced in the three constructs, i.e. presentation skills and attribute construct, content construct (introduction and while presentation stage). No changes were done to the other constructs, i.e. behavioral skills and attribute, content (conclusion stage), language competency and non-verbal skills.

As indicated in Table 3.22, in the presentation skills and attribute construct, with the exclusion of “aware of sub-points” and “aware of points”, the reliability test was increased from 0.80 to 0.87. As such, the number of items in this construct was reduced from 15 to 13 items. As for the content construct (introduction stage), the two items termed as “use of gesture” and “use of audiovisual” indicated reliability test results at 0.87. With the exclusion of the items, the construct was reduced to 7 items that indicated reliability at 0.93. In the content (while presentation stage) the inclusion of three items, namely, “use of number of words”, “type of font used” and “type of example” indicated reliability at 0.86. With the exclusion of the 3 items, the reliability was increased to 0.89.

The initial questionnaire was too long and was not clearly grouped according to the constructs. This created a negative response on the visual presentation and readability of the items in the questionnaire. The researcher then categorized the content dimension items to three sections – introduction, while presentation and conclusion stage, to enable clarity in structural layout of the questionnaire. The inclusion of sub-sections enhanced clarity and readability of the questionnaire. Certain sections were merged to eliminate research participants from re-reading the instructions.

Through the pilot study, the language and non-verbal skills items were merged under one section instead of different sections. The improvised questionnaire consisted of five sections with a revised list of 65 likert scale items (see Appendix B and Appendix C).

3.8.1.2 Interview

To ascertain readability and accurate interpretation of questions posed in the interview questions for students, a pilot study on the type and structure of interview questions was conducted. The researcher explained the rationale and purpose of the study to the students in the business and management class. Five potential students volunteered to participate and expressed willingness to provide their feedback on the interview questions.

The researcher administered field tests to the students (from the same pool of participants in the questionnaire pilot test) to improve on the existing interview questions. The sample size is considered a reliable measurement for pilot study guides in qualitative phases of a mixed method study (Stewart, Makwarimba, Barnfather, Letourneau, & Neufeld, 2008).

The interview questions was focused on six domains of inquiry such as (a) definition of technical oral presentation, (b) technical oral presentation experiences, (c) presenter skills and attributes, (d) communicative competence requirements (language, content and other skills), (e) challenges in enhancing communicative competence, and (f) improvements to enable students to be actively engaged in oral classroom participation (see Appendix F, Appendix G, Appendix H and Appendix I).

In the initial interview draft, the researcher listed a total of 22 questions. Two questions were itemized as ice-breaker questions on the participants' background. Five questions were itemized as introduction to the technical oral presentation issue. One question was considered redundant and eliminated in the final list of interview questions. The question on "What are the important elements required to ensure that a presentation is technical in nature?" was considered repetitive.

Instead, the question worded as, “In your opinion, what are the important elements required for a technical oral presentation?” was retained. There were no changes to the interview questions on technical oral presentation experiences. On the issue of presentation skills and attributes, the four questions were retained but improvised as it appeared as “lead-in” questions. Instead of wording questions as “What are the essential elements…?” it was reworded as “In your opinion, what are the essential elements …?”. One question was worded as “What do you think…?”. Two questions were incorrectly organised and added to the query on presentation skills and attribute. There were four questions posed on this area.

There were five questions listed on communicative competence and language area. Four questions were retained. The question on “Are there other essential skills required in presenting effectively?” was considered redundant. A similar question was listed in the presentation and attribute. The questions were also improvised to eliminate “lead-in” questions. Questions were reworded as “What is your comment on…?” instead of “What about the language input…?”.

The two questions posed on challenges were retained. Two questions were listed for solution purposes. As a result of the pilot study, the final student interview question list comprised 19 interview questions (see Appendix F: Student Interview Question).

3.8.1.3 Observation of student presentation

The researcher contacted the Program Head of the Mechanical Engineering program (with the highest number of student presentations) and requested permission to sit in as a detached observer for two upcoming student presentations. The reason for the said choice is due to the venue of the presentation. One was in a lecture hall while another was in a lecture room.

The researcher was required to obtain permission from the lecturers and engineers concerned. Permission was granted by the lecturers and engineers and student to observe and video-tape the student's presentation. In prior conversations with the technical oral presentation coordinator, it was revealed that students were given a 30 minute slot for a presentation. Students were required to present for 20 minutes and this was followed by a 10 minute critique session with the panel of lecturers and engineers.

The first observation was conducted in a lecture hall. The lecture hall was designed with descending steps to the presentation stage. The student would be standing at the presentation stage or near the computer situated at the left of the stage. A fellow presenter might assist the presenter in clicking on the presentation slides. In lecture rooms (being a smaller venue), presenters would personally manage the presentation.

The researcher would begin recording when a student begun the presentation. While a student was presenting, the researcher would focus on the student. Recording would be less static during the critique session. The researcher would focus on the question answer or critique session of the presentation.

Upon immediate completion of a recording, the researcher would briefly note points of concern raised by the lecturers, engineers and students overall response during the critique session. The recording was downloaded to the researcher’s laptop. Few technological challenges like audibility of student voice were noted. The researcher needed to ensure that the volume on the camera recorder was set to full for future observation purposes.

3.8.2 The Engineer

This section describes the pilot study on questionnaire and interview conducted with engineers. A description of the sample size, piloting of both research instruments and recommended amendments is provided.

3.8.2.1 Questionnaire

The researcher was interested to seek the views of engineers from the professional engineering community. The researcher contacted the Human Resource Manager of the national petroleum company and requested for assistance to provide a list of about 10-15 names for the said purpose. The only research criterion was engineers who acted as external lecturers for the said batch of students in the university.

The researcher was provided with a list of 10 names of engineers who were also engaged as external lecturers for the students. Five engineers responded and provided their feedback on improving the questionnaire. This sample size is considered reliable measurement in mixed method design (Stewart et al., 2008). Engineers were provided two weeks to provide their feedback on the pre-test.

Feedback on format and layout was received and improvised in the final questionnaire. The engineer suggested categorizing the likert scale items to various constructs. As the initial questionnaire consisted of 7 pages, it was suggested to minimize to 6 pages in view of employers' hectic work pace and limited time available to answer the questionnaire.

The engineer did not comment on the need to change any technical jargon used in the questionnaire. The suggestion on visual presentation and categorization of ideas was incorporated in the final set of questionnaire for engineers (see Appendix C on Engineer Questionnaire).

3.8.2.2 Interview

Before the set of interview questions were sent to the engineers, the researcher consulted a fellow engineer on the initial draft for "ambiguities, misunderstandings, or other adequacies" (Ary, Jacobs, & Razavieh, 1996, p. 453). The same pool of five engineers who responded for the questionnaire pre-test was requested to provide their feedback to the interview questions. The engineers provided their consent and shared their willingness in providing their critique.

The interview questions comprised similar concerns as expressed in the students' interview pilot study but incorporated workplace relevance and evaluation criteria. The interview questions for engineers focused on (a) workplace communicative events, (b) technical oral presentation and experience, (c) presenter skills and attributes, (d) communicative competence requirements, (e) challenges in enhancing communicative competence, and (f) improvements in evaluation criteria and student presentation ability (see Appendix F, Appendix G, Appendix H and Appendix I).

The initial draft of 25 questions was sent to the engineers. The engineers were provided a week to provide their responses to the researcher. The engineers provided suggestions for elimination of certain questions which were considered repetitive and organisation of questions to ensure coherence in subject matter. 5 questions were eliminated as considered repetitive. Two questions (Questions 7 and 8) were merged as one question.

In the initial draft, the questions "Do engineers have to be involved in a lot of oral communication activities?" and "What types of oral communication activities are expected of engineers?" implied the same meaning. These two questions were dropped. The questions on workplace communication activities were merged as one. The questions written as "What are the types of technical oral presentations expected of engineers?" and "Are there different types of presentations conducted by engineers of different levels?" were merged as one question.

The improvisations were done and necessary changes were done to the final set of interview questions. The final revised set of interview questions for the engineers was reduced to 19 questions and rearranged to fit queries based on the said areas of concern (see Appendix H on Engineer Interview Question).

3.8.3 The Lecturers

The lecturers contributed to the qualitative phase of the study. The lecturers were involved as research participants in the interviews. Five senior lecturers were indicated as key focal persons by the registry section of the university. The lecturers were selected from the panel of final year project selection committee. These lecturers held positions as Head of the final year project selection committee. In addition, three other senior lecturers who acted as internal lecturers and engineers were recommended to comment on the initial draft of interview questions.

3.8.3.1 Interview

The initial draft comprised 25 questions. The researcher received comments on organisation questions and redundancy of certain questions. For example, the questions "What do you think are the essential skills criteria that are required for the FYP2?" was retained but the question on "What are the essential elements a student must possess to be an effective presenter?" was eliminated.

Another comment was on reorganisation and grouping of similar questions. In the initial draft, questions were dispersed throughout and not arranged systematically. For example, one of the interview questions was listed as part of communicative competence requirement but was later reorganised as part of the content dimension requirement. In addition, the evaluation criteria dimension was added as part of the interview questions.

Thus, in the final draft of interview questions for lecturers, the domains of inquiry focused on a) presentation skill and attribute, b) communicative competence requirement, c) content requirement, d) evaluation criteria, e) challenges, and f) suggestions. The final set of interview questions comprised 19 questions (see Appendix G on Lecturer Interview Question).

3.8.4 The Language lecturers

For the purpose of the study, the researcher sent an email to 13 staff of the department. The researcher received feedback from 3 language lecturers. These language lecturers expressed their willingness to be part of the pilot test of the interview questions. These lecturers fulfilled the researcher criteria as they had provided presentation input in the cohorts' foundation years.

3.8.4.1 Interview

There were 20 interview questions listed in the initial draft of the questionnaire. The language lecturers commented on the need to include certain specific terms when in reference to participants' area of specialisation. A question was omitted as considered repetitive.

In the final draft of interview questions, the domains of inquiry focused on a) technical oral presentation and experience, b) communicative competence requirement, c) presenter skills and attribute, d) challenges, and e) suggestions. The final draft of interview questions was reduced to 19 questions (see Appendix I on Language lecturer Interview Question).

3.9 Main Study

Following the pilot study, students and engineers were selected as the pool of research participants for the survey in the main study. The students and engineers were selected as initial participants of the study to gauge stakeholders' perception of communicative competence requirement in technical oral presentation.

Subsequent to the statistical analysis of the students' and engineers' responses to the said questionnaire, qualitative analysis was required to investigate certain results attainable in the quantitative data. In the second phase of the study, interviews were conducted among selected students, engineers, lecturers and language lecturers to gain multiple perspective of participants involved in technical oral presentations. Observations and use of written documents such as students' evaluation task sheets were utilised in the second phase of the study. Such research tools were required to provide feedback to uncertain ambiguities as a result of the quantitative study.

The following sections provide an explanation how questionnaires were distributed among students and engineers. It also describes the qualitative data (interviews, observation, written documents of students' evaluation task sheets) gathered from the students, engineers, lecturers and language lecturers at the research site.

3.9.1 The Students

The students were involved in both the quantitative (questionnaire) and qualitative (interview) phase of the study.

3.9.1.1 Questionnaire

All final year engineering students were registered for a course titled "Engineering In Society". The researcher communicated with the lecturer of this course and obtained permission to utilise one of the class sessions. The researcher was not personally involved in the distribution but requested the help of a colleague for dissemination purposes. The finalized version of the questionnaire was distributed to all students present. All students were required to return their questionnaires at boxes placed at the entrance of the hall prior their exit.

The students took approximately 20 minutes to complete the questionnaire. Students who had completed the questionnaire then dropped the questionnaire in the boxes provided at the exit of the hall. Out of 275 questionnaires, 87.2% of the questionnaires were returned successfully. Student quantitative data were statistically analyzed to indicate the importance in agreement to items listed in the questionnaire.

3.9.1.2 Interview

The researcher obtained names of possible student interviewees from the list of final year engineering project schedule provided by the project coordinator. The 26 students selected as interviewees were final year engineering project students from the said cohort (see Appendix D). The students fulfilled the research criteria as they had been exposed to the presentation input and had participated in the questionnaire survey.

The researcher approached a few students who had just completed their final year project session at presentation venues at the research site. In the initial query, three students provided their willingness to share input on competency requirement in technical oral presentations. Contact was established and the researcher obtained an 11% response rate from the total population of 240 students. The researcher was able to interview 26 students as research participants (see subsection 3.8.1.2). The researcher wrote brief notes in a log-book after each interview session with the students. Follow up contact was established with selected students if clarification was required.

3.9.1.3 Critique session

To obtain data on the student presentation critique session, the researcher elicited the permission of the Program Head for respective engineering programs on the purpose of the study. The researcher requested the permission of Program Heads to send emails to lecturers and engineers who were involved as examiners in the final year project.

Once the said email was sent, the researcher would follow up with personal requests with the lecturers and engineers. In some cases, where students and lecturers and engineers were not willing to be video-taped by the camera recorder, the researcher would not intrude in such presentation sessions. Instead, the researcher would then seek assistance with other lecturers and engineers. By this way, the panel of examiners and students' were well informed of the researchers' presence at the presentation venue and video recording as a detached observer was not considered obtrusive.

The researcher was able to record 16 student presentation sessions that lasted 20 minutes each with a 10 minute session for question and answers (see Appendix K on Technical Oral Presentation Observation Sheet). The researcher would begin recording the entire student presentation although focus was emphasised on the question and answer session. The researcher would write brief notes of lecturers' and engineers' comments after each student presentation session for data reference purposes.

3.9.2 The Engineers

The engineers were involved in both phases of the study. 66 engineers were required to provide their responses to the questionnaire. Following the quantitative data findings, 12 selected engineers were interviewed to gain a perspective from the engineers' view (see Appendix D). Only engineers who fulfilled the role as external lecturers and engineers for final year engineering projects were selected in the study.

3.9.2.1 Questionnaire

66 engineers participated in the actual study, from a pool of 80, indicating a response rate of 82.5%. These engineers played the role as external lecturers and engineers for the said cohort of students and were chosen to participate in the study. The questionnaire was emailed to the engineers due to logistics constraint. The engineers were employed in various companies and had demanding travel commitments. As such the most appropriate means of obtaining questionnaire feedback was by email. This enabled the engineers to provide their response when they returned from their travel.

In cases where the engineers were unable to provide their immediate response, the engineers requested for another time frame. Deliberation on a new date was fixed to meet the engineers' time frame. For the purpose of this study, the researcher provided the engineers with a suggested time frame of three weeks to provide their answers. All responses by the engineers were later statistically tabulated and analyzed to verify the agreement on level of importance to variables listed in the questionnaire.

3.9.2.2 Interview

The engineers selected for the study were procured from the pool of 66 engineers who provided their response to the questionnaires. The list of 66 names was obtained from the initial list of 80 names provided by the coordinator of the technical oral presentation. The 66 engineers were the participants who indicated their willingness to be part of the survey respondents. The researcher corresponded by email with the 66 engineers.

12 engineers indicated their willingness to be interviewed. The 12 engineers met the researchers' criteria of meeting a minimum of 5 years of working experience (see Appendix D). This requirement was also required by the university prior the engineers' appointment as external lecturers in the students' technical oral presentation. The 12 engineers who responded fulfilled the researcher's criteria as external examiners to the said cohort of students.

The researcher scheduled interview session appointments prior the engineer's schedule as an external examiners for the students' presentation at the research site. The researcher would firstly reconfirm the engineer's evaluation session as set by the university. Upon confirmation by the engineer, the researcher would slot in a preferred hour after the lecturers' and engineers' evaluation session for a tape-recorded interview session. The researcher conducted similar interview session appointments with the remaining engineers.

In order to ensure that the scheduled interview appointments were conducted within the engineers' limited time on the research site, the researcher would seek the use of nearby empty rooms prior to the interview appointment. If bookings of such venues were required, the researcher would officially make a request with the relevant staff and book the required venue for three to four hours, depending on the number of interviewees scheduled for the appointed interview session. Booking of such venues were required to ensure minimal interruption during the audio recording of an interview session.

Follow up interviews were held with selected engineers to clarify certain technical terms. Qualitative feedback from all 12 engineers were transcribed and quantitatively analyzed by the use of Qualitative Software Research or QSR NVivo 8, a software program to analyze qualitative data.

3.9.3 The Lecturers

The lecturers were involved in the qualitative phase of the study. In other words, they participated only as interview participants. Names of lecturers were provided by the program coordinator. Email was sent to the 46 lecturers. The researcher received a response from 13 lecturers who were willing to share their feedback on the said notion (see Appendix D).

3.9.3.1 Interview

Interview sessions were conducted with the 13 lecturers at their office rooms at a set time and date agreed by the interviewees and researcher. In cases, where lecturers were unable to make it for the interviews due to unexpected work obligations, another date and time would be arranged. All interviewees were provided with the interview consent form which indicated the consent of both researcher and interviewee prior an interview session.

Interview sessions lasted for 40 minutes to 1.5 hours. This depended on the extent of the interviewees' feedback and experience. Two follow up interviews would be held with selected lecturers if the researcher was in doubt over certain responses. Qualitative feedback from all 13 lecturers were transcribed and quantitatively analyzed by the QSR NVivo 8, a software program to analyze qualitative data.

3.9.4 The Language lecturers

The language lecturers were involved in the qualitative phase of the study. In other words, they were only involved as interview participants. The researcher sent an email to the 9 staff in the language unit of the management and humanities department of the university. These lecturers fulfilled the researcher's criteria as they had provided presentation input to the said cohort of students.

3.9.4.1 Interview

The researcher received a response from 6 language lecturers. All language lecturers were informed of the purpose of the interview session and that all sessions would be tape-recorded for transcription purposes. Interviews would be conducted in a scheduled venue agreed by both the interviewee and researcher.

In some cases, the interviews were held in the interviewees' office or the researchers' office. In cases where the interviews are held in the researchers' office, the researcher would disengage the phone to ensure that no interruption occurred during the interview session. Interviews lasted for 1 hour to 1.5 hours depending on the experiences shared by the interviewees. In cases where the interviewees were unable to express a certain point, the researcher would either provide a prompt or rephrase the question to enable the interviewees to provide their responses.

The researcher would use phrases like, "I see, and when you say this, do you actually mean that ….", "I see, is this applicable to all?" or "Why do you think this is so?" Other phrases to prompt interviewees would be, "In your opinion, what are some features…?" Through this way, the interviewees were able to express themselves freely as views provided are based on their opinion. The researcher would conduct follow up sessions with selected language lecturers to clarify certain responses if in doubt. All interview sessions were then later transcribed and qualitatively analyzed using QSR NVivo 8 program.

3.9.5 Written comments: Students' evaluation task sheets

The researcher communicated with Program Heads of all engineering programs to obtain permission to utilise lecturers' and engineers' evaluation forms in confidence for the qualitative phase of the study. The researcher revealed that the names or individual scores would not be revealed. Instead, focus would be on the linguistic comments provided by the lecturers and engineers in the students' evaluation task sheets.

After permission was granted to gain access to the evaluation task sheets, the researcher sought the help of technical oral presentation coordinators to provide the relevant files on the lecturers' and engineers' evaluation sheets of the students' presentations. Among the comments mentioned by the lecturers and engineers include "lack of interpretation, lack of clear explanation on methodology of procedure taken, inaccurate conclusion, and inconsistent presentation flow" (see Appendix L, Appendix M and Appendix N).

The researcher thematically analyzed the said responses and used the QSR NVivo 8 for statistical analysis purposes. These views were tabulated as evidence of linguistic and rhetorical challenges provided by lecturers and engineers on the students' technical oral presentations.

3.10 Data Analysis

The following section describes the series of analysis applied to quantitative and qualitative data of the study.

3.10.1 Pre-testing

Before finalizing and administering a questionnaire, "it is essential that the researcher test the instrument in order to identify ambiguities, misunderstandings, or other inadequacies" (Ary et al., 1996, p. 453). In the context of this study, the researcher applied Dillman's (2000) four stages of pre-testing the research instrument (questionnaire and interview question) prior to the actual study. The four stages advocated of pre-testing are: (a) Stage 1: Review by knowledgeable Colleagues and Analyst, (b) Stage 2: Interviews with non-research participants and write brief notes on comments provided, (c) Stage 3: A Pilot study, and (d) Stage 4: A Final Check with non-research participants. Methods and results of this four-stage process are outlined as follows in sequential order.

3.10.1.1 Stage 1: Expert review by colleagues and analysts

The first stage of pre-testing was to "elicit suggestions based on experience with previous surveys and knowledge of study objectives" to obtain feedback from people with diverse expertise (Dillman, 2000, p. 141). In the context of the study, the researcher consulted content expert (supervisor), and language and communication experts on the questionnaire and interview questions. The researcher also consulted two statistical experts to review the questionnaire.

a) Consultation with experts on questionnaire and interview questions

The researcher consulted two language and communication experts from the Management & Humanities department of the university. They were asked to provide comments on any problems that may have been overlooked. The researcher also consulted the content expert (supervisor) on the possible repetitions of statements or ideas posed in both student and engineer questionnaire.

Comments were provided on the format and items listed in the questionnaire. Feedback was also provided on the domains of inquiry listed in the set of interview questions used in the study. Comments were provided to group the questions according to the domain of inquiry to ensure clarity in the interview session. Questions were regrouped to improve the categorization of questions according to the inquiry.

b) Consultation with content expert on research site

Being a novice researcher, the researcher was initially unsure if the research site was to be workplace situated or located at the university. To ascertain this decision, the researcher together with the content expert conducted an initial exploratory study in a workplace organisation on employers expectations of presentations (Bhattacharyya & Sargunan, 2007).

Challenges such as limited accessibility to highly confidential workplace oral communication sessions and time constraint as a part-time researcher emerged during the said exploratory study. Discussions on the need to relook at the research site were held with the content expert. It was decided that the research site for the study be located in the university. The change in the research site enabled the researcher to conduct a case study with participants and stakeholders involved in technical oral presentations in the university.

c) Consultation with statistical experts

Along with the content expert, the researcher sought the help of two statistical research experts, a professor and a lecturer teaching quantitative survey research methods in the researcher's research university, to validate the constructs and design of the questionnaire.

3.10.1.2 Stage 2: Interviews to evaluate comments

The second stage of pre-testing was to ascertain whether the questionnaire items are interpreted in the same way by the research participants. In order to do this, the researcher approached a group of students from the business and management class. Two students volunteered as survey participants. These students were chosen as they fulfilled the researcher's criteria as being i) final year students, and ii) involved as presenters in the technical oral presentations. The survey participants were informed that that they could seek clarification if they faced with any doubt on the question items. This was clarified to the survey participants before distributing the questionnaire.

3.10.1.3 Stage 3: Pilot study

The questionnaire was piloted among selected students and engineers. Interview questions were pilot tested among selected students, engineers, lecturers and language lecturers in the university. Comments for suggested improvement were recommended before distributing the final set of questionnaire and interview questions.

3.10.1.4 Stage 4: Final check of the questionnaire

In this final step, consultation is carried out with a few persons who have no part in the development process to answer the questions and check for problems. In this study, three additional people from the business and management unit of the department were asked to review the survey for wording or content problems. An error was spotted in the repetition of a certain item in the presentation dimension. It was removed in the final draft.

3.10.2 Validity and accuracy

Various analyzes were administered to both the quantitative and qualitative data. Reliability tests were administered to the adapted questionnaire preceding the actual dissemination of the questionnaire.

3.10.2.1 Quantitative data

Appropriate statistical tests were conducted to ensure that the quantitative data would attain the desired data (validity) and the instrument would be consistent in measuring the intended measurement (reliability) (Ary et al., 1996). The questionnaire went through a series of pre-testing and pilot test before the actual study. The questionnaire was verified by content expert to validate that items tested were content-related, criterion-related, and construct-related (Committee on Psychological Tests and Assessment American Psychological Association, 1996).

Statistical Package for Social Science or SPSS version 11.5 (2002) research was used to analyze the data quantitatively. The quantitative data from the survey was coded for statistical analysis into a database, and analyzed. Statistical procedures include descriptive statistics for various items in the questionnaire to examine overall frequencies (totals, percentages, mean values, standard deviations and Mann Whitney U test). Reliability and validity tests were also administered to the 65 items in the survey questionnaire. Pie-charts and graphs were also statistically analyzed by the use of the said software.

Statistical tests are necessary to provide the required descriptive and inferential statistics to test the reliability and validity of questionnaire items in the current study (Creswell, 2008). Statistical test is used "when comparing groups or relating variables, making predictions about variables and testing hypotheses that make predictions" (Creswell, 2008, p. 190). In this investigation, comparison of variable items can be made between the students and the engineers. Upon consultation with a statistical expert and readings on statistical data, it was decided that for the purpose of this study, the statistical test used is the Mann-Whitney U test. Mann-Whitney U test is used to obtain possible significant statistical similarities and/or differences (if any) to the quantitative findings in the study.

Mann-Whitney U test is applied to the quantitative data for both student and engineer questionnaire to determine the reliability and validity of the items and infer possible data analysis (thick description analysis) for the study (Palaniappan, 2007). Quantitative data were cleaned and screened for outliers and errors before calculating descriptive and advanced statistics.

Statistical literature indicates that parametric alternative tests include non-parametric technique (such as Mann-Whitney U test), which according to Pallant, is commonly referred as "distribution-free tests and are free from assumptions of underlying population distribution" (Pallant, 2007, p. 210). Pallant justifies that such non-parametric techniques (an alternative to t tests for independent samples) are ideal to "test for differences between two independent groups on a continuous measure" (Pallant, 2007, p. 220). Palaniappan adds that Mann-Whitney U tests "are utilised for comparison of a nominal or ordinal variable between two groups" (translated, Palaniappan, 2009, p. 163).

In this study, inferential statistical analysis (Kolmogorov-Smimov Z) normality distribution was conducted to all 65 likert scale items of the study total population of students and employers (N=306). This revealed non-normal distribution curve as Kolmogorov-Smimov test of normality distribution showed significant difference of <

0.005. Thus, non-parametric test such as Significant Mann-Whitney U test which is given as Asymp. Sig (2 tailed) was utilised as an alternative to the parametric technique (Pallant, 2007).

3.10.2.2 Qualitative data

The internal validity (the extent to which result findings are congruent with reality) and reliability (consistency of findings) of qualitative research can be enhanced by various strategies. Among the strategies include member validation or member checks and triangulation. Triangulation strengthens reliability as well as internal validity. The researcher also adopted Creswell's (2003) generic process of data analysis in analyzing qualitative data.

a) Member validation

To ensure the accuracy or credibility of qualitative data, the researcher utilised various strategies such as "member validation or member check and triangulation" to validate the content of the data (Creswell, 2008, p. 266). Member validation allows "qualitative researchers the accessibility to verify their findings with the participants" (Boeije, 2010, p. 177).

In this study, member validation was utilised at various stages of qualitative data analysis to ensure accuracy and credibility of qualitative data findings. The researcher contacted selected students, lecturers, language lecturers and engineers to view the transcriptions. Discrepancies in certain technical terminologies were resolved. In cases where the researcher was unsure over certain responses, follow up loosely structured interviews were held to clarify such ambiguities.

Credibility is ascertained when “members of the social world that was studied confirm that the researcher has correctly understood that social world” (Boeije, 2010, p. 177). Verification of “transcribed interviews and field notes indicates a direct test of the reliability of the observation as any misunderstandings and selections that may have taken place can be removed at this time” (Boeije, 2010, p. 177).

b) Triangulation

Triangulation or convergent validation refers to the process of corroborating evidence from different individuals, types of data, or methods of data collection in the description and thematic analysis of qualitative research (Creswell, 2008, p. 266). Triangulation enables a researcher to confirm the emerging findings (Merriam, 1998). Denzin (1978) mentions that triangulation can broadly be defined as “a combination of methodologies that study the same phenomenon” (Denzin, 1978, p. 291).

In this study, different sources of data (surveys, interviews, observation and written documents of students’ evaluation task sheets) were triangulated to find evidence to support various constructs and themes that constitute the notion of communicative competence. This ensures the accuracy of a study as multiple sources are used to support a quantitative or qualitative finding.

The items listed in the questionnaire were triangulated with qualitative thematic analysis obtained from multiple sources such as interviews, critique sessions and written evaluative comments in evaluation task sheets. Findings from each research instrument were triangulated to substantiate the accuracy of data findings. In this sense, quantitative and qualitative data can be viewed as complementary rather than “rival camps”.

In this study, both quantitative and qualitative findings aim to provide feedback to the various research questions posed on the notion of communicative competence as held by selected stakeholders. The quantitative findings aim to provide feedback to Research Questions 1 and 2. The qualitative findings as obtained from the remaining three research questions aim to provide an insight to communicative competence features and with specific focus on linguistic and rhetorical dimension. Both the quantitative and qualitative findings are aimed to provide feedback to the five research questions posed in the study and eventually to address the central research question.

c) Generic Content Analysis

In the context of this study, the researcher adopted Creswell’s (2003) generic process of data analysis for analyzing qualitative data whereby the generic process of data analysis includes six main steps like “organizing and preparing the data, reading through all data, coding, narrating descriptions and themes, and interpreting data” (Creswell, 2003, pp. 191-195).

d) Coding by NVivo Analysis

The NVivo QSR 8 program was used for qualitative data analysis. Qualitative analysis begins with coding by dividing the text to small units (phrases, sentences, paragraphs), followed by "labeling the exact words of the participants (or referred to as in vivo coding process) either by hand or electronically by software data analysis program" (Creswell & Clark, 2007, p. 132).

In the context of this study, the researcher utilised the software to analyze primary and secondary coding followed by analyzes of themes. The researcher was able to provide quantitative analysis to qualitative data. The researcher was able to enumerate the significance of qualitative data to the group of students, engineers, lecturers and language lecturers.

3.11 Data Administration Procedure

The following sections provide details of the data collection procedure for the survey questionnaire and interview questions set for the students, engineers, lecturers and language lecturers. The researcher utilised Dillman's approach (2000) for both student and engineer questionnaire data administration.

3.11.1 Students' survey questionnaire administration

The following Table 3.23 on "Students' survey questionnaire administration" summarizes the procedure for the questionnaire administration and distribution.

Table 3.23: Students' survey questionnaire administration

TIMELINE	PROCEDURE	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **June 2007** Exploratory study	Literature Review and Primary Data on Evaluation of Project Presentation Questionnaire and Interview	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents Questionnaire among 200 students who just returned from industrial experience; interview with selected employers at a national oil company.
November 2007 - March 2008 Phase 1:Pre-test 5 students Pilot Study: 40 students	Drafted questionnaire. Interview students and colleagues to comment on the items listed. Students would provide comments on items and layout.	Seek feedback from expert opinions. Too many questions and sections as critiqued by students and colleagues. Some items required clarification and one error in repeat item. Too many headings and decide to merge certain sections to finally derive five sections.
April 2008 Phase 2: Actual study 275 students	Pilot study students were not included in the study.	Received 240 completed questionnaires; approximately 87.2% response rate completed the study.

3.11.2 Students' interview questions administration

The following Table 3.24 on "Students' interview question administration" summarizes the procedure undertaken by the researcher. A list of interviewee details is provided in Appendix D.

Table 3.24: Students' interview questions administration

TIMELINE	PROCEDURE	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **March 2008** 5 students	Literature Review and Primary Data on Evaluation of Project Presentation. Interview at research site. Comment on interview questions.	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents. Students provide comments to regroup and rephrase questions for clarity purposes.
March 2008 Phase 1:Pre-test 5 students Pilot study: 5 students	Drafted interview question. Wrote comments provided by students. Wrote comments by students.	Seek feedback from experts. Regrouped and organised questions to domain of inquiry. Final set of interview questions were prepared.
June – July 2008 Phase 2: Actual study 26 students	Students recommended other willing participants.	Interviewed 26 students; approximately 11% response rate completed the study.

3.11.3 Engineers' survey questionnaire administration

As similar questionnaire items were utilised for the engineers. Table 3.25 indicates "Engineers' survey questionnaire administration".

Table 3.25: Engineers' survey questionnaire administration

TIMELINE	PROCEDURE	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **December 2007** 2 lecturers from the academic engineering faculty **March – April 2008** Phase 1: Pilot study – 5 engineers	Literature Review and Primary Data on Evaluation of Project Presentation. Interview. Survey questionnaire sent via email requesting feedback and comments from 5 engineers who volunteered.	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents. Interviewed 2 focal persons - provides feedback on final year engineering project evaluation procedure, time line and requirements. Received format comments, editions were made to final draft questionnaire prior dissemination.
May – June 2008 Phase 2:Actual study 66 engineers	Survey questionnaire sent via email requesting feedback to 80 engineers.	66 engineers responded to the questionnaire after follow up email. Some participants required longer response time as were away from office.

3.11.4 Engineers' interview questions administration

The following Table 3.26 on "Engineers' interview questions administration" summarizes the procedure undertaken by the researcher.

Table 3.26: Engineers' interview questions administration

TIMELINE	PROCEDURE	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **December 2007** 2 engineers from the engineering industry	Literature Review and Primary Data on Evaluation of Project Presentation. Interview.	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents. Interviewed 2 focal persons - provides feedback on final year engineering project evaluation procedure, time line and requirements.
November 2007 - March 2008 Phase 1: Pilot study: 5 engineers	Drafted interview question. Interview and write comments provided.	Seek feedback from experts. Regrouped and organised questions to domain of inquiry. Final set of interview questions were prepared.
June – July 2008 Phase 2: Actual Study 12 engineers	Individuals willing and volunteered to be participants.	Interviewed 12 engineers; approximately 18% response rate completed the study.

3.11.5 Lecturers' interview questions administration

The following Table 3.27 on "Lecturers' interview questions administration" summarizes the procedure undertaken by the researcher.

Table 3.27: Lecturers' interview questions administration

TIMELINE	PROCEDURE	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **December 2007** 2 lecturers from the academic community	Literature Review and Primary Data on Evaluation of Project Presentation. Interview.	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents. Interviewed 2 focal Person - provides feedback on final year engineering project evaluation procedure, time line and requirements.
November 2007 - March 2008 Phase 1: 5 Lecturers Pilot study: 5 Lecturers	Drafted interview question. Write comments provided by participants.	Seek feedback from experts. Regrouped and organised questions to domain of inquiry. Final set of interview questions were prepared.
August –September 2008 Phase 2: Actual Study 13 Lecturers	Individuals willing and volunteered to be participants.	Interviewed 13 lecturers; approximately 28% response rate completed the study.

3.11.6 Language lecturers' interview questions administration

The following Table 3.28 on "Language lecturers' interview questions administration" summarizes the procedure undertaken by the researcher.

Table 3.28: Language lecturers' interview questions administration

TIMELINE	PROCEDURES	RESPONSES
January 2006 till March 2008 Background Study prior to Phase 1 **December 2007** 2 participants from the academic community	Literature Review and Primary Data on Evaluation of Project Presentation. Interview.	Literature from Primary data such as Public Speaking Books, Technical Communication Text, University Documents Interviewed 2 focal Person - provides feedback on final year engineering project evaluation procedure, time line and requirements.
November 2007 - March 2008 Phase 1: 5 language lecturers Pilot study: 5 language lecturers	Drafted interview question. Write comments provided by participants.	Seek feedback from experts. Regrouped and organised questions to domain of inquiry. Final set of interview questions were prepared.
August – September 2008 Phase 2: Actual study 6 language lecturers	Individuals willing and volunteered to be participants	Interviewed 6 language lecturers; approximately 46% response rate completed the study.

3.12 Overview of Quantitative and Qualitative Phase and Research Questions

This section provides an overview of the mapping of the quantitative and qualitative data toward providing feedback to the research questions. The inclusion of different focal groups at different phases of the study allows the researcher to probe the data findings on communicative competence in technical oral presentation by different COP in an ESL context. In addition, the design provides a generalizable data as well as experiences and interactions of the participants from the academia and professional engineering community in the Asian region.

In this study, Research Questions 1 and 2 are mapped to the quantitative findings obtained in the survey questionnaire. Findings to Research Questions 3 and 4 are elicited through the qualitative phase by use of interview questions. With Research Question 5, the findings are obtained from the use of supporting documents such as the written comments provided as well as critique provided by lecturers and engineers during the students' oral presentation sessions. Eventually feedback from all research questions is aimed toward answering the central research question.

Figure 3.6 on Visual Representation of Research Questions with Research Instruments provides an overall representation of the research methodology of the study where mapping of research questions to the type of research instruments are used at different phases of the study.

RESEARCH METHODOLOGY:
MAPPING RESEARCH QUESTIONS WITH RESEARCH INSTRUMENTS

RQ1: What are the students' perceptions of communicative competence requirement in technical oral presentation?

a. What are the students' perceptions of presentation skills required in technical oral presentation?
b. What are the students' perceptions of attributes required in technical oral presentation? **(QN)**

RQ2: What are the engineers' perceptions of communicative competence requirement in technical oral presentation?

a. What are the engineers' perceptions of presentation skills required in technical oral presentation?
b. What are the engineers' perceptions of attributes required in technical oral presentation? **(QN)**

RQ3: What are the lecturers' and language lecturers' perceptions of communicative competence requirement in technical oral presentation?

a. How similar are they in their perceptions of presentation skills and attributes required in technical oral presentations?
b. How different are they in their perceptions of presentation skills and attributes required in technical oral presentations? **(QL)**

RQ4: What are the stakeholders' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

a. How similar are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?
b. How different are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations? (**QL)**

RQ5: In practice, what do lecturers and engineers consider as essential linguistic and rhetorical features necessary for successful technical oral presentations?

a. In practice, how similar and different are the selected lecturers' and engineers' critique on linguistic and rhetorical features necessary for technical oral presentations?
b. In practice, how similar and different are the selected lecturers' and engineers' written comments on linguistic and rhetorical features necessary for technical oral presentations? **(QL)**

PHASE 1: QUANTITATIVE PHASE:
(QN) QUESTIONNAIRE ITEMS

Presentation skills and attribute construct (13 items) **RQ1a, RQ2a**

Behavioral Skills and attribute construct (9 items) **RQ1b, RQ2b**

Content Construct (Intro, While, Conclusion stage) (25 items) **RQ1a, RQ2a**

Language Competency Construct (8 items) **RQ1, RQ 2**

Non-Verbal Skills Construct (10 items) **RQ1b, RQ2b**

PHASE 2: QUALITATIVE PHASE:
(QL)
INTERVIEW QUESTIONS

Elements in Technical Oral Presentation **(RQ3)**

COP Presentation Skills and Attribute Requirement **(RQ3)**

Language and Content Dimension **(RQ4)**

Challenges **(RQ4)**

Suggestions **(RQ4)**

PHASE 2: QUALITATIVE PHASE:
(QL) SUPPORTING DOCUMENTS

Written comments and critique session **(RQ5)**

Figure 3.6: Visual Representation of Research Questions and Research Instrument

3.13 Summary

This chapter described the methodological approaches, ethical consideration, data collection methods and procedures, data analyzes, and reliability and validity issues. It provides a description of the participants, analytical framework and data administration procedure carried out at various phases of the study. Multiple sources of data are required to triangulate the quantitative and qualitative data which aim to provide feedback to the research questions posed in the study.

CHAPTER 4

FINDINGS OF THE QUANTITATIVE DATA

4.0 Introduction

The quantitative phase of this study study seeks to understand stakeholders' views on communicative competence following Celce-Murcia's model of communicative competence (2007) which focuses on five sub-sets of competence constructs, namely, presentation skills and attribute construct (strategic and socio-cultural competence), behavioral skills and attribute construct (strategic and interactional competence), content construct (linguistic and discourse competence), language competency construct (linguistic competence) and non-verbal skills construct (interactional competence), necessary to enhance the said notion in technical oral presentations.

The rationale for the stakeholders' selection stems from the apparent lack of global consensus on the operational definition of communicative competence (Bhattacharyya, 2012; Lailawati Mohd. Salleh, 2008). In addition, the continued academia-industry practitioner divide on students' communicative competency of prospective graduates necessitate the need to conduct the study. In this context, students and engineers are selected as participants for the survey questionnaire as they are the end users of such competency requirement.

4.1 Research Objective

To ascertain the stakeholders' perception of communicative competence requirement in technical oral presentations, the researcher embarked on a mixed methods research design. Qualitative data findings are followed in sequence to explain certain quantitative findings. The initial phase of the study included a survey questionnaire distributed to students from the Research University and engineers of a national oil company. The engineers perform dual roles as they are professionals within the engineering community and external examiners for the said students' presentations. This chapter will elaborate the quantitative data obtained in response to Research Questions 1 and 2 as perceived by the students and engineers.

4.2 Research Questions 1 and 2

As part of the initial phase of data collection to ascertain the communicative competence perceptions held by stakeholders (students and engineers), the central research question is listed as follows,

"What are the stakeholders' perceptions of communicative competence requirement in a technical oral presentation?"

To ascertain generalizable results of the end-users involved in technical oral presentations, students and engineers were required to provide feedback to five sub-sets of communicative competence. As mentioned the five sub-sets of communicative competence constructs include presentation skills and attribute construct, behavioral skills and attribute construct, content construct, language competency construct and non-verbal skills construct. The competencies were worded accordingly for ease of participants' understanding. The research questions are,

1. What are the students' perceptions of communicative competence requirement in technical oral presentation?
   a. What are the students' perceptions of presentation skills required in technical oral presentation?
   b. What are the students' perceptions of attributes required in technical oral presentation?

2. What are the engineers' perceptions of communicative competence requirement in technical oral presentation?
   a. What are the engineers' perceptions of presentation skills required in technical oral presentation?
   b. What are the engineers' perceptions of attributes required in technical oral presentation?

The following section provides the descriptive and inferential analysis of both the students' and engineers' feedback in relation to the research questions posed in the study. The findings will initially discuss the students' findings followed by the engineers' findings.

4.3 Perceptions of Students and Engineers' on the sub-sets of communicative competence constructs in Technical Oral Presentation

The subsequent section elaborates the said groups' perceptions toward specific communicative competence items listed within five constructs in technical oral presentations. The five constructs (presentation skills and attribute, behavioral skills, content, language competency and non-verbal skills) with specific descriptive items were itemized as likert scale statements for both sets of students and engineers questionnaire (see Appendix B and C).

Statistical analysis was utilised to analyze the validity and reliability of items within each construct. Table 4.1 on "Cronbach Alpha Values of Each Construct by Students and Engineers" displays the students' and engineers' indication toward the communicative items listed within the five constructs.

Table 4.1: Cronbach Alpha Values of Each Construct (Students and Engineers)

CRONBACH ALPHA VALUES OF EACH CONSTRUCT BY STUDENTS AND ENGINEERS					
CONSTRUCT	**PRESENTATION SKILLS AND ATTRIBUTE CONSTRUCT (13 items)**	**BEHAVIORAL SKILLS AND ATTRIBUTE CONSTRUCT (9 items)**	**CONTENT CONSTRUCT (25 items)**	**LANGUAGE COMPETENCY CONSTRUCT (8 items)**	**NON-VERBAL SKILLS CONSTRUCT (10 items)**
STUDENTS (N=240)	0.84	0.85	Introduction: 0.87, While presentation: 0.87, Conclusion: 0.79.	0.88	0.88
ENGINEERS (N=66)	0.88	0.87	Introduction:0.87, While presentation: 0.90, Conclusion stage :0.90.	0.95	0.93

Quantitative statistical findings reveal alpha values ranging from 0.79 to 0.93. Alpha values recorded higher than 0.6 value can be noted as reliable items (Hair, Anderson, Tatham, & Black, 1998; Malhotra, 2004). Table 4.1 reveals the scales recorded by the students and engineers indicating the reliability of the items. Reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the "goodness" of measure" (Sekaran, 2003, p. 203).

The overall statistical findings of the five constructs suggest that both students and engineers attest reliable alpha values to the listed items deemed essential in technical oral presentations. Both groups of students and engineers indicate reliability and validity of the communicative items listed within the said constructs. Students recorded an 80% response while engineers indicated 82.5% response rate. Engineers have accorded a higher reliability and validity of the said items in comparison to the students' response.

Descriptive statistics test was also applied to determine the mean rank of each item listed in the five constructs. Inferential tests (Mann-Whitney U test) were used to indicate possible significant difference of each item when comparing students and engineers' response to each likert scale item. According to Mcknight & Najab (2010), the Mann Whitney U test also known as the Wilcoxon rank test, tests for differences between two groups on a single, ordinal variable with no specific distribution (Mann & Whitney, 1947; Wilcoxon, 1945). In contrast, the independent samples t-test, which is also a test for two groups, requires the single variable to be measured at the interval or ratio level, rather than at the ordinal level, and be normally distributed.

The Mann-Whitney U test is referred to as the nonparametric version of the parametric t-test. The parametric t-tests and non-parametric test differs on the assumed distribution. When the data is not normally distributed or do not meet the parametric assumptions of the t-test, the Mann-Whitney U tends to be more appropriate (McKnight & Najab, 2010). In this study, the distribution was skewed to the right and not a normal distribution. As such the Mann-Whitney U test was used instead of the parametric t-test (Palaniappan, 2009). The following subsections provide a statistical analysis of each likert scale item as listed in the five constructs in both students and engineers' questionnaire.

The analysis would examine the following:

(a) the mean value of each presentation skills and attribute dimension as deemed important by the students;

(b) the mean value of each presentation skills and attribute dimension as deemed important by the engineers;

(c) possible significant difference of each presentation skills and attribute dimension between students and engineers.

As the researcher's objective was to identify the perceptions on notion of communicative competence of the two focal groups, only the mean was reported as it is the intention of the researcher to indicate the average and not rank of items between the students and employers' in the presentation skills and attribute dimension (Palaniappan, 2007). As such the median and *p* value are not reported in the analysis. Instead, what is reported is the mean for each construct and the significance of items within each construct.

Among the seven constructs in the Presentation and Attribute Dimension include Presentation Skills and Attribute Construct; Behavioral Skills and Attribute Construct;

Content Construct – Introduction Stage; Content Construct – While Presentation stage; Content Construct – Conclusion Stage; Language Competency Construct and Non-Verbal Construct.

4.3.1 Presentation Skills and Attribute Construct

For the mean on “presentation skills and attribute” construct (Table 4.2), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted which implies that both students and engineers agree on the requirements of the presentation skills and attribute construct. Both students and engineers indicate their agreement on the importance of the 13 items listed within the said construct required to achieve communicative competence in technical oral presentations.

This means that both students and engineers indicate agreement on stating the inclusion of presentation elements on purpose, scope, analytical ability, memorization skill, audience technical knowledge, audience non-technical knowledge, composure, organisation, time limit, anticipatory skill, clarify technical terms, humor and acceptance of criticism. This finding is in tandem with studies on presentation rubric in technical oral presentation (Bradney, 2000). Despite differences in legitimate peripheral participation, both students and engineers acknowledge the importance of such items for technical oral presentations.

Table 4.2: Mean for Presentation Skills and Attribute Construct

Presentation Skills and Attribute Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.07	0.418	7378.500	0.394
Engineer	66	4.07	0.533		

However, out of the 13 items listed in the presentation skills and attribute construct, only 7 items provided significant results (mean) while the remaining 6 items were considered not significant by the students and engineers. This means to say although both students and engineers agree on the importance of the said items within the said construct, statistical analysis reveal significant differences on individual items between students and engineers. The findings reveal that students are inclined toward strategic competence while engineers place higher emphasis on socio-cultural competence. This is in line to students' legitimate peripheral participation in an academic community while engineers are inclined toward client and customer needs (McDonald & Star, 2008).

The following discussion elaborates each significant and not significant item listed within the said construct as perceived by students and engineers. One of the significant items listed in the construct are the importance of "understanding the purpose of a presentation" (see Table 4.3). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.000. The findings indicate that there is significant difference between student and engineers on the importance of "understanding the purpose of a presentation".

Table 4.3: Understanding the Purpose of presentation

Purpose of presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.35	0.566	0.000
Engineer	4.70	0.554	

This implies that although the mean difference is quite close, the findings reveal that engineers compared to students consider "understanding the purpose of a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on "understanding the purpose of a presentation" compared to students.

The next significant item listed in the said construct is on "understanding the scope of a presentation" (see Table 4.4). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.000. This means that there is significant difference between students and engineers on the importance of "understanding the scope of a presentation".

Table 4.4: Understanding the Scope of presentation

Scope of presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.37	0.549	0.000
Engineer	4.68	0.559	

Although the mean difference between the students and engineers is quite close, engineers in comparison to students consider "understanding the scope of a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on "understanding the scope of a presentation" compared to students. Engineers in comparison to students consider the element "understanding the scope of presentation" to be more significant compared to students. The need to be brief, focussed and precise as key elements expected of engineers in the professional context (Sharma, 2007).

The next item considered significant in terms of the importance is to “possess analytical ability in a presentation” (see Table 4.5). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.010. This means that there is significant difference between students and engineers on the importance to “possess analytical ability in presentations”.

Table 4.5: Possess Analytical ability in presentation

Analytical ability in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.19	0.636	0.010
Engineer	4.39	0.699	

Although the significant difference is quite close, engineers compared to students regard the significance of the said item in enhancing communicative competence in technical oral presentations. Engineers indicate more significance to the said item to “possess analytical ability in a presentation” compared to students. This feature mirrors Celce-Murcia’s model of communicative competence which stresses on cognitive ability as an essential feature of strategic competence (Celce-Murcia, 2007).

The following item considered significant in the said construct is on the importance to “utilise memorization skill in a presentation” (see Table 4.6). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.002. This means that there is significant difference between students and engineers on the importance to “utilise memorization skill in technical oral presentations”.

Table 4.6: Utilise Memorization Skill in presentation

Memorization skill in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.55	1.009	0.002
Engineer	3.08	1.15	

As for this element, it is perceived to be more significant to the students compared to engineers in enhancing communicative competence in technical oral presentations. Students compared to engineers indicate more significance to the said item on the need to "utilise memorization skill in technical oral presentations" compared to engineers. This finding is indicative of students' knowledge construct and meta-cognitive strategy to acquire communicative competence in presentations (Passow, 2008). Memorization is a learning strategy significant among learners in the Asian region (Ande, 2011).

The next significant item listed in the said construct is on "awareness of audience technical knowledge" (see Table 4.7). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.015. This means that there is significant difference between students and engineers on the importance of "awareness of audience technical knowledge" in a presentation.

Table 4.7: Awareness of Audience Technical Knowledge in presentation

Audience Technical Knowledge in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.25	0.675	0.015
Engineer	3.91	0.972	

As for this element on "awareness of audience technical knowledge", it is perceived to be more significant to students compared to engineers in enhancing communicative competence in technical oral presentations. Students compared to engineers indicate more significance to the said item on “awareness of audience technical knowledge” compared to engineers.

The next significant item listed in the said construct is on “awareness of audience non-technical knowledge” (see Table 4.8). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.002. This means that there is significant difference between students and engineers on the importance of “awareness of audience non-technical knowledge” in a presentation.

Table 4.8: Awareness of Audience Non-technical Knowledge in presentation

Audience Non-Technical Knowledge in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.06	0.787	0.002
Engineer	3.65	0.984	

As for this element on “awareness of audience non-technical knowledge”, students perceive the said skill to be more significant compared to engineers. Audience analysis to the students is an important pre-requirement compared to engineers. In comparison to engineers, the said skill is perceived to be more significant to students in enhancing communicative competence in technical oral presentations.

Students consider this element more significant in comparison to engineers who indicate less importance to the said element. This reflects the need for students to be well-prepared for a varied type of audience (Bulca & Safaei, 2013). Students’ preparation is essential as their experiences is based on their legitimate peripheral participation in the academic community. Thus, students need to prepare for expected queries from the professional engineering community. For engineers, the preparedness is more holistic as it requires a presenter to be market driven, competitive over rival competitors and client centered (Venkatesan & Ravenell, 2011). The difference between students and engineers preparation can be likened to their experiences gained in the COP (Lave & Wenger, 1991).

The following item considered significant is the importance on "maintaining composure in a presentation" (Table 4.9). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.021. This means there is significant difference between students and engineers on the importance of "maintaining composure in a presentation".

Table 4.9: Maintaining composure in presentation

Composure in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.01	0.630	0.021
Engineer	4.18	0.821	

As for this element on "maintaining composure in a presentation", engineers perceive the said skill to be more significant compared to students. Maintaining composure is an essential competency requirement to the engineers as professionalism is an essential criteria when a presentation is challenged by queries from the audience. One needs to be composed to ensure a harmonious and cordial environment among the audience and presenter (Jarvis & Cain, 2003). In comparison to students, the said skill is perceived to be more significant to engineers as presentations are delivered to varied types of audience who may possess technical knowledge or non-technical knowledge. This is an essential feature to enhance socio-cultural competence as stipulated in the model of communicative competence (Celce-Murcia, 2007).

The following items are considered not significant in the said presentation skills and presenter ability construct. The item considered not significant in the said construct is on “application of organisation pattern in a presentation” (see Table 4.10). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.226. This means that there is no significant difference on this item between students and engineers on the “application of an organisation pattern in presentations”.

Table 4.10: Application of organisation pattern in presentation

Organisation pattern in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.37	0.549	0.226
Engineer	4.23	0.719	

Students however indicate this as a more significant feature compared to engineers. The findings reflect the students’ reliance on academic input provided by instructors in the classrooms and based on their legitimate peripheral participation in the said COP (Waljee et al., 2012). This feedback concurs with other findings which states that presentation data needs to be organised and in sequence to enhance audience understanding (Steiner, 2011).

The next item considered not significant in the said construct is on “presenting within the time limit in a presentation” (see Table 4.11). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.172. This means that there is no significant difference on this item between students and engineers on the “application of an organisation pattern in presentations”.

Table 4.11: Presenting within time limit in a presentation

Presenting within time limit in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.03	0.770	0.172
Engineer	4.17	0.736	

As for this element on "presenting within the time limit in a presentation", both students and engineers hold similar consensus on the importance of the said item. Although minimal difference exists on the agreement of the importance of the said item, the difference between the students and engineers is considered not significant. Engineers accord slightly higher level of importance of "presenting within the time limit in a presentation" to acquire communicative competence in technical oral presentations. This finding concurs with previous literature which states the importance on keeping a presentation within the time frame as an essential requirement to ensure communicative competence in presentations (Freeley & Steinberg, 2009).

Another element considered not significant is on the "ability to anticipate the possible questions in a presentation" (see Table 4.12). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.149. This means that there is no significant difference between students and engineers on the importance of understanding "anticipatory skill on possible questions required for presentations".

Table 4.12: Anticipatory Skill on questions in presentation

Anticipate questions in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.94	0.752	0.149
Engineer	4.02	0.969	

Although minimal difference exists on agreement of the importance of the said item, the difference between the students and engineers is not significant. However engineers indicate a slight higher significance to the “ability to anticipate the possible questions in a presentation”. This finding is indicative of the need to be critical and prepared to anticipate possible questions posed by the audience. For engineers, critical thinking is a crucial skill to validate a viewpoiint or decision making done during the tenure of a project (Venkatesan & Ravenell, 2011; Whitcomb & Whitcomb, 2013).

The next item considered not significant is the “ability to clarify technical terms in a presentation” (see table 4.13). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.883. This means that there is no significant difference between students and engineers on the “ability to clarify technical terms in a presentation”.

Table 4.13: Ability to clarify technical terms in presentation

Clarify technical terms in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.13	0.639	0.883
Engineer	4.11	0.787	

Both students and engineers indicate consensus on the importance of “ability to clarify technical terms in a presentation” as a crucial component in acquiring communicative competence in technical oral presentations. Although minimal difference exists on agreement of the importance of the said item, the difference between the students and engineers is not significant. Possessing the ability to clarify technical terms in a presentation is perceived as an important element by both students and engineers. Students’ have indicated slightly higher level of significance to the item as clarification implies the presenter’s ability to provide explanation to clarify and answer queries posed by the audience (Louhiala-Salminen & Kankaanranta, 2011)

The following item considered not significant in the presentation skill and presenter ability construct is “incorporating humor in a presentation” (see Table 4.14). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.132. This means that there is no significant difference between students and engineers on the importance of “incorporating humor in a presentation”.

Table 4.14: Incorporate humor in presentation

Humor in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.62	0.870	0.132
Engineer	3.39	1.006	

Although minimal difference exists on agreement on the importance of the said item, the difference between the students and engineers is not considered significant. Possessing the ability to utilise humor in a presentation is perceived as a fairly important element by both students and engineers. This element creates the rapport and interaction with the audience (Gurak, 2004). Students are of the opinion that humor ensures that interpersonal competence with the audience (Fraile et al., 2010).

The next element considered not significant in the said presentation skills and presenter ability construct is “acceptance of criticism in a presentation” (see Table 4.15). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.051. This means that there is no significant difference between students and engineers on the importance of understanding “acceptance of criticisms in a presentation”.

Table 4.15: Acceptance of Criticism in presentation

Acceptance of Criticism in presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.26	0.579	0.051
Engineer	4.41	0.607	

Although minimal difference exists on agreement on the importance of the said item, the difference between the students and engineers is not significant. However, engineers indicate a higher level of significance to the item. Working in a global environment, engineers are expected to accept criticisms in a presentation posed by the audience. As such maintaining ones’ composure is an essential work attitude due to the competitiveness as a market player (Venkatesan & Ravenell, 2011).

In analyzing the presentation skills and attribute construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, inferential tests indicate significant results among the items listed in the construct.

Students indicate higher emphasis on memorization skills, audience background of technical knowledge or non-technical knowledge. Students are aware of the need to interact with the audience. Students stress on knowledge and skills but focus more on content knowledge at an academic platform which is indicative of their COP. Engineers, however, stress the importance of socio-cultural competence where particular emphasis is stressed on the need to articulate and apply the findings in a professional context. For engineers, the importance of maintaining professional network is necessary to remain as a global competitive market player (Rajala, 2012).

4.3.2 Behavioral Skills and Attribute Construct

For the mean on "behavioral skills and attribute" construct (Table 4.16), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted which implies that both students and engineers agree on the requirements of the behavioral skills. Both students and engineers indicate their agreement on the importance of the 9 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.16: Mean for Behavioral Skills and Attribute Construct

Behavioral Skills Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.06	0.444	7569.000	0.579
Engineer	66	4.08	0.539		

Out of the total of 9 items listed in the "behavioral skills and attribute" construct, only 2 out of the 9 items provided significant results (mean) while the remaining 7 items were considered not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveal significant differences on individual items between students and engineers.

The 2 items out of the 9 items considered significant to students and engineers in a presentation include students' ability to "provide analytical answers to queries" and the attribute on "being courteous in a presentation". The findings indicate differences between students and engineers on the said items within the said construct. As for the remaining 7 out of the 9 items considered not significant by students and engineers in a presentation include the student's ability to be flexible in meeting audience's needs, allow audience to reflect, invite audience participation, possess listening skills, incorporate audience feedback, providing response to sudden unexpected queries and ability to defend ideas when questioned. The findings indicate that there is similarity in students' and engineers' perceptions on the said items in technical oral presentation.

The following discussion elaborates each significant and not significant item listed within the said construct on "behavioral skills and attribute" as perceived by the students and engineers. One of the significant items listed in the construct is on understanding the importance to "provide analytical answers to queries" (see Table 4.17). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.000. The findings indicate that there is significant difference between student and engineers on the importance of "providing analytical responses to questions in a presentation".

Table 4.17: Providing analytical responses to questions in a presentation

Analytical response in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.99	0.656	0.032
Engineer	4.12	0.920	

This implies that although the mean difference is quite close, the findings reveal that engineers compared to students consider "analytical responses to questions in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on "providing analytical responses in a presentation" compared to students as a result of their legitimate peripheral participation in the said COP. Engineers are required to be involved in critical thinking and decision making during the job (Vohra, Ghrayeb, & Kasuba, 2012). This finding bears resemblance with cognitive expectations in strategic competence mentioned in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

The next significant item listed in the said construct is "being courteous in a presentation" (see Table 4.18). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.000. This means that there is significant difference between students' and engineers' perception on the importance of "providing courteous response in a presentation".

Table 4.18: Providing courteous response in a presentation

Courteous response in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.00	0.637	0.020
Engineer	4.21	0.645	

This implies that although the mean difference is quite close, the findings reveal that engineers compared to students consider "providing courteous response in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. The finding concurs with Celce-Murcia's model of communicative competence which emphasises interactional competence (Celce-Murcia, 2007). Engineers indicate more significance to the said item compared to students, but the difference between students and engineers is not significant. Perceptions are formed by the audience at the beginning of the presentation (Freeley & Steinberg, 2009). Thus, the significant result provided by engineers is possibly indicative of a students' professionalism expected in a workplace.

For the following 7 out of the 9 items, students and engineers indicated that these items were not significant. The item of "incorporating flexibility in a presentation" is indicated as not significant by the students and engineers (see Table 4.19). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.580. This means that there is no significant difference on this item between students and engineers on the item of "being flexible in a presentation".

Table 4.19: Incorporating flexibility in a presentation

Incorporating flexibility in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.97	0.643	0.580
Engineer	3.97	0.859	

What can be implied from Table 4.19 is that both students and engineers accord similar importance on "incorporating flexibility in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord similar level of importance to the said item but the difference is not significant. Both students and engineers recognize the importance of "incorporating flexibility in presentation" to ensure communicative competence in a presentation. Flexibility implies the presenters' ability to be receptive to the audience's needs. This criteria is a necessary skill to provide accomodate and encourage active engagement between the presenter and the audience (Morton, 2009).

The following item of “allowing audience time to reflect in a presentation” is indicated as not significant by the students and engineers (see Table 4.20). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.321. This means that there is no significant difference between students and engineers on the item of “allowing audience time to reflect on a presentation”.

Table 4.20: Allowing Audience to Reflect in a presentation

Allowing audience to reflect in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.00	0.637	0.321
Engineer	3.89	0.704	

What is inferred from the finding in Table 4.20 is that both students and engineers indicate the item on “allowing audience to reflect in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Students, however, seem slightly more sensitive to audience need to understanding the message. Listening allows the audience to internalise the contents of a presentation (Fraile et al., 2010). This actional feature is an important element that mirrors Celce-Murcia’s model of communicative competence (Celce-Murcia, 2007). Such interactive exchanges are crucial to enhance communicative competence.

The following item of “inviting audience participation in asking questions” within the said construct is indicated as not significant by the students and engineers (see Table 4.21). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.363. This means that there is no significant difference between students and engineers on the item "inviting audience participation in asking questions".

Table 4.21: Inviting Audience to participate in a presentation

Inviting audience participation in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.10	0.635	0.363
Engineer	3.98	0.754	

What is inferred from the finding in Table 4.21 is that both students and engineers indicate their agreement on the importance of the item "inviting audience to participate in a presentation" as essential element in ensuring communicative competence in a technical oral presentation. Although the said item is not significant, there is higher emphasis by students. Students acknowledge the importance to engage audience participation in a presentation (Fraile et al., 2010). This aspect of competence requirements engages the audience in a presentation. This finding embraces Celce-Murcia's stress on interactional competence (Celce-Murcia, 2007).

The following item of "listening to questions by the audience" is indicated as not significant by the students and engineers (see Table 4.22). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.198. This means that there is no significant difference between students and engineers on the item of "listening attentively to questions posed by the audience".

Table 4.22: Listening to questions by the audience

Listening to questions by the audience			
	Mean	SD	Sig Mann-Whitney U
Student	4.27	0.591	0.198
Engineer	4.36	0.624	

What is inferred from the finding in Table 4.22 is that both students and engineers indicate their agreement on the importance of the item “listening to questions posed by the audience” as essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance of “listening to questions by the audience” to ensure communicative competence in a presentation. This feature of actional competence where presenter’s “hold the floor” during a presentation is crucial to enhance communicative competence (Celce-Murcia, 2007).

In the following item on the importance of “incorporating audience feedback for further improvement in a presentation” is indicated as not significant by the students and engineers (see Table 4.23). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.406. This means that there is no significant difference between students and engineers on the item of “incorporating audience feedback for further improvement in a presentation”.

Table 4.23: Incorporating audience feedback in a presentation

Incorporating audience feedback			
	Mean	SD	Sig Mann-Whitney U
Student	4.16	0.691	0.406
Engineer	4.24	0.680	

What is inferred from the finding in Table 4.23 is that both students and engineers indicate their agreement on the importance of the item “incorporating audience feedback for further improvement in a presentation” as essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Engineers' denote the importance of client feedback as an essential criterion in the said COP (Fraile et al., 2010). This finding supports Celce-Murcia's mention of interactional competence in enhancing communicative competence (Celce-Murcia, 2007).

In the following item on the importance of "providing response to sudden queries in a presentation" is indicated as not significant by the students and engineers (see Table 4.24). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.818. This means that there is no significant difference between students and engineers on the item of "providing response to sudden queries in a presentation".

Table 4.24: Providing response to sudden queries in a presentation

Providing response to sudden queries			
	Mean	SD	Sig Mann-Whitney U
Student	4.03	0.714	0.818
Engineer	4.02	0.690	

What is inferred from the finding in Table 4.24 is that both students and engineers indicate their agreement on the importance of the item "providing response to sudden queries in a presentation" as an essential element in ensuring communicative competence in technical oral presentations. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant.

The following item on the importance of understanding how to "defend ideas when questioned in a presentation" is indicated as not significant by the students and engineers (see Table 4.25). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.700. This means that there is no significant difference between students and engineers on the item of how to “defend ideas when questioned in a presentation”.

Table 4.25: Defend ideas when questioned in a presentation

Defend ideas when questioned			
	Mean	SD	Sig Mann-Whitney U
Student	4.01	0.700	0.700
Engineer	3.92	0.883	

What is inferred from the finding in Table 4.25 is that both students and engineers indicate their agreement on the importance on how to “defend ideas when questioned in a presentation” as essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance to “defend ideas when questioned in a presentation” to ensure communicative competence in a presentation. Cognitive ability is acknowledged as an essential feature in strategic competence (Celce-Murcia, 2007). Students understand the importance of defending their decision making as part of the evaluation criteria in technical oral presentations.

In analyzing the behavioral skills and attribute construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, inferential tests indicate significant results among the individual items listed in the construct between the students and engineers. Engineers stress on strategic competence when compared to students. However, both indicate importance to the aspect of interactional competence to enhance two-way interaction.

4.3.3 Content Construct – Introduction Stage

For the mean on “Content - introduction stage” construct (Table 4.26), the findings indicate that there is a significant mean difference in the said construct between students and engineers. This means that the null hypothesis is rejected which implies that both students and engineers do not agree on the requirements of the “content dimension of introduction stage”. Both students and engineers indicate their disagreement on the importance of the 7 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.26: Mean for Content – Introduction Stage Construct

Introduction Stage Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.29	0.494	6549.000	0.029
Engineer	66	4.42	0.482		

Out of the total of 7 items listed in the “content dimension of introduction stage” construct, only 3 out of the 7 items provided significant results (mean) while the remaining 4 items were considered as not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveal significant differences on the individual items between students and engineers.

The 3 presentation items out of the 7 items within this construct that are considered significant to students and engineers in a presentation include the students’ ability to “begin with an introduction or lead-in statement, identify problem statement and indicate relevance in a presentation”. As for the remaining 4 out of 7 items considered not significant by students and engineers in a presentation, the items listed include the students’ ability to “provide a title in a presentation, state the research methodology, clarify the research objective and clarify literature review in a presentation”. The findings indicate that there is a similarity in students’ and engineers’ perceptions on the said items in technical oral presentation.

The following discussion elaborates each significant and not significant item listed within the said construct on “content dimension of introduction stage” as perceived by the students and engineers. One of the significant items listed in the construct is on understanding the importance to “indicate an introduction or lead-in statement in a presentation” (see Table 4.27). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.012. The findings indicate that there is significant difference between students and engineers on the importance to “indicate an introduction or lead-in statement in a presentation”.

Table 4.27: Indicate introduction/lead-in statement in a presentation

Introduction in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.25	0.619	0.012
Engineer	4.47	0.561	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to “indicate introduction/lead-in statement in a presentation” as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to “indicate introduction/lead-in statement in a presentation” compared to students. For engineers, the lead-in gives a synopsis of the expected presentation. Engineers need to be brief, precise and focussed in a presentation (Marjorie, 2010).

The next item considered significant in the said construct is the importance of "identifying the problem statement in a presentation" (see Table 4.28). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.008. This means that there is significant difference between students and engineers on the importance of "identifying the problem statement in a presentation".

Table 4.28: Identifying problem statement in a presentation

Problem statement in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.37	0.600	0.008
Engineer	4.59	0.526	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance of "identifying the problem statement in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need of "identifying the problem statement in a presentation" compared to students. Identifying the problem statement is significant to engineers as the engineering COP revolve around decision making and problem-solving in the workplace (Venkatesan & Ravenell, 2011).

The next item considered significant in the said construct is the importance to "indicate the relevance in a presentation" (see Table 4.29). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.010. The findings indicate that there is a significant difference between students and engineers on the importance to "indicate the relevance in a presentation".

Table 4.29: Indicate relevance in a presentation

Indicate relevance in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.30	0.614	0.010
Engineer	4.50	0.639	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to "indicate the relevance in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item as it marks an essential criterion in its real world application context (Marjorie, 2010).

For the following 4 out of the 7 items, students and engineers indicated that these items were not significant. Among the item considered not significant in the said construct is the importance to "provide a title in a presentation" (see Table 4.30). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.058. The findings indicate that there is no significant difference between student and engineers on the importance to "provide a title in a presentation".

Table 4.30: Provide title in a presentation

Provide title in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.31	0.671	0.058
Engineer	4.45	0.727	

What is inferred from the finding in Table 4.30 is that both students and engineers indicate their agreement on the importance to "provide a title to presentation" as essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Engineers indicate a higher importance to “provide a title in a presentation” to ensure clarity in a presentation.

The next item considered not significant in the said construct is the importance to “state research methodology in a presentation” (see Table 4.31). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.326. The findings indicate that there is no significant difference between students and engineers on the importance to “state research methodology in a presentation”.

Table 4.31: State research methodology in a presentation

Research methodology in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.29	0.700	0.326
Engineer	4.38	0.674	

What is inferred from the finding in Table 4.31 is that both students and engineers indicate their agreement on the importance to “state research methodology in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Clarity in the “research methodology in a presentation” is exemplified by scientific and methodological investigation of a research project. Scientific evidence is crucial to engineers (Waljee et al., 2012).

The next item considered not significant in the said construct is the importance to “clarify research objective in a presentation” (see Table 4.32). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test =

0.114. The findings indicate that there is no significant difference between student and engineers on the importance to “clarify research objective in a presentation”.

Table 4.32: Clarify research objective in a presentation

Clarify research objective in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.42	0.580	0.114
Engineer	4.52	0.662	

What is inferred from the finding in Table 4.32 is that both students and engineers indicate their agreement on the importance to “clarify research objective in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Engineers stress the need to “clarify research objective in a presentation” to ensure that the goal is stated at the onset of a presentation.

The next item considered not significant in the said construct is the importance to “clarify literature review in a presentation” (see Table 4.33). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.681. The findings indicate that there is no significant difference between students and engineers on the importance to “clarify literature review in a presentation”.

Table 4.33: Clarify literature review in a presentation

Clarify literature review in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.07	0.810	0.681
Engineer	4.06	0.721	

What is inferred from the finding in Table 4.33 is that both students and engineers indicate their agreement on the importance to “clarify literature review in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to “clarify literature review in a presentation” to ensure communicative competence in a presentation. Students indicate greater stress on being thorough with the literature review which is reflective of the legitimate peripheral participation in the academic community (Waljee et al., 2012).

In analyzing the content dimension introduction stage construct, the findings indicate that there is a significant difference between the students and engineers. This means that both students and engineers do not agree on the inclusion of all elements listed within the said construct. However, inferential tests indicate significant results between students and engineers on the items listed in the construct.

4.3.4 Content Construct – While Presentation Stage

For the mean on “content - while presentation stage” construct (Table 4.34), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted, which implies that both students and engineers agree on the inclusion of the said items within the said construct. Both students and engineers indicate their agreement on the importance of the 10 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.34: Mean for Content – While Presentation Stage Construct

While Presentation Stage Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.13	0.494	7853.500	0.917
Engineer	66	4.09	0.565		

Out of the total of 10 items listed in the "content introduction stage" construct, only 1 item provided significant results (mean) while the remaining 9 items were considered as not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveal significant differences on individual items between students and engineers.

The single presentation item within this construct that is considered as significant by both students and engineers include the students' ability to "ensure coherence within the points delivered in a presentation". As for the remaining 9 items considered as not significant by students and engineers in a presentation include the student's ability to "ensure correct delivery style, provide supporting materials, check visual presentation of all slides, use visually appealing materials, use of gantt charts for explanation, use of right font color, font size, word count for each slide and use of analogy in a presentation". The findings indicate that there is a similarity in students' and engineers' perceptions on the said items in technical oral presentation.

The following discussion elaborates each significant and not significant item listed within the said construct on "content while presentation stage" as perceived by the students and engineers. One of the significant items listed in the construct is on understanding the importance to “ensure coherence within the points delivered in a presentation” (see Table 4.35). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.032. The findings indicate that there is a significant difference between students and engineers on the importance to “ensure coherence within the points delivered in a presentation”.

Table 4.35: Ensure coherence in a presentation

Coherence in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.14	0.604	0.032
Engineer	4.30	0.701	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the need to “ensure coherence in a presentation” as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to “ensure coherence in a presentation” compared to students. Coherence among points delivered in technical oral presentations is more significant among engineers in comparison to the students. Engineers stress on the importance of coherence as this ensures audience understanding of the contents. Coherence enables listeners to render effective decision making when listening to a presentation (Freeley & Steinberg, 2009).

For the following 9 out of the 10 items, students and engineers indicated these items within the “content while presentation stage” construct is as not significant. Among the items considered as not significant in the said construct is the importance to “ensure correct delivery style in a presentation” (see Table 4.36). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test =

0.782. The findings indicate that there is no significant difference between students and engineers on the importance to “ensure correct use of delivery style in a presentation”.

Table 4.36: Ensure correct delivery style in a presentation

Correct delivery style in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.12	0.719	0.782
Engineer	4.17	0.646	

What is inferred from the finding in Table 4.36 is that both students and engineers indicate their agreement on the importance to “ensure correct delivery style used in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost a similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need for “correct delivery style in a presentation” to ensure communicative competence in a presentation.

The next item considered as not significant in the said construct is the importance on the “use of supporting materials for elaboration in a presentation” (see Table 4.37). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.869. The findings indicate that there is no significant difference between students and engineers on the “use of supporting materials for elaboration in a presentation”.

Table 4.37: Use of supporting material for elaboration in a presentation

Supporting material in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.09	0.714	0.869
Engineer	4.05	0.812	

What can be inferred from the finding in Table 4.37 is that both students and engineers indicate their agreement on the “use of supporting materials for elaboration in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost a similar level of importance to the said item but the difference is not significant. Both students and engineers recognize the importance on the “use of supporting material for elaboration in a presentation” to ensure communicative competence in a presentation. Students stress on the importance of supporting materials as it lends maximum support to the issues discussed (Freeley & Steinberg, 2009).

The following item considered not significant in the said construct is the importance to “check the visual presentation of all slides in a presentation” (see Table 4.38). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.683. The findings indicate that there is no significant difference between students and engineers on the importance to “check the visual presentation of all slides in a presentation”.

Table 4.38: Check visual presentation of all slides in a presentation

Check visual presentation of slides			
	Mean	SD	Sig Mann-Whitney U
Student	4.28	0.661	0.683
Engineer	4.20	0.808	

What can be inferred from the finding in Table 4.38 is that both students and engineers indicate their agreement on the importance to “check the visual presentation of all slides in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to "check the visual presentation of all slides in a presentation" to ensure communicative competence in a presentation. Visual presentation is stressed among the students which is reflective of the COP and pegadogical instructions in the classroom (Clark et al., 2012).

The following item considered as not significant in the said construct is the importance to "ensure that materials are visually appealing in a presentation" (see Table 4.39). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.645. The findings indicate that there is no significant difference between students and engineers on the importance to "ensure that materials are visually appealing in a presentation".

Table 4.39: Ensure visually appealing materials in a presentation

Visually appealing material in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.20	0.694	0.645
Engineer	4.14	0.762	

What can be revealed from the finding in Table 4.39 is that both students and engineers indicate their agreement on the importance to "ensure that materials are visually appealing in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Students appear to stress the imporatnce higher than engineers on the need to "ensure that materials are visually appealing in a presentation". Visually appealing slides can be created by students' creative use of Information and Communication Technology (ICT) skills. This finding indicates students stress on visual presentation which mirrors the legitimate peripheral participation of the academic community (Waljee et al., 2012).

The next item considered as not significant in the said construct is the importance to “use gantt charts for explanation purposes in a presentation” (see Table 4.40). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.163. The findings indicate that there is no significant difference between students and engineers on the importance to “use gantt charts for explanation purposes in a presentation”.

Table 4.40: Use gantt charts for explanation in a presentation

Gantt charts in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.52	0.868	0.163
Engineer	3.70	0.803	

The finding in Table 4.40 concurs that both students and engineers indicate their agreement on the importance to “use gantt charts for explanation purposes in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to “use gantt charts for explanation purposes in a presentation” to enhance communicative competence in a presentation.

The following item considered as not significant in the said construct is the importance to “select right color for wording in a presentation” (see Table 4.41). The difference between students and engineers on this item is indicated by significant Mann-Whitney

U test = 0.103. The findings indicate that there is no significant difference between students and engineers on the importance to “select right color for wording in a presentation”.

Table 4.41: Selection of right color for wording in a presentation

Color for wording in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.17	0.764	0.103
Engineer	3.98	0.832	

The finding in Table 4.41 concurs that both students and engineers indicate their agreement on the importance to “select right color for wording in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to “select right color for wording in a presentation” to enhance communicative competence in a presentation.

The next item considered as not significant in the said construct is the importance to “select the right font size in a presentation” (see Table 4.42). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.300. The findings indicate that there is no significant difference between students and engineers on the importance to “select the right font size in a presentation”.

Table 4.42: Selection of right font size in a presentation

Font size in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.20	0.686	0.300
Engineer	4.09	0.739	

The finding in Table 4.42 concurs that both students and engineers indicate their agreement on the importance to “select right font size in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to “select right font size in a presentation” to enhance communicative competence in a presentation. Students emphasis of such strategic competence is a reflection of the legitimate peripheral participation of the COP (Whitcomb & Whitcomb, 2013).

The next item considered as not significant in the said construct is the importance to “limit the number of words for each slide of a presentation” (see Table 4.43). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.635. The findings indicate that there is no significant difference between students and engineers on the importance to “limit the number of words for each slide of a presentation”.

Table 4.43: Limit the number of words used for each slide of a presentation

Word limitation for each slide presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.18	0.708	0.635
Engineer	4.09	0.872	

The finding in Table 4.43 concurs that both students and engineers indicate their agreement on the importance to “limit the number of words for each slide in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant.

Both students and engineers recognize the importance on the need to “limit the number of words for each slide in a presentation” to enhance communicative competence in a presentation. This finding concurs with literature which mentions the need for brevity in slide presentations (Felder & Brent, 2004). At the same time, limited presentation time is also made available to students and the audience in an oral presentation (Beins & Beins, 2010).

One of the remaining items considered as not significant in the said construct is the importance to “use simple analogy to provide explanation in a presentation” (see Table 4.44). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.993. The findings indicate that there is no significant difference between students and engineers on the importance to “use simple analogy to provide explanation in a presentation”.

Table 4.44: Use analogy for explanation in a presentation

Use of analogy in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.23	0.627	0.993
Engineer	4.20	0.730	

The finding in Table 4.44 concurs that both students and engineers indicate their agreement on the importance to “use simple analogy to provide explanation in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance on the need to “use simple analogy to provide explanation in a presentation” to enhance communicative competence in a presentation.

In analyzing the “content dimension while presentation stage” construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, the differences in the inferential tests on the items within the said construct are significant between students and engineers.

4.3.5 Content Construct – Conclusion Stage

For the mean on “content dimension of conclusion stage” construct (Table 4.45), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted, which implies that both students and engineers agree on the item requirements of the said construct. Both students and engineers indicate their agreement on the importance of the 8 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.45 Mean for Content – Conclusion Stage Construct

Conclusion Stage Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.03	0.453	6777.000	0.071
Engineer	66	4.12	0.588		

Out of the total of 8 items listed in the “content of conclusion stage” construct, only 1 item provided significant results (mean) while the remaining 7 items were considered as not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveal significant differences on individual items between students and engineers.

The single presentation item within this construct that is considered as significant to students and engineers include the students' ability to "include cost factor analysis in a presentation". As for the remaining 7 items considered as not significant by students and engineers in a presentation include the student's ability to "state key milestones (where necessary), apply creativity, discussion of findings, restate the purpose, provide closing statements for the entire topic, restate the relevance and propose relevant suggestions in a presentation". The findings indicate that there is a similarity in students' and engineers' perceptions on the said items listed within the said construct in technical oral presentation.

The following discussion elaborates each significant and not significant item listed within the said construct on "content of conclusion stage" as perceived by the students and engineers. One of the significant items listed in the construct is on understanding the importance to "include cost factor analysis in a presentation" (see Table 4.46). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.042. The findings indicate that there is a significant difference between student and engineers on the importance to "include cost factor analysis in a presentation".

Table 4.46: Include cost factor analysis in a presentation

Cost factor analysis in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.63	0.914	0.042
Engineer	3.86	0.910	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to "include cost factor analysis in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to “include cost factor analysis in a presentation” compared to students. Cost factor analysis delivered in technical oral presentations is more significant to engineers in comparison to the students (Vohra et al., 2012). The importance of costing in a presentation is more significant to engineers in the competitive workforce in comparison to students.

The following 7 items are considered as not significant between the students and engineers within the said construct. Among the item considered as not significant in the said construct is the importance to “state key milestones in a presentation” (see Table 4.47). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.126. The findings indicate that there is no significant difference between students and engineers on the importance to “state key milestones in a presentation”.

Table 4.47: State key milestones in a presentation

Key milestones in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.80	0.725	0.126
Engineer	4.00	0.711	

The findings in Table 4.47 concurs that both students and engineers indicate their agreement on the importance to “state key milestones (where necessary) in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. However, engineers accord a slightly higher level of importance to the said item.

Both students and engineers recognize the importance on the need to "state key milestones (where necessary) in a presentation" to enhance communicative competence in a presentation. Such information would enable audience to acknowledge the transitional progress of a certain project presentation. Engineers indicate a higher significance to use of "key milestones" in presentations as it indicates the timeline for specific achievement or goals acquired. Such indication charts a company's productivity in a specific time frame (Vohra et al., 2012).

The next item considered as not significant in the said construct is the importance on understanding the need to "apply creativity in a presentation" (see Table 4.48). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.446. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "apply creativity in a presentation".

Table 4.48: Apply creativity in a presentation

Creativity in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.97	0.773	0.446
Engineer	4.03	0.822	

The findings in Table 4.48 concurs that both students and engineers indicate their agreement on the importance of understanding the need to "apply creativity in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance of the need to "apply creativity in a presentation" to enhance communicative competence in a presentation. Such presentation skills through the use of ICT skills enhances audience engagement in an otherwise overtly technical presentation.

The following item considered as not significant in the said construct is the importance of understanding the need to "discuss the findings in a presentation" (see Table 4.49). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.133. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "discuss the findings in a presentation".

Table 4.49: Discuss the findings in a presentation

Discuss findings in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.18	0.678	0.133
Engineer	4.32	0.660	

The findings in Table 4.49 concurs that both students and engineers indicate their agreement on the importance of understanding the need to "discuss findings in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance to "discuss findings in a presentation" to enhance communicative competence. For engineers, discussion is essential to provide solutions to a problem (Seidel, Mehdi Shahbazpour, Walker, Shekar, & Chambers, 2011).

Such presentation skill enables the audience to ascertain student ownership and engagement with a project. Discussion provides the student an opportune platform to indicate the relevance or purpose of any results, or outcome of a particular decision making conducted by the student. It provides an opportunity for the student to justify his/her rationale for any decision making.

The next item considered as not significant in the said construct is the importance of understanding the need to “restate the purpose in a presentation” (see Table 4.50). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.301. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “restate the purpose in a presentation”.

Table 4.50: Restate the purpose in a presentation

Restate purpose in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.21	0.658	0.301
Engineer	4.27	0.755	

The findings in Table 4.50 concurs that both students and engineers indicate their agreement on the importance of understanding the need to “restate the purpose in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant.

Both students and engineers recognize the importance to “restate the purpose in a presentation” to enhance communicative competence in a presentation. When such element is practiced in a presentation, the audience is able to recapitulate the purpose of the project presentation. Restating the purpose enables a student to provide clarity and emphasis of a presentation (Freeley & Steinberg, 2009). Engineers indicate the importance of purpose as this clarifies the objective of the project (Zareva, 2013).

The following item considered as not significant in the said construct is the importance of understanding the need to "provide closing statement in a presentation" (see Table 4.51). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.423. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "provide closing statement in a presentation".

Table 4.51: Provide closing statement in a presentation

Closing statement in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.18	0.649	0.423
Engineer	4.23	0.697	

The findings in Table 4.51 concurs that both students and engineers indicate their agreement on the importance of understanding the need to "provide closing statement in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance of the need to "provide closing statement in a presentation" to enhance communicative competence in a presentation. Engineers emphasise the need for closure as this clarifies that the presenter has summarized the findings (Davis, Davis, & Dunagan, 2012).

Another item considered as not significant in the said construct is the importance of understanding the need to "restate the relevance in a presentation" (see Table 4.52). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.817. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "restate the relevance in a presentation".

Table 4.52: Restate the relevance in a presentation

Restate relevance in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.11	0.620	0.817
Engineer	4.05	0.773	

The findings in Table 4.52 reveals that both students and engineers indicate their agreement on the importance of understanding the need to "restate the relevance in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Students stress on the need to recap or restate the relevance to emphasise a message (Dannels, 2011).

The remaining item considered as not significant in the said construct is the importance of understanding the need to "propose suggestions relevant for consideration in a presentation" (see Table 4.53). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.205. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "propose suggestions relevant for consideration in a presentation".

Table 4.53: Propose suggestions in a presentation

Propose suggestions in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.16	0.586	0.205
Engineer	4.23	0.740	

The findings in Table 4.53 reveals that both students and engineers indicate their agreement on the importance of understanding the need to "propose suggestions relevant for consideration in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. For engineers, suggestions are proposed considerations for problem solving (Moore, Tank, Glancy, Kersten, & Stohlmann, 2013). The item provides students the opportunity to indicate real world applications from the project findings.

In analyzing the "content dimension conclusion stage" construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, the differences in the inferential tests on the items within the said construct are not significant between the students and engineers.

4.3.6 Language Competency Construct

For the mean on "language competency" construct (Table 4.54), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted, which implies that both students and engineers agree on the item requirements of the said construct. Both students and engineers indicate their agreement on the importance of the 8 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.54: Mean for Language Competency Construct

Language Competency Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.12	0.490	6942.500	0.119
Engineer	66	4.14	0.687		

Out of the total of 8 items listed in the “language competency” construct, 2 out of the 8 items provided significant results (mean) while the remaining 6 items were considered as not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveal significant differences on individual items between students and engineers.

The two students attribute items considered as significant to students and engineers include the students’ ability to “articulate the words in a presentation” and “to enunciate the words correctly”. As for the remaining 6 items considered as not significant by students and engineers in a presentation include the student’s ability to “use correct grammar at all times, use appropriate language throughout the presentation, avoidance of usage of complex language, clear pronunciation and appropriate word choice”. The findings indicate that there is a similarity in students’ and engineers’ perceptions on the said items listed within the said construct in technical oral presentation. The following discussion elaborates each significant and not significant item listed within the said construct on “language competency” construct as perceived by the students and engineers.

One of the significant items listed in the construct is on understanding the importance to “articulate words in a presentation” (see Table 4.55). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.011. The findings indicate that there is significant difference between students and engineers on the importance to “articulate words in a presentation”.

Table 4.55: Articulate words in a presentation

Articulate words in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.04	0.652	0.011
Engineer	4.26	0.730	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to “articulate words in a presentation” as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to “articulate words in a presentation” compared to students. Clear articulation is necessary to avoid miscommunication and incorrect interpretation as perceived by the audience (Haber & Lingard, 2004). Interestingly, this finding indicates a change in the way engineers perceive the importance of language in a technical oral presentation. Thsi shows that there is a paradigm shift in the way engineers perceive the role of non-technical skills in scientific and technical engineering presentations (Fraile et al., 2010).

The next significant item listed in the “language competency” construct and considered as significant by the students and engineers is the importance on the need to “enunciate the words correctly in a presentation" (see Table 4.56). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.043. The findings indicate that there is a significant difference between student and engineers on the importance to "enunciate words in a presentation".

Table 4.56: Enunciate words in a presentation

Enunciate words in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.08	0.652	0.043
Engineer	4.21	0.814	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to "enunciate words in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to "enunciate words in a presentation" compared to students. Clear enunciation enhances understanding among listeners in the audience (Freeley & Steinberg, 2009).

The following 6 out of 8 items are considered as not significant between the students and engineers within the said construct. Among the item considered as not significant in the said construct is the importance to "use correct grammar in a presentation" (see Table 4.57). The difference between students and engineers on this item indicated by significant Mann-Whitney U test = 0.417. The findings indicate that there is no significant difference between students and engineers on the importance to "use correct grammar in a presentation".

Table 4.57: Use correct grammar in a presentation

Correct grammar in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.84	0.815	0.417
Engineer	3.89	0.914	

The findings in Table 4.57 reveal that both students and engineers indicate their agreement on the importance of understanding the need to "use correct grammar in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Accurate use of grammar enables listeners to comprehend a student's message conveyed in a presentation. This indicates that engineers appreciate the correct use of grammar to ensure audience understanding of a mesage in a presentation (Morton, 2009).

Another item considered as not significant in the said construct is the importance on understanding the need to "use appropriate language throughout the presentation" (see Table 4.58). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.188. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "use appropriate language throughout the presentation".

Table 4.58: Appropriate language use in a presentation

Appropriate language use in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.08	0.686	0.188
Engineer	3.89	0.914	

The findings in Table 4.58 concurs that both students and engineers indicate their agreement on the importance of understanding the need to "use appropriate language throughout a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Students recognize the importance to "use appropriate language throughout a presentation" to enhance communicative competence in a presentation (Beins & Beins, 2010). Language has to be adjusted according to the different occasions (Lucas, 2009).

The following item considered as not significant in the said construct is the importance on understanding the need to "ensure language is easily understood in a presentation" (see Table 4.59). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.713. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "ensure language is easily understood in a presentation".

Table 4.59: Ensure language is easily understood in a presentation

Language is easily understood in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.24	0.586	0.713
Engineer	4.15	0.790	

The findings in Table 4.59 indicates that both students and engineers agree on the importance of understanding the need to "ensure language is easily understood in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Both students and engineers recognize the importance to "ensure language is easily understood throughout a presentation”. Failure in enhancing the said linguistic element within the language competency constructs results in lack of “effective audience-centred presentation” (Koch, 2010).

The following item considered as not significant in the said construct is the importance on understanding the need to “avoid using complex language in a presentation” (see Table 4.60). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.649. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “avoid using complex language in a presentation”.

Table 4.60: Avoid complex language in a presentation

Avoid complex language in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.27	0.683	0.649
Engineer	4.29	0.739	

The findings in Table 4.60 concurs that both students and engineers indicate their agreement on the importance of understanding the need to “avoid complex language in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar level of importance to the said item, but the difference is not significant. Students and engineers recognize the importance to “avoid complex language in a presentation”. Failure in enhancing the said linguistic element leads to a breakdown in the communication act (Koch, 2010).

The next item considered as not significant in the said construct is the importance on understanding the need to “ensure clear pronunciation in a presentation” (see Table

4.61). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.278. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “ensure clear pronunciation in a presentation”.

Table 4.61: Ensure clear pronunciation in a presentation

Clear pronunciation in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.20	0.600	0.278
Engineer	4.24	0.745	

The findings in Table 4.61 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “ensure clear pronunciation in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord close level of importance to the said item, but the difference is not significant. Engineers recognize the importance to “ensure clear pronunciation in a presentation” to enhance a speech communicative act (Koch, 2010). This indicates that engineers realise the importance of non-technical skills to verbalize technical findings.

The remaining item considered as not significant in the said construct is the importance on understanding the need to “ensure appropriate word choice in a presentation” (see Table 4.62). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.469. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “ensure appropriate word choice in a presentation”.

Table 4.62: Ensure appropriate word choice in a presentation

Word choice in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.19	0.581	0.469
Engineer	4.20	0.770	

The findings in Table 4.62 suggests that both students and engineers indicate their agreement on the importance of understanding the need to "ensure appropriate word choice in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Both students and engineers are aware of the need to "ensure appropriate word choice in a presentation" to enhance presentation delivery and comprehension of the message in a communicative act (Koch, 2010).

In analyzing the language competency construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, the differences in the inferential tests on the items within the said construct are not significant between students and engineers.

4.3.7 Non-Verbal Skills Construct

For the mean on "non-verbal skills" construct (Table 4.63), the findings indicate that there is no significant mean difference in the said construct between students and engineers. This means that the null hypothesis is accepted which implies that both students and engineers agree on the item requirements of the said construct. Both students and engineers indicate their agreement on the importance of the 10 items listed within the said construct required to achieve communicative competence in technical oral presentations.

Table 4.63: Mean for Non-Verbal Skills Construct

Non-Verbal Skills Construct					
	N	Mean	SD	Mann-Whitney U	Asymp. Sig. (2-tailed)
Student	240	4.07	0.496	7079.500	0.184
Engineer	66	4.13	0.634		

Out of the total of 10 items listed in the "non-verbal skills" construct, 3 out of the 10 items provided significant results (mean) while the remaining 7 items were considered as not significant by the students and engineers. This means to say that although both students and engineers agree on the importance of the said items within the construct, statistical analysis reveals significant differences on individual items between students and engineers.

The three student attribute items considered as significant to students and engineers include the student's ability to "use appropriate volume in a presentation, use vocal fillers in a presentation", and "to pause to ensure that the message is understood" in a presentation. As for the remaining 7 items considered as not significant by students and engineers in a presentation include the student's ability to "speak at an appropriate rate, use vocal variety in a speech presentation, use appropriate non-verbal gestures for emphasis, stand and move in non-distracting ways, use effective facial expressions to reinforce message, appear extemporaneous and be culturally observant in code of conduct" in a presentation.

The findings indicate that there is a similarity between students' and engineers' perceptions on the said items listed within the said construct in technical oral presentation. The following discussion elaborates each significant and not significant item listed within the said construct on "non-verbal skills" construct as perceived by the students and engineers. It is interesting to note that engineers perceive non-verbal skills as essential communicative competence elements in technical oral presentation (Fraile et al., 2010).

One of the other significant items listed in the construct is on understanding the importance to "use appropriate volume in a presentation" (see Table 4.64). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.044. The findings indicate that there is significant difference between student and engineers on the importance to "use appropriate volume in a presentation".

Table 4.64: Use appropriate volume in a presentation

Volume in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.18	0.647	0.044
Engineer	4.33	0.730	

The findings imply that although the mean difference is fairly close, engineers in comparison to students consider the importance to "use appropriate volume in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to "use appropriate volume in a presentation" compared to students. This finding is indicative of the need to overcome noise in a SPEAKING context (Hymes, 1971). The volume is an important element for students' to take note of in a presentation as deemed by the engineers.

The next significant item listed in the construct is on understanding the importance to "use vocal fillers in a presentation" (see Table 4.65). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.000. The findings indicate that there is a significant difference between students and engineers on the importance to "use vocal fillers in a presentation".

Table 4.65: Use vocal fillers in a presentation

Vocal fillers in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	3.79	0.808	0.000
Engineer	4.24	0.703	

The findings imply that although the mean difference is quite close, engineers in comparison to students consider the importance to "use vocal fillers in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Engineers indicate more significance to the said item on the need to "use vocal fillers in a presentation" compared to students. This finding is indicative of the need for audience to comprehend the message and relate to the point discussed (Koch, 2010).

The audience requires time to follow the thoughts of a student. The use of vocal fillers enables a student to gauge if the audience is able to follow a presentation. However, overuse of such fillers may mar the fluency of the presentation. Thus, it is important that students cultivate verbal fluency by appropriate use of vocal fillers (Freeley & Steinberg, 2009).

The next significant item listed in the construct is on understanding the importance to "use pauses in a presentation" (see Table 4.66). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.005. The findings indicate that there is significant difference between student and engineers on the importance to "use pauses in a presentation".

Table 4.66: Use pauses in a presentation

Pause in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.00	0.752	0.005
Engineer	3.65	0.969	

The findings imply that although the mean difference is quite close, students in comparison to engineers consider the importance to "use pauses in a presentation" as an important element in ensuring communicative competence in a technical oral presentation. Effective pauses are intentional as "pausing between major points allows the audience a few seconds to contemplate a difficult concept" (Jaffe, 2007, p. 264).This finding is indicative of the need for students to ensure that audience is able to follow the message delivered in a presentation (Lannon & Gurak, 2011).

The following items within the "non-verbal skills" construct are considered as not significant by students and engineers. Among the item considered as not significant within the said construct is the importance in understanding the ability to "speak at an appropriate rate in a presentation" (Table 4.67). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.280. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "speak at an appropriate rate in a presentation".

Table 4.67: Speak at an appropriate rate in a presentation

Speak at appropriate rate in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.22	0.623	0.280
Engineer	4.26	0.771	

The findings in Table 4.67 suggests that both students and engineers indicate their agreement on the importance of understanding the need to "speak at an appropriate rate in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Successful students need to "adapt the rate of speech to the requirement of the audience" (Freeley & Steinberg, 2009, p. 308). Engineers stress on "appropriate rate in a presentation" to enhance presentation delivery and comprehension of the message conveyed in a speech act. This finding emphasises the engineers stress on non-verbal skills which shows a paradigm shift from the learning theory.

The next item considered as not significant within the said construct is the importance in understanding the ability to "utilise vocal variety in a presentation" (Table 4.68). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.348. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to "utilise vocal variety in a presentation".

Table 4.68: Utilise vocal variety in a presentation

Vocal variety in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.05	0.719	0.348
Engineer	4.12	0.775	

The findings in Table 4.68 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “utilise vocal variety in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Vocal variety “adds life to the message” which would otherwise be considered monotonous for an audience (Jaffe, 2007, p. 263). The ability to modulate the voice to communicate ideas and feelings is considered an essential communicative element in presentations (Lucas, 2009).

The following item considered as not significant within the said construct is the importance in understanding the ability to “use appropriate non-verbal gestures for emphasis in a presentation” (Table 4.69). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.960. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need of “non-verbal gestures in a presentation”.

Table 4.69: Non-verbal gestures in a presentation

Non-verbal gestures in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.07	0.700	0.960
Engineer	4.02	0.868	

The findings in Table 4.69 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “use appropriate non-verbal gestures for emphasis in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Gestures used in presentations should be "purposeful and aid communication with the audience" (Freeley & Steinberg, 2009, p. 311).

The next item considered as not significant within the said construct is the importance in understanding the ability to "stance in a presentation" (Table 4.70). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.849. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need for "stance in a presentation".

Table 4.70: Stance in a presentation

Movements in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.12	0.687	0.849
Engineer	4.12	0.734	

The findings in Table 4.70 suggests that both students and engineers indicate their agreement on the importance of understanding the need for "stance in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord similar levels of importance to the said item, but the difference is not significant. Movement, like any other non-verbal skill should be purposeful to aid communication. Movements should be "easy, economical, and purposeful yet spontaneous" to enhance a presentation (Freeley & Steinberg, 2009, p. 310).

Meanwhile, the next item considered as not significant within the said construct is the importance in understanding the ability to "use effective facial expressions to reinforce a message in a presentation” (Table 4.71). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.278. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “use effective facial expressions to reinforce a message in a presentation”.

Table 4.71: Use facial expressions to reinforce a message in a presentation

Facial Expressions in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.11	0.718	0.278
Engineer	4.21	0.713	

The findings in Table 4.71 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “use effective facial expressions to reinforce a message in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Facial expressions should be “consistent with the attitude” expressed on certain information (Freeley & Steinberg, 2009, p. 311). In other words, engineers stressed that facial expressions should reflect the issue discussed.

The next element considered as not significant within the said construct is the importance in understanding the ability to “appear extemporaneous in a presentation” (Table 4.72). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.341. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “appear extemporaneous in a presentation”.

Table 4.72: Appear extemporaneous in a presentation

Appear extemporaneous in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.12	0.800	0.341
Engineer	4.20	0.827	

The findings in Table 4.72 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “appear extemporaneous in a presentation” as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Being extemporaneous indicates the need to be well prepared and yet greater flexibility befitting the presentation situation (Freeley & Steinberg, 2009, p. 302).

The remaining item considered as not significant within the said construct is the importance in understanding the ability to “be culturally observant in code of conduct in a presentation” (Table 4.73). The difference between students and engineers on this item is indicated by significant Mann-Whitney U test = 0.306. The findings indicate that there is no significant difference between students and engineers on the importance of understanding the need to “be culturally observant in code of conduct in a presentation”.

Table 4.73: Culturally observant in a presentation

Culturally observant in a presentation			
	Mean	SD	Sig Mann-Whitney U
Student	4.08	0.693	0.306
Engineer	4.14	0.857	

The findings in Table 4.73 suggests that both students and engineers indicate their agreement on the importance of understanding the need to “be culturally observant in a presentation" as an essential element in ensuring communicative competence in a technical oral presentation. In this case, both students and engineers accord almost similar levels of importance to the said item, but the difference is not significant. Being culturally observant during speech presentations is equally important as students need to be aware of "racial, ethnic and cultural differences" when presenting to a culturally diverse audience (Lucas, 2009, p. 103). This is a crucial element to enhance communicative competence (Celce-Murcia, 2007).

In analyzing the non-verbal skills construct, the findings indicate that there is no significant difference between the students and engineers. This means that both students and engineers agree on the inclusion of all elements listed within the said construct. However, the differences in the inferential tests on the items within the said construct indicate that some items are significant while some items are not significant between students and engineers.

4.4 Perceptions of Students' and Engineers' on communicative competence

The findings indicate that there is no significant difference in the four constructs namely, i) presentation skills and attribute construct, ii) behavioral skills and attribute construct, iii) language competency construct, and iv) non-verbal skills construct. This means that both students and engineers agree on the items listed within the constructs. However, significant difference is indicated in the content dimension (introduction stage). This means that both students and engineers are not in agreement over the items listed in the said construct. The following section discusses the significance of 240 students and 66 engineers' responses to Research Questions 1 and 2.

4.4.1 Students' perceptions of significant communicative competence elements

Despite these overall findings in the five constructs, inferential tests reveal that there is slight significant difference in some of the items listed within the five constructs. For the presentation skills and attribute construct, the sub-items for presentation skills include i) memorization skills, while the two attribute items include i) awareness of audience technical knowledge in a presentation, and ii) awareness of audience non-technical knowledge. These items were considered of higher importance to students than engineers.

What can be implied is that students' construct is probably indicative of pedagogical implication to presentation input provided in the speaking course at the academic platform or research university (Lave & Wenger, 1991). As university students, the conceptual knowledge perceived by students is based on the academic knowledge taught in the ESL classrooms. In other words, students' world view of the construct is based on the input received.

Students did not indicate any significant item in the behavioral construct. This means that students shared similar agreement with engineers on the inclusion of the 9 items listed within the construct. Students agreed that the features necessary include the ability to be analytical, courteous and yet accommodating to incorporate the audience to reflect and provide feedback wherever possible. In other words, the students are aware of the importance to enhance a two-way interaction with the audience even if the audience remains silent. This feature is in line with Celce-Murcia's (2007) model of communicative competence with emphasis on interactional competence.

What is important is that the students realize the need to be receptive and responsive to the audience. In this way, the students are actually "talking with and not to the audience" (Koch, 2010, p. 109). This finding mirrors the importance of interactional competence like that of Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

As for content dimension (introduction stage), the findings indicate that there is significant mean difference between students and engineers. This means that students and engineers do not indicate the same level of importance to the items within the construct. Students indicate differences in two items being, i) lead-in, and ii) identification of problem statement. Students may have different opinions from engineers on these two items. Another aspect of interest to students is literature review. Although there is no significant difference between students and engineers, which means that both students and engineers agree on the importance of literature review, inferential tests reveal that students have accorded a slightly higher level of importance to the item.

Again one possible implication from the data findings is students' reliance on content and academic input on the subject matter. Even if students are accessible to all forms of literature, students input on introduction stage may be structured to content and data findings. This finding implies the theoretical underpinning of learning theory where participants' perceptions are a result of their participation within communities of practice (Lave & Wenger, 1991).

As for content dimension (while presentation stage), the students have also indicated that there is no significant mean difference between students and engineers on the said construct. However, inferential tests reveal that students have placed higher level of importance to various items. Among the items include i) use of supporting details, ii) check visual, iii) right color use , iv) right font size, v) words per slide, vi) visually appealing, and vii) analogy.

Students' emphasis on such items indicates the students' awareness to create unique and visually appealing presentation slides to capture audience attention. The findings reveal that students' conception of presentation layout is as per the input received from lecturers in the university. Students receive formal presentation input in the speaking course conducted by language lecturers. Thus, students' perception of content dimension (while presentation stage) is reflective of the academic input received. This feedback clearly implies the theoretical implication of the situated learning theory (Lave & Wenger, 1991).

As for the content dimension (conclusion stage), it is apparent that there is no significant mean difference between students and engineers in the 8 items listed. However, inferential tests indicate slight difference and emphasis accorded by students toward some of the items. One particular item stressed by students includes i) restate relevance. Students consider this item as important as it directs audience's attention to the purpose of the project findings and its significance to the study. The added emphasis allows students the opportunity to indicate the importance of the findings.

For the language competency construct, although there is no significant mean difference between students and engineers, slight difference in significance exists among individual items. Within this construct, the items that students have indicated higher level of importance include i) appropriate language use, and ii) language understood. The language input received by students is based on the input provided by language lecturers in the university. Thus, the findings indicate possible reference to participation communities of practice as stipulated in the learning theory (Lave & Wenger, 1991).

In terms of non-verbal skills construct, students indicated emphasis on the attribute of i) use of pause in presentation, ii) non-verbal gestures, and iii) movement while presentation. This finding is possibly indicative of the relevance the competency item in emphasizing and providing stress on a particular point in a presentation (Koch, 2010).

Students are aware of the importance to pause in presentations to ensure that audience is able to internalize the verbal information before introducing a new point (Freeley & Steinberg, 2009). What can be implied from the findings is the importance for audience understanding to occcur when a message is delivered. Movements need to be coordinated to accentuate an oral presentation (Davis, 2005). Students are aware of the need to interact and engage the audience through non-verbal gesture.

The students' findings imply that communicative competence in technical oral presentation is depicted by a combination of structural and non-verbal elements in a presentation. To students, a successful presentation is one that is structured, visually appealing, and delivered in an interactive manner, and made understandable by appropriate lead-in, word choice and language use (Boiarsky, 2004). Students focus on the content and two-way interaction with the audience. Students' are content centered.

4.4.2 Engineers' perceptions of significant communicative competence elements

Despite these overall findings in the five constructs, inferential tests reveal that there is a slight significant difference in some of the items listed within the five constructs. For the presentation skills and presenter ability construct, the sub-items in the presentation skills construct include i) purpose, ii) scope, and iii) analytical ability. These sub-items have been accorded a higher level of importance by engineers. Engineers require presentations to be precise and concise as time is a critical factor for industry practitioners (Polonsky & Waller, 2004).

Other items (although not significant), however are accorded higher levels of importance include i) time limit, ii) anticipatory skill, and iii) criticism. It is obvious that critical thinking is an essential skill requirement of prospective graduates (Venkatesan & Ravenell, 2011). Engineers expect students to be critical in their presentations.

In the behavioral construct, engineers accorded a higher level of importance to significant items such as i) analytical response, and ii) courteous response. Other items that are not significant but accorded a higher level of emphasis are i) listing questions, and ii) incorporating audience feedback. What is implied is engineers' emphasis of analytical and questioning mind (Morton, 2012). Presentations are not mere presentation of facts but an interpretation of findings. Engineers consider professionalism as important criteria to be practiced throughout a presentation (Carter, 2013).

In terms of content dimension (introduction stage), engineers concur on the importance of i) introduction lead-in, ii) problem statement, and iii) indicate relevance. These items are significant and have been accorded higher level of emphasis by engineers. Due to time constraint, engineers need to be specific and focused in the presentations (Boiarsky, 2004). Engineers expect students to be able to transfer information as clearly as possible.

As for the content dimension (while presentation stage), engineers consider significant items of importance to include i) coherence, and ii) correct delivery. Coherence evidenced by linguistic markers signals the end of discussion of a point before a new point is brought forth (Anthony et al., 2007). Engineers indicate that presentations should be easily understood.

Another item, is the use of gannt charts to enable audience to capture the visual format. Precise and well planned visuals enable the audience to capture the information in a single slide as opposed to words and sentences in a slide (Wecker, 2012). As time is a crucial indicator for engineers, visuals enable busy audience like engineers to capture visual information in a glance.

As for information on content dimension (conclusion stage), cost is an important significant item to engineers. Cost is crucial to sustain market competitiveness in a global borderless world (Vohra et al., 2012). As for other items (although not significant), engineers' emphasis include i) key milestones, ii) creativity, iii) discussion of findings, iv) restate purpose, v) closing statement, and vi) propose suggestions. This means that engineers expect students to restate the purpose of the presentation. In other words, engineers expect students to share a holistic perspective of the findings.

As for the language dimension construct, engineers also indicate their awareness to ensure the correct articulation and enunciation is practiced in technical oral presentations. As for this construct, other items listed with a higher emphasis (although not significant) include, i) grammar, ii) avoid use of complex language, iii) clear pronunciation, and iv) word choice. What is evident from the findings is engineers' awareness of communicative competence is not only isolated to that of technical competency but dependent on linguistic and rhetorical variables.

This is a clear indication of the shift in engineers' perspective on soft skill requirement such as communication skills required in a technical discipline (Azami Zaharim et al., 2012). This view indicates the change in the way engineers perceive communicative competence which contradicts the situated learning theory on communities of practice. What is implied is that over and above the necessary technical knowledge, engineers now realize that other tools such as language and rhetorical competency are required to verbalize the technical expertise (Rainey, Turner, & Dayton, 2005).

In terms of non-verbal construct, engineers are also aware of the importance of certain significant items such as i) volume, and ii) vocal fillers. Other items, although not significant, but accorded a higher emphasis include i) rate, ii) vocal variety, iii) facial expressions, iv) being extemporaneous, and v) culturally observant. The findings reflect engineers' awareness of non-technical items that accentuate the communicative competency of a presentation. In other words, the non-verbal skills are equally important. This implies that engineers realize the importance of such skills when delivering a presentation.

Subject matter knowledge is not the sole criteria but the ability to be heard, understood and engaged in a presentation are other features necessary in a presentation. In other words, the findings imply that engineers acknowledge the importance of other skills besides field of specialisation. This is a change in receptivity of other skills than technical skills (Kumar & Hsiao, 2007).

4.5 Summary

The findings have clearly indicated an insight of the perception of students and engineers on communicative competence requirement in technical oral presentations. Students and engineers indicate no significant findings in four of the constructs with an exception to content dimension introduction stage construct. However, inferential test findings reveal significant and not significant findings among students and engineers in various items listed within the construct.

In line with Research Question 1, students' view of presentation skills include technical and content of the project which must be presented in a structured, and creative visual presentation. In terms of attribute, students are aware of the importance to ensure audience interaction through non-verbal skills which enable audience to reflect on points discussed in a presentation. Students' are more content focused. The implication of the ESL learners' findings to language communication and curriculum designers is the need to align academic community's perception of communicative competence in technical oral presentation to the needs of the real world application. By this way, the ESL learners will be better equipped to prepare themselves for workplace expectations when presenting technical or scientific engineering presentations.

With reference to Research Question 2, engineers' presentation skills focus on analytical, critical and holistic perspective in a presentation. In addition, engineers also look out for economic relevance and data application in the industry. Engineers are also linguistic and rhetorically driven. For the attribute component, engineers include non-verbal cues to accentuate communicative competence in technical oral presentations. Engineers perceptions differ from students' as the engineers are more holistic in perspective and industry focused.

At the same time, an interesting finding of the study reveals that certain communities of practice like students indicate the conventional reference to content focus which in other words remains within an academic perspective. Although students indicate awareness toward the importance of non-verbal cues, the findings indicate that in terms of critical analysis perspective, students stressed on technical knowledge related to data findings.

Engineers on the other hand indicate an awareness to both discipline (technical) and non-technical skills. Engineers stress on data from a holistic perspective. For engineers, there is more to presentations than just reporting data findings. Communicative competence is enhanced when data findings are critiqued and made relevant to the industry. At the same time, the findings indicate that engineers reveal a higher level of importance to language, behavioral and non-verbal cues. This implies a shift in the trend how engineers perceive competent presenters in a workplace.

It is essential that both members of the academic community and professional engineering community convene to aid the ESL learners and not work as separate entities or in silo. There is a need for combined decision making on choice of project titles, language choice, organisation of presentation contents, real world application as well as economic considerations of such technical oral presentations. At the same time, the importance of non-technical skills is undoubted. Presentation skills, professionalism and maintaining one’s composure during intense critique sessions are factors that merit ones’ presentation.

The engineers' findings indicate the need for synergy between the engineering professional community and participants of the academic community such as the ESL learners and educators involved in the learning and teaching of technical oral presentations. It is evident that both focal groups indicate differences in the criteria of importance on the sub-sets of communicative competence. However, the diversity can be lessened among the academic community and that of the engineering professionals if prior discussions are held at the onset of the project and sustained during the duration of the project till its completion. With combined input from both the academicians and engineers, students will be able to capture input from both groups and align their presentations that meet the specifications from both communities of practice.

CHAPTER 5

FINDINGS OF THE QUALITATIVE DATA: STAKEHOLDERS' PERCEPTIONS OF LINGUISTIC AND RHETORICAL COMPETENCE

5.1 Introduction

The qualitative phase of this study seeks to understand stakeholders' views on communicative competence and subsequently the linguistic and rhetorical dimension vital for enhancing communicative competence in technical oral presentations. The analysis is on participants' response to semi-structured interview sessions on the linguistic and rhetorical dimension in technical oral presentations. To Morton (2009), this perspective is essential as it creates that "magic" or interactivity needed in engineering presentations.

Following the quantitative phase of the study, five constructs were obtained and deemed necessary for technical oral presentations. This phase seeks initially to probe the "emic" or insider perspective with 13 lecturers and 6 language lecturers. This act as a preamble to further qualitative investigation with the pool of 26 students, 13 lecturers, 6 language lecturers and 12 engineers from a rhetorical and linguistic dimension. These participants were also involved in the quantitative phase of the study.

5.2 Research Objective

In relation to Research Question 3, lecturers and language lecturers were selected to provide their response on essential presentation skills and attributes necessary in technical oral presentation. Findings from Research Question 3 acts as a preamble to linguistic and rhetorical dimension queries with the subsequent interview conducted with the pool of 26 students, 6 language lecturers, 13 lecturers and 12 engineers.

5.3 Research Questions 3 and 4

The central research question for the study remains as,

"What are the stakeholders' perceptions of communicative competence requirement in a technical oral presentation?"

Research Question 3 aims to provide feedback on selected participants' perspective of communicative competence while Research Question 4 addresses linguistic and rhetorical dimension deemed necessary in technical oral presentations.

In the context of this study, Research Question 3 is worded as,

"What are the lecturers' and language lecturers' perceptions of communicative competence requirement in technical oral presentation?"

a. How similar are they in their perceptions of presentation skills and attributes required in technical oral presentations?

b. How different are they in their perceptions of presentation skills and attributes required in technical oral presentations?

Research Question 4 is worded as,

"What are the stakeholders' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?"

a. How similar are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?
b. How different are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

Research Question 3 acts as a precursor to further investigation on the linguistic and rhetorical dimension of the said construct. The findings also reconfirm the inclusion of the said constructs as mentioned in the quantitative feedback. Eventually, the study aims to propose an adapted linguistic and rhetorical competence framework deemed necessary for technical oral presentation set within an ESL context in a Malaysian setting.

5.4 Thematic Analysis of Research Question 3: Communicative Competence

Among the communicative competence features that language lecturers and lecturers commented on broad areas like i) technical mastery in knowledge and application, ii) presentation skills, iii) non-verbal cues, iv) focus, v) confidence, vi) interaction with audience, vii) meta-cognitive skills, viii) contextual application, viv) language fluency, and vv) structural layout. Respondents were required to comment on these areas during the interview sessions. Such areas are deemed important dimension that enhance the notion of communicative competence in technical oral presentations.

These broad areas can be thematically analyzed as the following constructs, i) presentation skills and attribute, ii) behavioral skills, iii) content, iv) language competency, v) discourse competence, vi) Information Technology competence construct, and vi) non-verbal skills. The sub-sets within the constructs are:

i) presentation skills and attribute construct: presentation competence, meta-cognitive skills, and well-preparedness,

ii) behavioral skills construct: interaction with audience, confidence, contextual application,

iii) structural competence construct: structural layout, coherence, focus,

iv) technical competence construct: technical knowledge, engineering judgment,

v) language competency construct: language fluency,

vi) non-verbal cues construct: pace; eye contact.

The above constructs are also evidenced in the quantitative findings obtained from the questionnaire. The qualitative findings confirm certain sub-sets of communicative competence features mentioned in the quantitative findings as stated in Chapter 4. The quantitative findings similarly emphasised the above constructs. The following section provides a brief description of each construct as emphasised by the selected language lecturers and lecturers.

5.4.1 Presentation Skills and Attribute Construct

For the presentation skills and attribute construct, language lecturers and lecturers attributed the following sub-sets such as i) presentation competence; ii) meta-cognitive skills, and iii) well-preparedness as part of the construct. In terms of presentation skills, 2 language lecturers and 4 lecturers stressed the importance of this sub-set. 5 lecturers and 1 language lecturer commented on the importance of meta-cognitive competence. As for well-preparedness, 1 language lecturer and 4 lecturers remarked on its importance within the presentation skills and attribute construct. The importance of presentation competence is evident in excerpt 5.1 by MMSALCS1.

Excerpt 5.1 MMSALCS1, RA3, Line 38-42

> "…the ***ability to deliver it well***; one of course would be in terms of the speaking skills; they should have the good ability to ***communicate well***; to ***articulate the ideas*** well; the ability to ***express the opinions***…"

The excerpt reinforces the language lecturers' stand on the importance of presentation skills. The importance of presentation skills and its attribute is similarly mirrored in the quantitative findings (see sub-section 4.3.1). The above feedback propel the need to explore phrases like "deliver it well, communicate well, articulate the ideas, and express the opinions" from a linguistic and rhetorical dimension. This is in line with Celce-Murcia's proposed rhetorical competence in the communicative competence model (Celce-Murcia, 2007). The finding implies that ESL learners must be able to articulate and express their ideas and thoughts during a technical oral presentation.

Meta-cognitive competence (justification) is another feature necessary within the presentation skill construct as illustrated by lecturers in excerpt 5.2 by MIIELC5.

Excerpt 5.2 MIIELC5, RA5S3, Line 283-285

They should able to ***justify their result*** based on engineering judgment. Essential skill will be confident level and their ***presentation skill***.

This finding provides the impetus to explore features like "justification and presentation skill" from a linguistic and rhetorical dimension. How does a presenter exhibit elements of justification and presentation ability from a linguistic and rhetorical dimension? This feature is akin to strategic competence as termed in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). The importance of well-preparedness is evidenced in excerpt 5.3 by MIIELCS11.

Excerpt 5.3 MIIELCS11, RA2, Line 9-11

"…do not read off from the slides but rather they are the ones who ***well prepared*** in terms of their ***content and material*** they have prepared, in other words, when they don't have refer or turn around and read from their slides that means that they are already ***well prepared***…"

It is essential to further understand what lecturers imply by "well prepared" from a linguistic and rhetorical dimension. In other words, students need to internalize the content of the presentation and be able to deliver the contents with confidence to the audience. Further probing on these features from a linguistic and rhetorical perspective is required. In the ESL context, engineering lecturers expect students to be well versed with their contents during a presentation. In other words, students must be thorough about their project. This implies that students must take ownership of their project from its inception to the date of completion.

5.4.2 Behavioral Skills and Attribute Construct

For the behavioral skills and attribute construct, language lecturers and lecturers attributed the following sub-sets such as pertinent features, i) interaction with audience, ii) confidence, and iii) contextual application. Similar issues were highlighted in the quantitative findings (see sub-section 4.3.2). In terms of behavioral skills and attribute construct, 1 language lecturer and 1 lecturer stressed on the importance of interaction. In terms of confidence, 3 lecturers and 1 language lecturer indicated the importance of this sub-set. As for contextual application, 3 lecturers and 1 language lecturer stated the importance of this sub-set.

The following excerpt 5.4 by FMLCLC19 provides an insight on the importance of interaction with the audience.

Excerpt 5. 4 FMLCLC19, RA11, Line l04-105

> "...the ability to ***engage the audience***, is the ability to ***interact***, to speak and ask them like, "Have you ever felt this way before?.."

Language lecturers emphasised the need for interaction during a presentation. Another example that lecturers stressed on interaction is provided in the excerpt 5.5 by

MMSALCS1, which is as stated,

Excerpt 5.5 MMSALCS1, RA4, Line 60-62

> ***"...passion,*** he is ***able to really deliver and engage the listener.*** A good speaker is really one who is able ***to connect to his listeners..."***

Lecturers were of similar viewpoint on the importance of interaction in presentations. This view is reflected as interactional competence emphasised in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). The subsequent feature expected by lecturers is the stress on confidence level as portrayed in excerpt 5.6 MIIELCS11.

Excerpt 5.6 MIIELCS11, RA2, Line 10

> "…they ***don't have refer or turn around and read from*** their slides…"

In the following excerpt 5.7 by MMIELC4, the importance of contextual application in the area of specialisation in technical oral presentations was emphasised.

Excerpt 5.7 MMIELC4, RA7, Line 35-36

> "…***convergent and divergent thinking***, to think ***outside of their methodology***; ***inside*** the ***research field***; but ***outside of their field***…"

Lecturers stated the importance of contextualization of data findings. This feature is in accordance with Celce-Murcia's strategic competence as exemplified in the model of communicative competence (Celce-Murcia, 2007). Further analysis needs to be conducted to decipher the sub-sets of communicative competence from a linguistic and rhetorical dimension.

5.4.3 Structural Competence Construct

For the structural competence construct, language lecturers and lecturers attributed the following sub-sets such as i) structural layout, ii) coherence, and iii) ability to concentrate or focus on the core issue, to be essential features to reflect the said construct. These findings concur with the quantitative feedback provided (see sub-sections 4.3.3. to 4.3.5). In terms of structural competence construct, 1 language lecturer and 4 lecturers accorded the importance on structural layout. In terms of coherence, 1 language lecturer and 2 lecturers indicated the importance to this sub-set. As for focus, 1 language lecturer and 4 lecturers indicated the importance to this sub-set.

The importance of structural layout is emphasised in the following excerpt 5.8 which is in accordance with Celce-Murcia's view on discourse competence which stresses on organisational layout and sequencing of information (Celce-Murcia, 2007).

Excerpt 5.8 FMLCLCS19 RA10, Line 89-91

> "...how they ***organise the information*** Then there will be slides, err, how are they…what kind of visual aids will be used, is ***the arrangement of the slides***..well…uhmm…pleasing to the eyes, I suppose..."

The following excerpt 5.9 by MMIELCS10 depicts lecturers' view on the importance of students' ability to concentrate and focus on the core issue in a technical oral presentation. This feature is in line with Celce-Murcia's description of strategic competence in the model of communicative competence (Celce-Murcia, 2007).

Excerpt 5.9 MMIELCS10, RA1S2, Line 162-163

> "…when you ***look at the objective***, your objective does not answer the title, your objective does not answer the ***methodology*** but the methodology is to answer the questions that you are going to answer…"

The findings prompted the researcher to conduct further analysis from a linguistic and rhetorical dimension. ESL students are expected to synchronize their objective to the methodology utilised in the project. In other words, all forms of decision making should be aligned to the objective of the study.

5.4.4 Language Competence Construct

For the language competence construct, language lecturers and lecturers emphasised the importance of language fluency. This finding concurs with the quantitative feedback (see sub-section 4.3.6). As evidenced in the following excerpt 5.10 by MPHIELCS7 who highlighted language fluency.

Excerpt 5.10 MPHIELCS7, RA5, Line 61-67

> The first thing that you would notice when the presenter comes in first thing is the ***communication skills,*** whether they are continuous or not, that is very important in the initial part; and then we ***see how it builds up; whether its smooth or not;*** whether there is ***transition from one area to another***; sometimes students can't relate from one area to another because of the ***poor command of English*** moving from one slide to another slide.

Thus, there is a need for further investigation from a linguistic and rhetorical dimension on the importance of language fluency in technical oral presentation. This finding concurs with Celce-Murcia's heed on linguistic competence to enhance the notion of communicative competence (Celce-Murcia, 2007).

5.4.5 Technical Competence Construct

In terms of technical competence construct, the feedback indicates that 1 language lecturer and 3 lecturers stressed on technical knowledge and engineering judgment. The importance of technical knowledge is exemplified in Excerpt 5.11 by MMIELCS3, who states,

Excerpt 5.11 MMIELCS3, RA2, L120-122

"...Basically it is about the knowledge, ***the technical knowledge***. The ***knowledge is the main thing*** that they need to have..."

The above excerpt as expressed by lecturers is in tandem with Celce-Murcia's definition of strategic competence necessary in communicative competence (Celce-Murcia, 2007). Students are expected to be equipped with technical competence. This sentiment is also reflected in the following excerpt 5.12 which states the need for critical engineering judgement.

Excerpt 5.12 MMIELCS4, RA, L283-285

They should able to justify their result based on ***engineering judgment***.

Lecturers were of the opinion that critical engineering decision making skills enable a student to be a competent presenter. Such competence is echoed in Celce-Murcia's need for strategic competence as part of communicative competence requirement (Celce-Murcia, 2007). The findings indicate the need to probe further from a linguistic and rhetorical dimension. The findings indicate that ESL learners must have mastery on technical content and be competent in the critical analysis expected in a project.

5.4.6 Non-Verbal Cues Construct

For the non-verbal cues construct, language lecturers and lecturers identified the following sub-sets such as i) pace and eye contact, as essential features that portray the construct. The qualitative feedback concurs with the quantitative findings (see sub-section 4.3.7). In this construct, 1 language lecturer and 2 lecturers accorded importance to pace and eye contact. This finding concurs with the quantitative findings on the importance of this construct. This finding concurs with Celce-Murcia's interactional competence which accounts for non-verbal skills (Celce-Murcia, 2007). The following excerpt 5.13 shows the importance of pace as expressed by the lecturer.

Excerpt 5.13 MMIELCS3, RA2, L120-122

> "...The second when I look at the presentation, they need to have a smooth presentation and when being asked and questioned they know what they are talking about; ***smooth presentation***; ***not too fast, not too slow****...*"

The following excerpt 5.14 demonstrates the language lecturers' view on eye contact as an important communicative competence element to engage and hold audience attention. Eye contact is essential to ensure that the presenter engages the audience attention toward the presenter and not on the slides (Dixon, 2008). This view is also similarly echoed as interactional competence in the model of communicative competence (Celce-Murcia, 2007).

Excerpt 5.14 MMLCLCS15 RA5, L54-55

> "...gestures, the facial expressions, the intonation, the voice…err the ***eye contact***, the confidence that they have/that they show..."

The findings from the language lecturers and lecturers concur with the constructs outlined in the quantitative feedback. In the course of the interview, certain items were emphasised by the language lecturers and lecturers. With the exception of the interaction item in the behavioral skills construct, engineers accorded higher emphasis to all items in the five constructs. This implies that ESL learners need to pay attention to the importance of non-verbal skills when delivering a presentation. The conviction and ownership of a learner is ascertained by the use of behavioral skills.

Following the findings to Research Question 3, the researcher sought the feedback of selected participants on the aspect of linguistic and rhetorical competence, an area deemed necessary and yet less explored in language and communication studies (Morton, 2009). The feedback on linguistic and rhetoric dimension provides findings to Research Question 4.

5.5 Methodological framework in Technical Oral Presentation

The linguistic and rhetorical framework illuminates several linguistic and rhetorical patterns deemed necessary to enhance communicative competence features in engineering presentations. Among the linguistic and rhetorical competence tenets include the student's ability to be "rhetorically explanatory, rhetorically personalized, orally immediate, orally professional and structurally holistic" when delivering a presentation (Dannels, 2009).

For this study, the researcher utilised the linguistic and rhetorical framework provided by Dannels (2009) and Morton (2009), which provides the impetus in identifying the required linguistic and rhetorical dimension deemed necessary in technical oral presentations. The definitions provided by Dannels (2009) and Morton (2009) genre methodological framework defines each tenet accordingly:

i. *Rhetorically explanatory* - use of interpretive lens rather than descriptive language. Includes the use of justification, interpretation, application and evaluation skills. Successful presentations provide clear explanation, rationale and scientific evidence provided for decision making processes conducted in the duration of the investigation.

For example, a project on fuel emission was personalized when mention is made on its environmental emission and its impact on society. Explanation was provided as to why the team had made certain decision making in the project. The excerpt 5.15 on Rhetorical Explanatory competence provides the illustration.

Example: Excerpt 5.15 on Rhetorical Explanatory competence

> "In order for you to understand why we **chose this interconnect material**, you need to know that interconnect material because you have to be **concerned about the thermal mismatch between parts** [*rationale*]. So, our **choice** of premium aluminum **addresses these concerns**..." [*reason for the choice is explained*].

As mentioned by Dannels (2009), the above explanation in excerpt 5.15 on Rhetorical Explanatory competence verifies the chemical engineering presentation team's decision on certain choices made during the duration of the project. Less successful presentations merely described the scientific justification as facts without explaining the rationale in choices made. For example, less successful teams may merely state, "...The team used interconnect material for ...". In this example, there was no rationale provided on the choice of the material (Dannels, 2009).

ii. *Rhetorically personalized* - Personal reference to engage the audience through the use of personal language, motivational language and translational language to indicate personal motivation in a discussion. Personal language includes use of examples, illustrations, justified evidence and appeals that personally motivate or appeal to the students and audience alike. Students clearly state the personal ownership of decision making conducted during the duration of the project. An example on Rhetorical Style is provided in the following sample excerpt 5.16.

Example: Excerpt 5.16 on Rhetorical Style

> Here are the companies in this area and the emissions they produce. So, which of these emissions should **you** be concerned with? The two **we** want to focus on is formaldehyde and PEP because **we** figure these emissions can be reduced for **your** health.

The excerpt 5.16 on Rhetorical Style indicates the students' upfront mention of personal decision making and motivation related to the project. The use of motivational language indicates the students' awareness of certain decision making that bears societal relevance and importance to the audience. Personal choices and motivational appeal toward lesser emission has far reaching societal consequences as the health of all present in the audience is also affected by such decision making processes.

Translational language refers to the translation of technical or jargon language for the audience in explicit ways. In other words, successful presentations required students to simplify technical language for the benefit of the audience. Dannels (2009) cites statements such as, ''Think of this mathematical curve as a *hill with a ball* [acronym], if you roll the ball down it *keeps going straight* [explanation]''; ''To simplify this equation, let's consider *our own gas use* [acronym]...'' are some examples of translational language to simplify technical jargon.

Successful presentations occur when students speak aloud beyond the meaning of such acronyms in presentations rather than assume that the audience understands the use of such acronyms. In other words, successful students provide explanation for the inclusion of acronyms to amplify the meaning of a technical jargon.

iii. Orally immediate - Use of interpretive language that helped the audience to understand details of the design and gain sense of connection and closeness with the presentation contents. Dannels (2009) states that successful presentation incorporates the use of phrases like “As you can see *here*”, “*This line* means…”, “*Red bars* stand for…” and “The *light blue curve* means…” to make specific aspects of the graphic illustration accessible to the audience.

Interpretive language (by using the above mentioned phrases) ensures that audience attention is drawn toward specific illustrations. Interpretive language creates closeness between the presentation and audience. Successful presentations use less generic and descriptive language.

iv. Orally professional – Successful presentations utilise professional language used by industry practitioners and professionals in the workplace. Dannels (2009) cites the use of terms like “*Chairman*”, “*Chief Executive Officer*” and “the *specialists* of the design team…” as some common examples of professional language. Although artificial in its context, students project confidence in using such language prevalent in the professional environment.

Successful presentations use less academic language like “our *group members* are…” or “we used the *problem statement* given to us by the students…”. In other words, successful presentations emulate the jargon used in the industry and professional workplace. Dannels (2009) reiterates that successful presentations used professional language confidently to sell their design.

Successful presentations ended their presentations with recommendations, and would explicitly direct their audience, as simulated professionals, to accept, adopt, or validate their work. Examples of statements include, ‘‘You can see the importance of this design, and *we hope you will fund it*’’ or ‘‘As you can see, the important point is that the price difference isn’t as drastic, so there’s no reason *for you not to accept the safer design* in your company’’.

Less successful presentations would opt for student type language like, “We *didn’t get* pure nitrates, but *we think and hope it will work anyway*’’. This sentence clearly indicates the lack of professionalism in decision making processes involved in the project. Such statements should be avoided in presentations.

v. Structurally holistic - Successful presentations illustrate a holistic, cohesive structure. Successful students refer to different parts of the presentation during the presentation to make connections between the different sections. Examples of such a statements are worded as, “*We mentioned kinetics earlier*, it is important to *come back to that here*” or “*As Sara discussed this point on design earlier*...”. This means that there is back and forth mention of the topic and use of holistic, cohesive markers such as "we" and "the team".

Morton's (2009) tenets on genre and disciplinary competence framework is also utilised as part of the genre methodological framework in the present study. The tenets refer to the repertoire used in contextualization resources such as narrative rhetorical style, visual and metaphorical images, and use of dynamic grammar. Narrative rhetorical style refers to the students' ability to engage audience in "story-telling like narratives" compared to mere "technical and functional presentations" to create that rapport with the audience (Morton, 2009).

Successful presentations utilise dynamic grammar with phrases like "*pressing against one another*" or "*pulling back from one another*" to convey the richnness and complexity of ideas associated with the design to help the audience visualize the project (Morton, 2009, p. 226). Other examples of dynamic grammar include phrases like, "*idea of folding and more folding* . . .", "*red elements moving through it* . . .", "*these elements just sort of pop up here and there within the site* . . ." indicate a student's genre competence and ability to depart from mere technical repertoire.

The usage of such genre and disciplinary competence enables the audience to accept the credibility of a presentation through "virtual witnessing" of a project (Ochs, Gonzales, & Jacoby, 1994, p. 163). It is envisaged that with the inclusion of such framework the interactive element or “magic” can be created in an otherwise overly technical presentation.

5.6 Thematic Analysis to Research Question 4: Linguistic and Rhetorical Dimension

The following sections report the qualitative feedback obtained from multiple interview participants such as students, lecturers, language lecturers and engineers involved in technical oral presentation. In this phase of the study, four focal groups comprising 26 students, 13 lecturers, 6 language lecturers and 12 engineers were selected to comment on the linguistic and rhetorical dimension deemed necessary for technical oral presentations.

As mentioned earlier (refer to section 1.7.1) linguistic competence encompasses linguistic accuracy and appropriacy while rhetorical competence includes a presenter’s ability to deliver the message that creates meaning, understanding and impact to an engaged and captivated audience.

5.7 Linguistic and Rhetorical Dimension in Technical Oral Presentations

Following Dannels (2009) and Morton (2009) adapted genre methodological framework and using Creswell’s (2003) generic process of data analysis in analyzing qualitative data, *seven themes* were derived from the linguistic and rhetorical dimension of communicative competence in technical oral presentations. The *seven themes* comprise *five linguistic* and *two rhetorical themes* resulting from the interview findings with the students, lecturers, language lecturers and engineers. Figure 5.1 on Linguistic and Rhetorical Dimension in technical oral presentation illustrates the said framework.

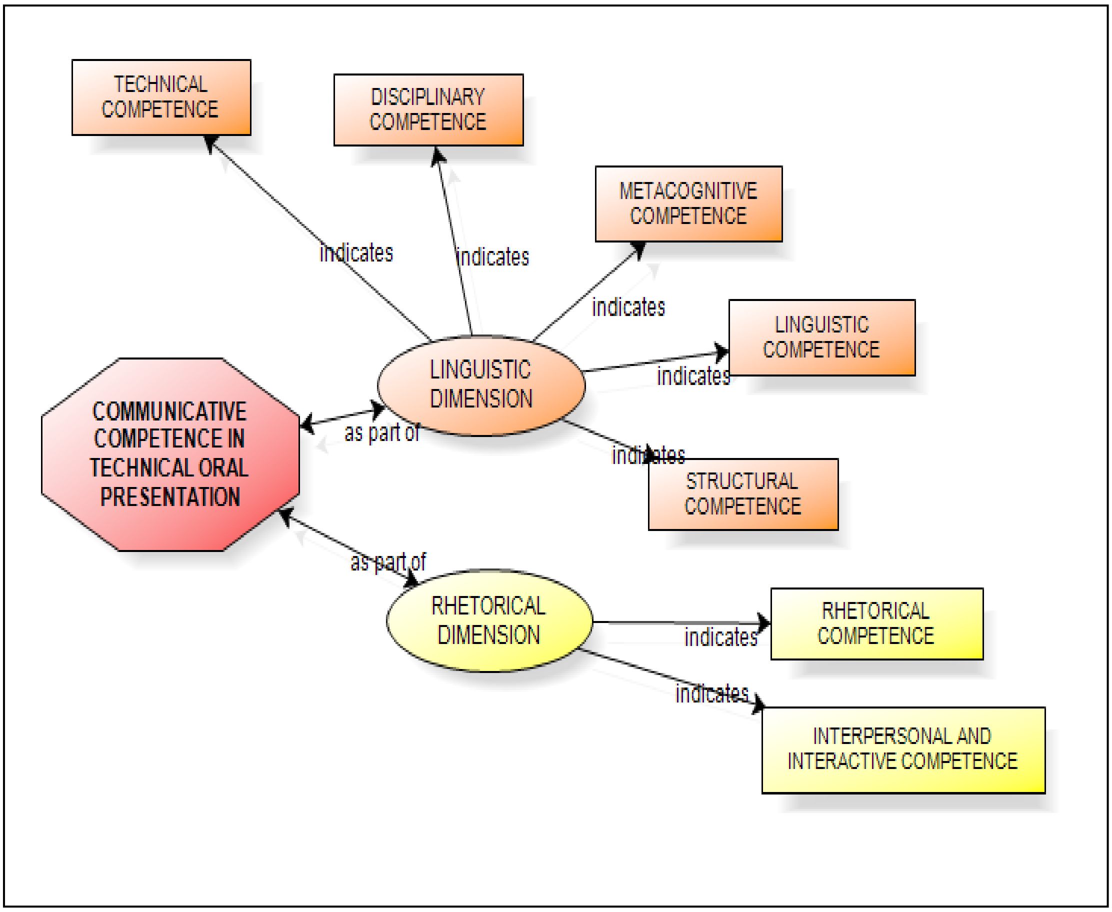


Figure 5.1: Linguistic and Rhetorical Dimension in Technical Oral Presentation

As indicated in Figure 5.1, the linguistic dimension refers to the use of *five linguistic themes* considered crucial for successful technical oral presentation such as i) technical competence, ii) disciplinary competence, iii) meta-cognitive competence, iv) linguistic competence (oral immediacy competence), and v) structural competence. These themes mirror Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

As for the rhetorical dimension, Figure 5.1 shows reference to *two rhetorical themes* such as i) rhetorical competence (rhetorical explanatory competence and rhetorical style competence), and ii) interpersonal and interactive competence. These two forms of rhetorical themes mirror Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). These themes concur with the quantitative and qualitative constructs provided in Research Questions 1, 2 and 3. This framework emphasises the importance of the linguistic and rhetorical dimension expected of ESL learners in technical oral presentations. Students in the Asian region must be encouraged to utilise and accentuate these features while delivering and presenting their findings during a technical presentation session.

Out of the seven themes, *forty six sub-sets* of communicative competence were derived. The forty-six sub-sets are comprised *thirty sub-sets of linguistic competence* and *sixteen sub-sets of rhetorical competence*. Figure 5.2 illustrates the sub-sets of rhetorical and linguistic dimension in technical oral presentations.

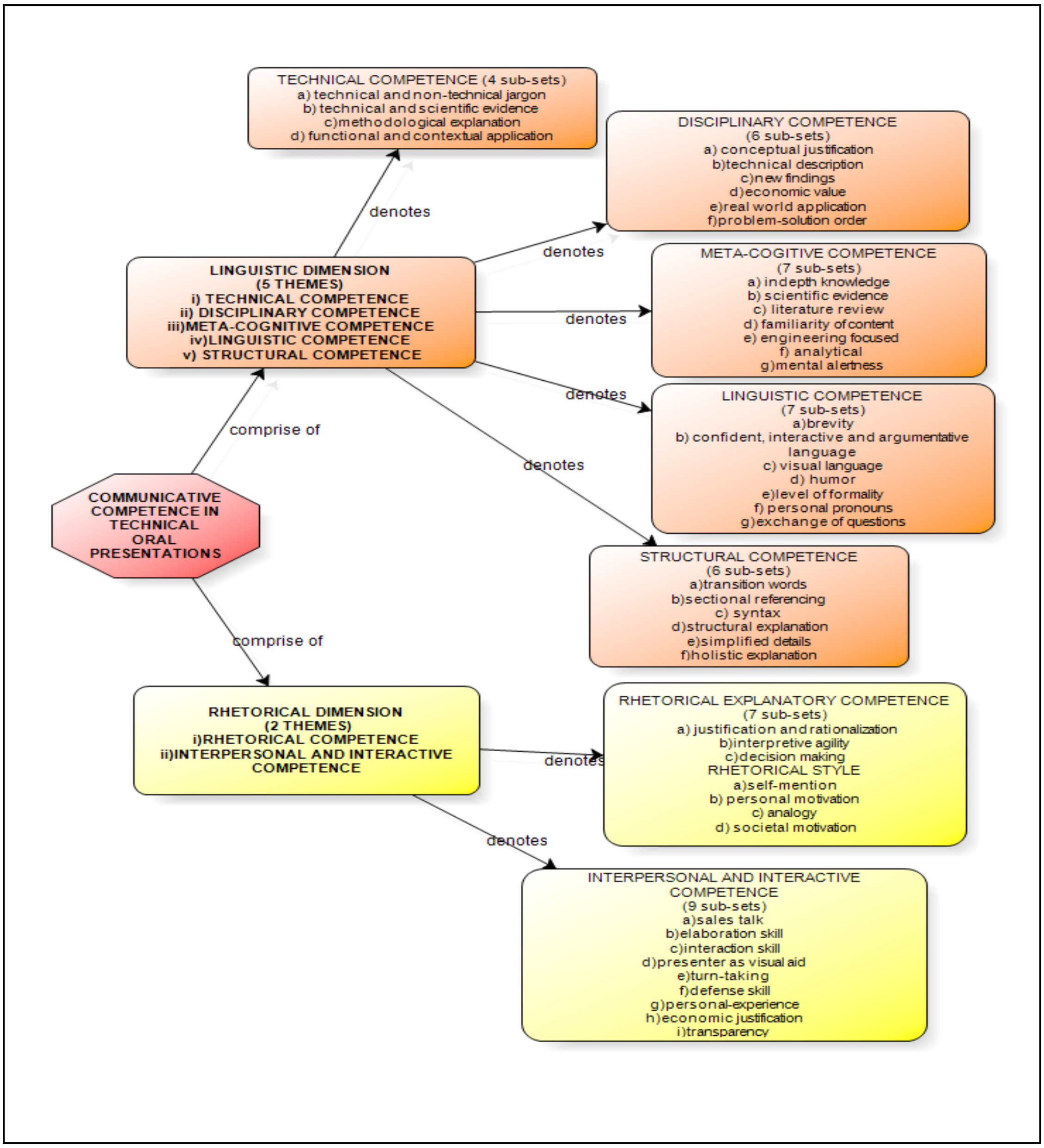


Figure 5.2: The sub-sets of Linguistic and Rhetorical Dimension in Technical Oral Presentation

A definitional operation of each linguistic and rhetorical theme is provided. Linguistic dimension is exemplified by technical competence, disciplinary competence, meta-cognitive competence, linguistic competence and structural competence.

i) *Technical competence* refers to technical mastery of the project, technical language proficiency, use of specific technical language and jargon, as well as coherence and cohesion in the discussion of technical points within sections of a presentation. In other words, the student is familiar and able to contextualize technical terms and apply technical knowledge within the project presentation (Robinson, Sparrow, Clegg, & Birdi, 2005). The student is able to deconstruct a technical term and contextualize the construct within a said project.

ii) *Disciplinary competence* indicates the students' familiarity in the use of simple and complex terminology and scientific justification related to the discipline or area of specialisation (Morton, 2009). A student is considered competent when able to provide related abreast information, special knowledge or details related to the discipline. Students are considered disciplinary competent when well versed on the project and well informed in all relevant aspects related to the project presentation.

iii) *Meta-cognitive competence* indicates the use and application of presentation language that depict the student's analysis, critical thinking, conceptual and scientific justification in a presentation (Robinson et al., 2005). A competent student is one who not only informs, but rationalizes and justifies a purported claim through scientific and methodological justification. A student must depict the ability to analyze, criticize, advocate ideas, reason inductively and deductively, reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief.

Meta-cognitive competence can be envisaged by use of phrases like, “this is *evident* from the results of heat transfer as shown in this *reading of* …degree celsius…”, “the *measurement* of XX degrees shows the *significant difference of* …[experimental evidence linked to claim]”, “*this was decided* because…”’ or “the *variable was chosen* because…”(Dannels, 2009). Students provide interpretation supported by statistical or scientific evidence to support the said claims or statements.

iv) *Linguistic competence* refers to oral language demands and language style indicated by use of *oral immediacy competence* features and *professional language* in project presentations. Although Dannels (2001) makes mention that immediacy is critically related to psychology rather than engineering presentations, renewed research indicates the shift in emphasis toward the inclusion of such linguistic requirement in engineering presentations (Dannels, 2009; Darling, 2005). However, limited examples provide details on the linguistic features that constitute the oral immediacy construct necessary for successful presentations (Darling, 2005).

Oral immediacy competence is a linguistic competence that shows connectedness and relatedness with one’s listeners. Connectedness is expressed by the use of interactive language, visual language, analogies and humorous experiences. Using questions that ask for clarification as well as referring to the examiner’s remarks will help achieve immediacy.

Connectedness through interactive language is enhanced by the use of the “you approach”. Students should incorporate the word “you” and say “I want *you* to see…” instead of saying “I want *people* to see…”. The use of personal pronouns creates that sense of connectedness and personal rapport with members of the audience (Elizabeth Rowley-Jolivet & Shirley Carter-Thomas, 2005). Connectedness is also established when the student makes reference to commonalities between the student and the audience with the use of phrases like, "*We are all faced* with health hazards at the platforms…" or "The decision to take on this method helps save high costs on …beneficial to *us all*…".

Visual language that creates the sense of connectedness is through action phrases that draw audience attention toward a particular visual image available on the presentation slide. The use of phrases like "As can be seen from *this* finding that…","*this blue line indicates*…", "However, the change *in this result* where...", and "*this* red bar will show *you* that…" create the immediacy as audience attention and focus is directed toward the presentation slide as emphasised by the student (Koch, 2010). The impact and immediacy is reinforced when the student actually points toward a particular illustration on the slide.

The use of analogies and humorous experiences are also examples to create the connectedness between the student and audience. Analogies provide the audience a clear mental picture of what is being presented. Analogies only create an image but do not prove anything (Koch, 2010). Students can use analogies to clarify a complex process for the benefit of the audience. For example, the *depth of drilling an oil rig* can be visualized with the height of a *pyramid* to provide the audience a mental picture of the depth required for an oil rig (Bhattacharyya & Sargunan, 2007).

Humorous experiences (if applicable) can be intercepted in a presentation to create that immediacy and connectedness between the student and the audience. Humor, if handled well, can be an attention getter in a presentation. It can help the audience relax and win their goodwill in a presentation session. Humor, in many cases almost always creates that rapport between the student and audience (Koch, 2010). Audiences almost always enjoy hearing a student poke fun at himself or herself.

Another feature to create oral immediacy is use of questions during a presentation. The sequence of question and answer between the student and audience shows continued connectedness during a presentation. Such questioning and clarification provides that engagement and interactive element in a speaking framework (Hymes, 1972b). When listeners in an audience (depending on the size of the audience) are asked questions, they feel part of the public speaking transaction (Vickers, 2010).

The following example as provided in excerpt 5.17 on Oral immediacy competence illustrates response provided to the question posed by the examiner.

Example: Excerpt 5.17 on Oral immediacy competence

> Examiner 1: ***What are the things*** you look for when ***I want*** to find a microcontroller to drive that motor? [question posed seeking clarification]
> Student 1: ***You need*** *a* power supply and an amplifier…er.. if it's just a dc motor, ***you would only need*** *a* power supply ...[detailed explanation to question]

(Vickers, 2010, p. 123)

The above excerpt 5.17 indicates the use of personal pronouns that create the connectedness and immediacy between the examiner and student. There is a two-way exchange of information.

Linguistic competence is also attained by the use of professional language. Professional language refers to the use of academic language artificially created for the workplace participation which includes use of phrases like "*Chairman*", "*clients*" or "*competitors*". Malyuga (2012) mentions lexical and phraseological units with particular focus on terminology as components of professional language. Lexical and phraseological units include the use of metaphors, emotional words and idiomatic expressions such as "*bite the bullet*" as part of professional language used in professional and business context (Malyuga, 2012).

v) *Structural competence* refers to thematic consistency, holistic markers, accuracy and clarity. Such structural features enable students to signal audience the different sections of discussion in a presentation. Structural markers like "*the next point*…", "*this shows the*… ", "*I am going to explain* about the…"and "this brings *the next point* of discussion" which cues the audience on the movement from one part of the presentation to another section (Koch, 2010). Such transitional words, phrases and sentences help the student achieve a coherent flow in the presentation.

Rhetorical dimension is exemplified by use of rhetorical competence and interpersonal and interactive competence. An added feature is the inclusion of information technology competence.

i) *Rhetorical competence* implies rhetorical explanatory competence and rhetorical style. *Rhetorical explanatory competence* refer to rhetorical explanatory skills such as justification skills, interpretive skill, contextualization skill, application skill, decision making as well as evaluation skill (Dannels, 2009).

Successful students are able to clarify problem statements, provide methodological justification and even suggest possible solution or absence from decision making as a result of project findings. In other words, a rhetorical competent student is one who provides valid circumstantial, methodological justification and explanation leading to a certain claim. Claims purported are substantiated and justified through scientific evidence evidenced in the project findings.

Rhetorical style indicates use of personalized language patterns, analogy, and social motivation in a project presentation. Rhetorical style to Zarefsky (2005) reflects the student's awareness of how language can be used to "show" and "tell" to evoke emotions and convey descriptive meaning to the audience (Zarefsky, 2005, p. 94). Style is depicted by students' mastery of word choices to punctuate or emphasise a viewpoint.

A student's use of analogy as rhetorical style can be described figuratively (similarities between things that are different) or literally (similarities between things that are physically alike). For example, a major speech can be likened to a parachute jump without a parachute (Koch, 2010, p. 78).

The use of analogy allows the audience to be familiar with the unfamiliar. Rhetorical oral style includes the use of personal pronouns such as through the use of "us, we, our, you," and "I" to create the conversational speech style which creates the impression of a student "talking with the audience rather than to it"(Koch, 2010, p. 109).

ii) *Interpersonal and interactive competence* depicted linguistically includes the use of turn-taking, clarification and use of affirmative statements. For a presentation to be considered successful, a two-way exchange of message is required between the student and the audience (Dannels, 2009; Morton, 2009). In other words, communicative competence is depicted when there is an interactive exchange or debate between presenter and audience to attain audience's understanding in a presentation. Tension is reduced between the student and audience (Eunson, 2008).

The following section will attempt to describe the students, lecturers, language lecturers and engineers' perceptions toward the *seven themes (five linguistic* and *two rhetorical themes)* deemed necessary to enhance communicative competence in a presentation. The discussion seeks to decipher possible similarities and differences among participants on the importance toward each theme. It also aims to ascertain if perceptions provided by the said stakeholders mirror the legitimate peripheral participation of a community of practice propagated in the situated theory of learning (Lave & Wenger, 1991).

5.7.1 Linguistic Dimension: Perception of technical competence

Technical competence refers to the students' linguistic familiarity, use and mastery of technical jargon in a presentation. A competent technical student is able to deconstruct and utilise the technical term within the context of a project presentation. The student is able to utilise technical terms with ease and provide appropriate methodological explanation, justification and utilise technical terminology within the engineering discipline.

In relation to the perceptions on level of importance of technical competence in technical oral presentations, 16 students, 12 lecturers, 5 language lecturers and 11 engineers indicated importance to technical competence. The findings concur with the findings in both quantitative and qualitative studies provided in Research Questions 1, 2 and 3 which shares similar emphasis on the level of importance of technical competence. Technical competence as part of strategic competence is essential to enhance communicative competence (Celce-Murcia, 2007).

The four sub-sets attributed to technical competence include the use of technical jargon and non-technical terminology, technical and scientific evidence, methodological explanation of a technical problem, and functional and contextual application of a problem statement. The following excerpts indicate the support voiced by selected participants to technical competence.

5.7.1.1 Technical and non-technical jargon

16 students indicated importance on the said construct. For MCESCS18, technical competence indicates students' familiarity and ability to use a wide variety of technical terminology and expressions related to the engineering discipline. This is exhibited in the following excerpt 5.18 by MCESCS18.

Excerpt 5.18 MCESCS18, RA5, Line 34-36

> "…I have to ***understand all the technical jargon*** and understand the whole concept behind the application. I need to ***understand the terms*** used as I referred to any journal paper, I need to ***understand the technical jargon*** used…"

The above excerpt 5.18 indicates the need for students to be familiar with technical terminology as students are required to constantly make reference to such terms in their said field of study. Students must be well prepared and able to explain factual knowledge (terminology, details) in a presentation (Passow, 2008). This finding concurs with the language lecturers' and lecturers' perceptions of importance toward technical knowledge and engineering judgment (see 5.4.5).

For MCESCS14, technical competence is associated with using technical jargon as practiced by professionals who participate in the community of practice. To MCESCS14, technical competence is associated with using the appropriate technical register and jargon. Excerpt 5.19 exemplifies this perception.

Excerpt 5.19 MCESCS14, RA12, Line 61

> "…presenters are expected to ***know how to speak technically, in civil engineering language …"***

To MCESCS14, technical competence is associated with one's ability to use the technical language similar to professionals' participation in the workplace environment. This perception is echoed in communication studies which state the eventual aim of communication course curriculum is to get novice engineers to "talk like an engineer" (Dannels, 2002).

Competent students are expected to practice speaking and utilizing the technical language in its rightful discipline and context. The lecturer's feedback concurs with Celce-Murcia's model of communicative competence which states the importance of linguistic competence which involves language fluency (Celce-Murcia, 2007). Essentially, it is crucial for ESL to master various sub-sets of communicative competence to deliver successful presentations.

5 language lecturers expressed similar sentiment. MMSALCS1 stated that students must be familiar with the technical terms used in the field of expertise. This is evidenced in excerpt 5.20 by MMSALCS1.

Excerpt 5.20 MMSALCS1, RA3, Line 32-36

"…if we look at the technical presentation, they must have the ***subject matter of that particular area***; they must also use technical terms or registers ***relating to that particular field***. I would expect that if it is a presentation by ***chemical engineering students***, they would use ***technical terms familiar to chemical registers*** if it is ***electronics*** then they must use ***electronic registers***…"

The above excerpt 5.20 clearly shows the importance for students to be equipped with registers associated with the engineering discipline. In other words, a competent technical student is one who is familiar with the technical registers used in the area of specialisation. This finding on the importance of language competency relates to Celce-Murcia's model of communicative competence which highlights the importance of linguistic competence (Celce-Murcia, 2007). This means that ESL learners must be familiar with the technical and scientific genre used in such presentations.

This view is shared by 12 lecturers. In excerpt 5.21 by MMIELCS3, the lecturer stressed on technical knowledge as the basic requirement of a student to be a competent student. Familiarity to technical jargon, terms and registers enables a student to deliver effectively.

Excerpt 5.21 MMIELCS3, RA 2, Line 18-21

"…I want their [them] to be fluent, when they are being asked, they are being questioned, they ***know what they are talking about***, they know what to respond. Basically it is about the knowledge, ***the technical knowledge***. The knowledge is the ***main thing*** that they need to have…"

The above excerpt 5.21 indicates the importance stressed on technical competency by the lecturer MMIELCS3. Technical competence is exhibited when a student is able to first understand and then apply the technical terminology with familiarity within the context of a presentation. Inappropriate choice of technical register results in undue confusion amongst members of an audience. This aspect is similarly expressed in the quantitative feedback (see sub-section 4.13) as well as qualitative finding (see sub-section 5.4.4) on language competence construct. It also concurs with Celce-Murcia's suggestion of linguistic competence as an essential feature of communicative competence (Celce-Murcia, 2007).

Another aspect of technical competence is depicted through a students' wide array of non-technical registers for the benefit of non-technical audience. A student is expected to be equipped with similar simplified terms of technical terms. 16 students shared a similar sentiment. The following excerpt 5.22 by MMESCS6 provides evidence of the said perception. It is clear that ESL students stress the importance of a wide array of technical genre to ensure audience understanding during a presentation.

Excerpt 5.22 MMESCS6, RA 11, Line 69-71

> "…the most important thing is can explain ***that related to the topic*** presenting as best you can, use technical term but make sure ***behind technical term that must be simple term of the meaning***…"

The above excerpt 5.22 indicates the need for technical students to be equipped with a wide repertoire of synonyms of technical registers to meet the needs of a varied audience who may come from technical and non-technical background. It is paramount that a student ensures that he is equipped with a wide array of technical and non-technical registers for a successful presentation. This aspect concurs the with feedback provided in sub-section 4.3.1 (see Table 4.7 on Awareness of Audience Technical Knowledge and Table 4.8 on Awareness of Audience Non-Technical Knowledge).

5.7.1.2 Technical and scientific evidence

12 lecturers substantiated technical competence with students' ability to justify purported claims by technical and scientific evidence. Lecturers encouraged students to include methodological details like statistical analysis to be technically convincing. This is evidenced in the following excerpt 5.23 by MMIELCS10 as below,

Excerpt 5.23 MMIELCS10, RA4S2, Line 206-209

> "…we want the ***experimental methodology what you did***. And another factor which is still ***missing*** is the ***statistical analysis***, we are trying to stress on this. If you [student] say that one graph is higher than the other and that it is better, ***where is the statistical analysis for that, where is the evidence for that***?..."

The above excerpt 5.23 indicated the need to provide technical and scientific clarification like data findings, calculations, scientific and technical data as evidence to a claim. Lecturers required students to provide experimental details prior to making a conclusive statement. Celce-Murcia also proposed that providing analytical responses is part of strategic competence to denote communicative competence (Celce-Murcia, 2007). In other words, ESL learners are expected to articulate analytical analysis systematically to gain audience confidence of students' ownership of the data findings.

Similarly, 11 engineers shared similar view on the importance of scientific and technical evidence. In excerpt 5.24, MMEESECS8 highlighted the need to provide scientific and technical justification to support a supposed claim.

Excerpt 5.24 MMEESECS8, RA2, Line 11-12

"…as one who shows that their [presenters] papers are ***based on certain technical postulations*** which had to be ***technically proven*** either by ***experimentations, simulations***…"

Engineers equate technical competence with technical and scientific evidence by proven experiments and simulations as technical evidence to support a particular claim purported in a presentation. The inclusion of scientific explanation enhances communicative competence in design presentations as stressed by Dannels (2009).

5.7.1.3 Methodological explanation

11 engineers stressed the importance of methodological explanation as part of technical competence. Students are expected to provide methodological explanation of technical jargon in a presentation. This sentiment is clearly indicated by MMEEMCS1 in excerpt 5.25.

Excerpt 5.25 MMEEMCS1, RA4, Line 41-44

> "…you can ***see crystal clear*** the problem; how they ***explain step by step*** about it; they must able to ***interpret to all clearly***, and say let's say I am a ***layman in front of him*** and I can ***understand the problem*** when he ***explain*** it to me ***very clearly***..."

Excerpt 5.25 indicates that engineers emphasised the need for a detailed and structured explanation in a presentation. A students' methodological explanation adds to audience clarity and understanding of the subject matter. This aspect concurs with the qualitative findings provided by the language lecturers and lecturers on the importance of content construct (see sub-section 5.4.3). The finding also concurs with Celce-Murcia's emphasis on discourse competence which includes reference to organisational structure (Celce-Murcia, 2007). ESL learners are expected to provide methodological and structured analysis for audience to understand the series of analysis prior to the result of a certain experiment.

5.7.1.4 Functional and contextual application

16 students equated technical competence to the students' ability to justify and rationalize the functional and application outcome of a technical project within the

engineering discipline context. In other words, a competent technical student is one who is able to justify the functional and application outcome of a project to fit the realm of the engineering discipline. This technical competence is evidenced in the following excerpt 5.26 by MCESC1.

Excerpt 5.26 MCESC1, RA 8, Line 68 - 70

> "…for me technical is about ***how things work***, ***why do they work like that***, and ***what kind of results do they obtain***…rather than just stating that something is good…"

To MCESC1 technical competence is not about stating the obvious, but providing justification and rationale to the procedural experimentation within the engineering context. The student implied that a rationale is necessary to justify the finding in a project. Technical competence is about stating the unobvious interpretation from the obvious experimental procedures. In other words, it explains the "why" of a finding. The above sentiment was similarly expressed in sub-section 4.52 and 5.4.2 on contextual application. This feature is also implied in Celce-Murcia's aspect of strategic competence as part of the notion of communicative competence (Celce-Murcia, 2007).

Reference to conceptualization of a project is also supported by MIESCS23 who concurred that technical competence is associated with ones' ability to deconstruct a problem statement to simpler patterns or components. The excerpt 5.27 provides the said affirmation.

Excerpt 5.27 MIESCS23, RA7, line 29 - 31

> "…I think the most important is being able to ***break it*** [project] ***down*** to simpler patterns. If you can ***break it down*** to that then you have proper structure than you can ***explain everything***…"

Technical competence implies a student's ability to deconstruct, simplify and explain a complex procedure in a simplified manner for the benefit of the audience. In other words, a technically competent student is one who conceptualizes and simplifies a complicated problem statement.

This finding concurs with the feedback obtained in Research Question 3 which indicates similar viewpoint as expressed by the language lecturers and lecturers. This finding concurs with Celce-Murcia's emphasis on strategic and linguistic competence which enhances communicative competence in a speaking session (Celce-Murcia, 2007). This means that the ESL student is expected to see beyond the project findings and relate its relevance to a broader context.

5.7.1.5 Perceptions toward technical competence

What seems uppermost to students, lecturers, language lecturers and engineers is that students not only need a wide array of technical and non-technical registers but more importantly, possess the linguistic prowess to substantiate purported claims by methodologically structured presentations within the engineering discipline.

All stakeholders concurred on the importance of technical and non-technical jargon. Lecturers voiced out the importance of technical and scientific evidence but this sentiment is not reflected among students, language lecturers and engineers. Engineers considered methodological justification as important construct in presentations. Both students and engineers considered functional and textual application as important sub-sets of technical competence. The findings show that there are similarities and differences between the different stakeholders on the different sub-sets associated with technical competence.

5.7.2 Linguistic Dimension: Perception of disciplinary competence

Disciplinary competence refers to the student's ability to utilise a technical terminology or provide scientific explanation related to the terminology in the area of specialisation. Students need to exhibit disciplinary competence and mastery by utilizing or explaining the technical term correctly within a context. Besides being discipline specific, technical students or ESL learners in the Asian region need to apply such disciplinary competence to real-world application from an economic perspective.

Technical students are expected to relate findings to real-world context with economic justification to meet competitive edge over rival competitors in the industry. In other words, technical students need to include "utility" feature in their presentations which refers to the economic benefit gained from the findings relevant to organisations "knowledge and finance of an organisation" (Sharma, 2007, p. 22).

In response to this feature, 8 students, 9 lecturers and 4 engineers perceived the importance of disciplinary competence to enhance the notion of communicative competence. No language lecturers expressed the importance of this construct. Such differences in perceptions among stakeholders can possibly be attributed to the theoretical implications of the learning theory (Lave & Wenger, 1991). Language lecturers differed from that of lecturers, engineers and students. The six sub-sets attributed to the disciplinary competence include conceptual justification, technical description, new academic findings within parameters of study, economic value, real world application and problem solution order. This feature is in line with Celce-Murcia's model of communicative competence with emphasis on strategic competence (Celce-Murcia, 2007).

5.7.2.1 Conceptual justification

8 students recognized the importance of explaining and interpretation from a conceptual perspective. In other words, the student must be able to relate the project to a broader context. This sentiment is provided in excerpt 5.28 by MCESCS1.

Excerpt 5.28 MCESCS1, RA 8, Line 69 -70

> "…more on how things works, ***why do they work like that, and what kind of results*** do they [data findings] obtain ***rather than just trying to say this is good*** …"

The excerpt 5.28 clearly clarified the need for students to elaborate beyond experimental results as expected in a professional workplace. This statement indicates the need for students to explain beyond the project experiments. Such justification termed as strategic competence is expected in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.2.2 Technical description

Disciplinary competence implies detailed technical description of data findings. 9 lecturers and 8 students accorded a high level of importance to technical description as part of disciplinary competence. This is reflected in the excerpt 5.29 by MSIELCS9.

Excerpt 5.29 MSIELCS9, RA 3, Line 158-159

> "…I understood her presentation so well because of her presentation skills, because she really ***goes to the centre of the issue and knows what is important*** and what is not important…"

This statement concurs with Dixon (2008) on the student need to draw audience attention toward critical information in technical presentations. A student MMESCS6 indicated similar sentiments as expressed in the following excerpt 5.30.

Excerpt 5.30 MMESCS6, RA 11, Line 69-71

> "…the most important thing is able to ***explain that related to the topic*** presenting as best as you can, ***use the technical term*** but make sure behind the technical that must be short of meaning…"

In other words, the student must understand the terminology, utilise it in context and provide similar technical explanation of the jargon. 4 engineers like MMEESECS8 expressed similar concern on technical description as depicted in excerpt 5.31.

Excerpt 5.31 MMEESECS8, RA 2, Line 11-13

> "…The learners had to show that their ***papers are based on certain technical postulations which had to be technically proven either by experimentations, simulations*** etc. At the same time, they had to show their ***ability to grasp the subject matter***…"

The above excerpt 5.31 clearly indicates the shared sentiment by lecturers, students and engineers. The sentiment is voiced in the quantitative findings in sub-section 4.36 on language competency (see Table 4.62 on Ensure Appropriate Word Choice).

5.7.2.3 New findings

4 lecturers emphasised the importance of relating new parameters of the study. For lecturers such findings may not necessarily imply economic value, but act as an academic contribution to the field. MIIELCS5 made reference to the said construct as exemplified in excerpt 5.32.

Excerpt 5.32 MIIELCS5, RA 7, Line 103-106

> "…for academicians they are looking at ***parametric study***; some parameter which it may not be economic or beneficial to the industry, but from ***academic it will be some parametric or new finding*** ..."

The above finding concurs with Celce-Murcia's mention of strategic competence which accounts for analytical interpretation as part of the model of communicative competence (Celce-Murcia, 2007).

5.7.2.4 Economic value

9 lecturers mentioned the need to elaborate on economic returns in project findings. This aspect engages audience in terms of the competiveness of the product over other

existing rival contenders existing in the market. This is mentioned by MMIELCS10 in excerpt 5.33.

Excerpt 5.33 MMIELCS10, RA5S2, Line 241-243

> "…and the costing, economic benefits has to be enabled, because of the seven attributes, ***business acumen has to be*** in; so we want to ***have those economic benefits***, without that, marks will be lost..."

In the above excerpt 5.33, MMIELCS10 stated that as part of the university requirement, students need to indicate acquisition of business acumen skills. Students are encouraged to include information from an economic perspective to the organisation (Arnó-Macià & Rueda-Ramos, 2011). This view is also captured in the quantitative findings (see sub-section 4.3.5 and Table 4.46 on Include Cost Factor Analysis in a presentation).

5.7.2.5 Real world application

Disciplinary competence implies real-world application as verified by 4 engineers. This is evident in excerpt 5.34 provided by MMEEPTCS4. Engineers are of the opinion that data findings should be related to the oil and gas industry. A student is expected to relate the project findings to real-world application to ascertain the significance of the findings (Seidel et al., 2011).

Excerpt 5.34 MMEEPTCS4, RA4, Line 70-73

> As it is the technical presentations I would expect some understanding on the economics and most importantly is the effects of such a research or such an idea ***can best be made alive in the oil and gas into an application that you can apply in science particularly in the oil and gas industry.***

What is essential is that data findings are relevant for the community of practice engaged in the particular field of specialisation (Alemdar Yalçin & Nursel Yalçin, 2010). This view is expressed by language lecturers and lecturers in the qualitative findings prior emphasis on the linguistic and rhetorical dimension (see sub-section 5.4.2).

5.7.2.6 Problem solution order

4 engineers are of the opinion that a student's ability to solve problems is considered as one of the sub-sets of disciplinary competence. This is apparent in excerpt 5.35 by MMEEMCS1. This sub-set of disciplinary competence is resonated in Celce-Murcia's model of communicative competence termed as strategic competence which reflects the use of analytical skills (Celce-Murcia, 2007).

Excerpt 5.35 MMEEMCS1, RA 5, Line 47-50

> "…I am more on how the students solve the problem; I am more on looking at methodology; how the students ***solve the problem; how the students understand the problems and mention the problem statement clearly***; how the students offer the ***solutions and explain the results***; if the results is not right, they can explain why…"

A student is expected to critically analyze and interpret data findings, problem statements in relation to the context of the study and not merely report technical facts.

5.7.2.7 Perceptions toward disciplinary competence

The findings indicated that students, lecturers, language lecturers and engineers have similarities and differences in identifying associated sub-sets related to disciplinary competence. All stakeholders concurred on technical description. Students emphasised the importance of conceptual justification while engineers stressed on real-world application and problem solution order. Lecturers on the other hand, placed importance on new academic findings and economic significance of the project.

5.7.3 Linguistic Dimension: Perception of meta-cognitive competence

Meta-cognitive competence refers to the use of presentation language that depicts critical thinking and scientific justification in a presentation. Reference to critical thinking is exemplified when claims or analysis is validated by constructive numerical evidence on the said problem statement. Students are expected to contextualize, conceptualize and rationalize the analytical significance of the project. Importance of critical thinking as key competency requirement for engineers of the 21st century is resonated in engineering education literature (Arnó-Macià & Rueda-Ramos, 2011).

In relation to the perceptions of importance of meta-cognitive competence in technical oral presentations, 12 students, 9 lecturers, 5 language lecturers and 11 engineers emphasised this form of competence. The seven sub-sets associated with meta-cognitive competence include in-depth technical knowledge, scientific evidence, literature review, familiarity of content, engineering focused, analytical ability and mental alertness in responses during critique session. ESL learners are expected to have critical thinking and mental alertness as professional would be engineers. This sub-set is also emphasised in Celce-Murcia's notion of communicative competence and termed as strategic competence (Celce-Murcia, 2007).

5.7.3.1 In-depth content knowledge

12 students expressed consensus over the inclusion of meta-cognitive competence in technical oral presentations. Students consider in-depth content knowledge as one of the sub-sets of meta-cognitive competence. In-depth knowledge enables a student to defend possible queries posed by the audience, which in turn enhances communicative competence. This finding is evidenced in excerpt 5.36 by MMESCS6.

Excerpt 5.36 MMESCS6, RA 3, Line 24–27

> "…presenter must ***have in-depth knowledge about the thing [project] they are going to speak*** because let's say the ***judges want to ask something***, otherwise you will be stuck and blank…"

The above excerpt 5.36 revealed the need for students to have in-depth content knowledge at all times. Students are aware that in-depth content knowledge is required to defend varied questions posed by examiners during the presentation.

9 lecturers shared similar viewpoint on the importance of in-depth knowledge as part of the meta-cognitive competence. FMIELCS2 exemplified this in excerpt 5.37.

Excerpt 5.37 FMIELCS2, RA 2, Line 19-21

> "…as effective presenters, first of all, I think they need to ***know the project, in and out of the project***, not just by doing or performing the experiments but they must be able to ***reason out why they are doing something*** like that…"

The above excerpt 5.37 clearly associates in-depth knowledge with meta-cognitive competence. This view is reflected in Celce-Murcia's model of communicative competence where analytical skills are part of strategic competence (Celce-Murcia, 2007).

5.7.3.2 Scientific evidence

11 engineers voiced the importance on the use of scientific evidence and analysis as part of the meta-cognitive competence construct. Such features contribute to the presenters' ability to provide scientific justification when queried. This sentiment is obvious in excerpt 5.38 by MMEESECS8.

Excerpt 5.38 MMEESECS8 RA2, Line 11-12

> "…The learners had to show that their papers are based on certain technical postulations which had to ***be technically proven either by experimentations, simulations***…"

Engineers emphasised on the need for scientific and proven analysis to validate findings in a study. Findings are not considered valid if not substantiated with scientific evidence. This viewpoint is similarly expressed in excerpt 5.39 by FMLCS17.

Excerpt 5.39 FMLCS17, RA21, Line 229-230

> "…of course you must ***give me evidence.*** So I really impress- is my student when they present something…"

In other words, meta-cognitive competence is justified when scientific evidence is used to support a particular claim. This finding is similarly evidenced in the quantitative finding (see sub-section 4.3.4, Table 4.37 on Use of Supporting Materials for elaboration in a presentation) and qualitative findings (see sub-section 5.4.1). The ability to provide scientific justification is essential to validate a point and in turn gain the trust and support of the listeners in the audience (Clark et al., 2012). This view is supported in Celce-Murcia's model of communicative competence as strategic competence is an essential sub-set of the said notion (Celce-Murcia, 2007).

5.7.3.3 Literature review

9 lecturers commented on the need for students to provide critical analysis of literature review. Students are expected to provide their analysis of previous literature and not merely state a record of the studies conducted previously. This sentiment is expressed in excerpt 5.40 by MMILECS10.

Excerpt 5.40 MMILECS10, RA1S2, Line 168-173

> "…sometimes they just cut here from one abstract, then sometimes they just cut from another; instead of talking in terms of literature review, where ***like this guy says this, whereas this guy says better but what I am going to do is this***; ahh…this one they don't know; and it keeps on cropping up every time in the Final Year Project presentations…"

In other words, lecturers are interested to note students' critical analysis of literature review and its significance to the study. 12 students concurred on this view as seen in the excerpt 5.41 by MMESCS5.

Excerpt 5.41 MMESCS5, RA4, Line 40-42

> "…I had ***to defend it [project] and I validated my input*** with added data from other ***government departments***…"

Validating ones' data adds to the linguistic and strategic competence of a presenter. Students need to be able to substantiate findings with other studies in the field. This reflects the need for presenters to contextualize the data findings. This finding concurs with qualitative feedback to Research Question 3 (see sub-section 5.4.1).

5.7.3.4 Familiarity of content

In this study, 9 lecturers expressed the need to indicate familiarity of content. Dixon (2008) mentioned that students should be well prepared to avoid "the cardinal sin of reading off their paper" (Dixon, 2008, p. 2). In other words, students are expected to be familiar with their content matter in order to make less reference to the presentation slides. This sentiment is made obvious in excerpt 5.42 by MIIELCS11.

Excerpt 5.42 MIIELCS11, RA 2, Line 8-11

> "…For those kind considered as good ones, …they are ***the ones who well prepared in terms of their content and material they have prepared, in other words, when they don't have refer or turn around and read from their slides that means that they are already well prepared***…"

From the above excerpt 5.42, good students are the ones who are well prepared and have internalized the content of the project presentation. This shows the importance of meta-cognitive analysis or strategic competence as inferred in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). ESL learners in the Malaysian context are expected to demonstrate familiarity with the professional engineering technical genre.

11 engineers also agreed to the importance of the said construct. To MMEEDCS5, meta-cognitive competence is marked when one makes minimal reference to the presentation slides. In other words, the student has memorized the contents of his or her project presentation. This sentiment on technical competence is expressed in excerpt 5.43 by MMEEDCS5.

Excerpt 5.43 MMEEDCS5, RA3, Line 30-31

"…the confidence in presenting ***without looking at the presentation material***; so you know ***the guy knows his stuff***…"

This sentiment is expressed in the qualitative response provided by language lecturers and lecturers (see sub-section 5.4.1). Presenter's familiarity with the content enables a person to deliver the data findings with ease and confidence as there is a sense of ownership with the project presentation.

5.7.3.5 Engineering focused presentations

Successful students are expected to convey engineering focused presentations. This sentiment is shared by 9 lecturers. This view is upheld by MIIELCS11 in the excerpt 5.44.

Excerpt 5.44 MIIELCS11, RA6, Line 68 -73

> "…the finer aspects of the work, ***the engineering aspects of the work***, what is right or wrong; what has been calculated against some existing problem rather than trying to market or oversell the work…"

The above excerpt 5.44 exemplified the need for students to relate their study to engineering perspective. This finding implies that students need to relate to the engineering aspect of the data findings. Focus on engineering aspect relates to the student's ability to analyze data from an engineering perspective which bears relevance to the industry. With this emphasis, the audience is able to gauge the significance of the findings. Such significance creates engagement with the audience.

5.7.3.6 Analytical ability

9 lecturers agreed that meta-cognitive competence is depicted by the students' analytical ability in a presentation. This view is verbalized in excerpt 5.45 by MMIELCS3.

Excerpt 5.45 MMIELCS3, RA8, Line 105-108

> "…Our students are good in presenting but sometimes they do not how to **rationalize things,** but sometimes they do not know what they are talking about, its ***empty***, in terms of the content, it's not really there,…they are good in presenting but when they try ***to justify, when they trying to make sense of their presentation, that's a problem***…"

It is evident from the above excerpt 5.45 that students are required to critically analyze and rationalize the findings of the study. This finding bears significance to Celce-Murcia's notion of communicative competence which stresses on strategic competence that implies the use of analytical skills (Celce-Murcia, 2007). This view is also expressed in the quantitative feedback (see sub-section 4.3.1, Table 4.5 on Possess Analytical Ability in a presentation) and in the qualitative feedback provided by language lecturers and lecturers (see sub-section 5.4.1) on the need for meta-cognitive skills. ESL learners in the Malaysian context are expected to have the linguistic and critical analytical ability during the presentation critique sessions.

For an engineer, a presentation at such platform may not necessarily provide the correct answer, but more importantly provide avenue for critical analysis of project findings. 11 engineers agreed with this perception. The view is reflected in excerpt 5.46 by MMEEMCS1.

Excerpt 5.46 MMEEMCS1, RA 3, Line 30-35

"…So the most important is for the students to have an ***analytical understanding*** on the works, mostly on ***methodology; understand how to solve the problem; and how the student can present the idea; the results maybe wrong***; but it's not really about right or wrong; ***but the student must know why this happens***; understanding is important; ***the student must know why this happens***…"

Thus, critical analysis and scientific justification is a mandatory category of meta-cognitive competence. Engineers expect students to be analytical and critical when presenting the findings of a study.

5.7.3.7 Mental alertness in response

For 11 engineers, mental alertness is an important criterion to mark meta-cognitive importance. This view is expressed in the following excerpt 5.47 by MMEEPTCS4.

Excerpt 5.47 MMEEPTCS4, RA2, Line 43-47

> "…***how fast they can think on their own*** and ***how creative and how fast*** they ***can answer on the spot***; the ***creative thinking and able to put things together in the right perspective instantaneously,*** that means the moment that you ask, he got to start ***thinking how does it fit in into your work and try to relate to the question*** and try to give the appropriate answer.."

In a competitive global workplace, time is of an essence and engineers are expected to be mentally alert at all times when queried on project findings during critique sessions. Engineers expect students to provide relevant and rationale answers that indicate ones' speed, mental alertness and aptitude toward a specific question.

This sentiment is expressed in the quantitative feedback (see sub-section 4.3.2, Table 4.25 on Defend Ideas when questioned in a presentation). This view is upheld in Celce-Murcia's model of communicative competence which emphasised on strategic competence (Celce-Murcia, 2007). This view is also concurred in other studies which emphasise the importance of such skills as part of the job requirement (Venkatesan & Ravenell, 2011).

5.7.3.8 Overview toward meta-cognitive competence

It is apparent that different groups of stakeholders expressed similarities and differences on the sub-sets that constitute meta-cognitive competence. Students indicated the need for in-depth knowledge. Lecturers favored inclination toward content matter such as being discipline centered. The findings suggest lecturers' preference toward procedural and academic knowledge.

Engineers, however, were more inclined toward scientific evidence and evidence of mental alertness during the question and answer session. Engineers expected students to possess the rhetoric and argumentative ability during presentations. Both engineers and lecturers concurred on the importance of analytical ability to attain meta-cognitive competence.

5.7.4 Linguistic Dimension: Perception of linguistic competence - oral immediacy competence

Oral demands and language style includes the use of oral immediacy and genre features such as visual, interactive and professional language to indicate linguistic competence in a presentation (Dannels, 2009; Darling & Dannels, 2003; Reave, 2004). Oral immediacy expressions through use of visual and interactive language allow audience to "feel psychologically closer" to the students and project (Dannels, 2009, p. 413). In addition, this importance of linguistic and discourse competence is also evident in Celce-Murcia's notion of communicative competence (Celce-Murcia, 2007).

In relation to the perceptions of importance of oral-immediacy competence in technical oral presentations, 16 students, 11 lecturers, 5 language lecturers and 9 engineers indicated the importance of the said feature. The seven sub-sets associated with oral immediacy competence in this context include brevity and genre, confident interactive and argumentative language, visual language, humor, level of formality, use of personal pronouns and exchange of questions.

5.7.4.1 Brevity and genre

11 lecturers concurred that brevity is an important salient feature in technical communication for professionals and engineers. As mentioned by Sharma (2007) "round about sentences and expressions" are avoided in scientific and technical presentations. A technical student has to be "brief, to the point, cogent and relevant" (Sharma, 2007, p. 15).

In other words, a technical writer must avoid circumlocution and verbosity – a feature not required in technical presentation. Instead, visual aids can be used to enhance a technical explanation. This is pointed out by MIIELCS14 in the following excerpt 5.48.

Excerpt 5.48 MIIELCS14, RA3, Line 47-50

> "…***rather than using a lot of sentences like a report***, some students just cut and paste it on the power point, it is not like that. ***Only the points there,*** we are all engineers, so I always insist upon some ***figures, some sketches that explain this point***…"

In the above excerpt 5.48 it is evident that brevity is essential due to the fixated amount of time available for the presentation. Brevity is supported by the use of visual aids to aid in audience understanding. Genre used is also agreed by students.

In the following excerpt 5.49 by MCESCS14, the student makes a point that familiarity with the language of the workplace is essential. This view is concurred in Celce-Murcia's emphasis on linguistic competence (Celce-Murcia, 2007). This is evident in the excerpt 5.49 by MCESCS14.

Excerpt 5.49 MCESCS14, RA12, Line 61

"…need to ***speak technically, in civil engineering language***…"

The importance of linguistic competence to create that immediacy with the audience is stated in the above excerpt. It is essential that students acquire competence in utilizing the language used by the said community of practice. Such practice provides students the platform to utilise language as practiced by the practitioners (Morton, 2012). Similar sentiment is expressed by MIESCS25 who highlighted genre knowledge in the following excerpt 5.50.

Excerpt 5.50 MIESCS25, RA2, Line 10-13

"…the most important element in technical oral presentation would be the ***flow***, ***overall flow, the targeted audience; if we are presenting to a technical audience background or a new crowd, we need to explain;*** depends whether audience has ***similar background, as people with different background, we need to explain more***..."

The above excerpt 5.50 indicated that the crux of professional communication lies in the genre used by the said community of practice. Students have to be agile and sensitive to audience background in order to choose the appropriate register and genre in a presentation (Morton, 2012). This finding is in accordance to Celce-Murcia's description of linguistic competence as part of communicative competence (Celce-Murcia, 2007).

5.7.4.2 Confident, interactive and argumentative language

9 engineers agreed that oral immediacy is marked by the students' use of confident language. Confident language is projected by a students' ability to provide concise and detailed methodological explanation without much hesitation. This viewpoint is expressed in excerpt 5.51 by MMEEMCS1.

Excerpt 5.51 MMEEMCS1, RA4, Line 40-44

"…One is confident and you can see the ***confidence how they already speak*** about it; and ***you can see crystal clear the problem***; ***how they explain step by step*** about it; they must able to ***interpret to all clearly***, and I can ***understand the problem when he explains it to me very clearly***…"

The above excerpt 5.51 indicates that confident language is portrayed when a student is well versed on the subject matter. A student's project familiarity enables a student to speak confidently in a presentation. Such use of confident language engages and creates oral immediacy with the audience as the audience attention is directed at what is stated by the student. This view is expressed in the qualitative findings provided by language lecturers and lecturers (see sub-section 5.4.2) on need for confidence skills.

In terms of interactive language, 11 lecturers voiced the importance of the said category. FMIELCS6 noted that the application of interactive language is necessary to engage the interest of the audience during a presentation. FMIELCS6 affirmed this viewpoint in the following excerpt 5.52.

Excerpt 5.52 FMIELCS6, RA2 Line 24-25 & RA3 Line 39 & Line 43

> "…first of all, I think the students need to be fluent in whatever they are presenting…they have to be convincing …how they ***actually interact for that period of presentation to keep the interest of the examiner***…he is able to defend his work, that is what makes some elements of a good presenter…"

The above excerpt 5.52 indicates that it is important for a student to interact with the audience to sustain audience's interest. It is important that a student interacts with his or her audience. The ability to interact with the audience is not an easy task as stated by FMLCLCS19 in the following excerpt 5.53.

Excerpt 5.53 FMLCLCS19, RA 37, Line 382-383

> "…The ***interaction skill, for me this rates rather high***…the ability to interact…because I ***feel that it takes only certain number of students can do that***…"

The above excerpt 5.53 states the importance of interactive language which remains a challenge among the majority of students. Language lecturers were of the opinion that such skill can only be mastered by a few. This view was similarly expressed in the quantitative feedback (see sub-section 4.3.2, Table 4.21) and qualitative findings (see sub-section 5.4.2) on the importance of interaction skills.

As for argumentative language, 11 lecturers concurred on the importance of argumentative language as such linguistic ability is necessary when a student needs to justify choices and decision making in a presentation. This view is expressed by MMIELCS3 in excerpt 5.54.

Excerpt 5.54 MMIELCS3, RA8, Line 105-109

> "…sometimes they do not know ***how to rationalize things,*** yes they are talking but sometimes they do not know what they are talking about, ***its empty,*** in terms of the content***, its not really there, empty, they just present, present.*** They are good in presenting but ***when they try to justify, when they trying to make sense of their presentation, it doesn't make sense****…*"

Excerpt 5.54 indicates that lecturers specified the need for students to justify when questioned. This requires the rhetoric ability of the student to defend and use argumentative language necessary to justify certain decision making required in a presentation. There is however, no mention on the need to use professional language such as reference to words like "Chairman" to create the artificial professional environment. This finding differs from the existing literature by Dannels (2009). However, linguistic competence is considered a crucial component of communicative competence (Celce-Murcia, 2007).

5.7.4.3 Visual language

In terms of visual language, 16 students expressed the need to use visual language during presentations. MIESCS25 states the sentiment in the following excerpt 5.55.

Excerpt 5.55 MIESCS25, RA8, Line 42-43

> "…I was trying to proof that we can use ***oil palm leaf*** as the source of energy if we go through a process of gasification…"

The student used commonly referred visual language such as "oil palm leaf energy" to explain the technical concept of "gasification". 5 language lecturers stressed the importance of such usage in technical oral presentations. FMLCLCS19 stated that visual language aids enhances audience understanding of a technical term as expressed in excerpt 5.56.

Excerpt 5.56 FMLCLCS19, RA 59, Line 534-536

> "…I was very impressed with that, because he ***applied something that he learnt*** to explain a term in his ***specialized field to some instrument like the guitar, that all of us are familiar*** with…"

In using an everyday simple reference such as the guitar, a difficult terminology was simplified and the audiences associate the visual example with an abstract concept. ESL learners in the Malaysian context are expected to utilise simple analogy and examples to illustrate technical jargon for audience understanding. Such visual representation of a scientific object creates oral immediacy with the audience (Darling, 2005). Linguistic competence via the use of visual language is also deemed as a crucial feature in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.4.4 Humor

Humor (if used appropriately) creates rapport and interactivity with the audience (Lannon & Gurak, 2011). 16 students concurred on the importance of humor. This sentiment is expressed by FCESCS19 in the excerpt 5.57.

Excerpt 5.57 FCESCS19, RA 15, Line 70-72

> "… I often find ***people with humor*** in whatever they talk to ***engage the audience*** is very important in their talk…"

The above excerpt 5.57 indicated the students' awareness to include humor as part of oral immediacy competence. This element is also reflected in the questionnaire findings (see sub-section 4.3.1, Table 4.14 on Incorporate humor in a presentation). However, the said category is not reflected in the response provided by the lecturers, language lecturers and engineers. ESL learners are of the opinion that humor can be used (with discretion) in a technical oral presentation.

5.7.4.5 Level of formality

Oral immediacy is also categorized by the level of formality required in a presentation. Such language style sets the mood for the presentation session. The importance on level of formality is shared by 11 lecturers. FMIELCS6 expressed the said view in the following excerpt 5.58.

Excerpt 5.58 FMIELCS6, RA10, Line 136-141

"…I think that the students need know the audience, that they are addressing because sometimes forget that it is ***actually a formal presentation,*** sometimes they tend to include ***too many animations***, they need to realize the audience they are addressing whether it is a ***formal or non-formal audience or is it semi-formal and know how much they can put in there***…"

Clearly, the lecturers expressed concern over the level of formality that students need to adapt to fit the audience needs. A student is expected to cater his or her presentation to meet the demands of the audience. 16 students concurred on the importance of formality used in presentation. This is expressed in excerpt 5.59 by FIESCS16.

Excerpt 5.59 FIESCS16, RA9, Line 99-102

"…***wasn't too sure on how formal the presentation slides should be***. Because in course, we were ***taught to be professional*** but ***some seniors told us the external prefer it to be more laid back, more pictures***, so that was a bit like '***Which should I do***?..."

The above excerpt shows the need to ascertain the level of formality required prior a final presentation. It is essential that students are clarified on the formality to craft the presentation language use. To ESL learners in the Malaysian setting, knowledge and input on the style of language to be used is considered of high importance.

5.7.4.6 Use of personal pronouns

The attribute associated to oral immediacy competence include use of personal pronouns. 5 language lecturers expressed importance over the use of personal pronouns in a presentation. FMLCLCS19 highlighted this in the next excerpt 5.60.

Excerpt 5.60 FMLCLCS19, RA9, Line 115-118

> "…they do not use words like "***I***' wanna show you" or "It is what ***how we feel***"…you know those ***pronouns*** that show that … that the topic that they are explaining about, that they are talking about has got to do with everybody…I think that is missing…***helps to engage the audience***…"

Students are encouraged to utilise such linguistic markers to personalize a presentation (Elizabeth Rowley-Jolivet & Shirley Carter-Thomas, 2005). The use of such linguistic items such as observable action verbs enhances oral immediacy in a presentation. Zareva (2013) concurs that this linguistic choice as a form of spoken genre in presentations is preferred by students. Such linguistic competence enhances communicative competence in presentations (Dannels, 2009).

5.7.4.7 Exchange of questions

One other category related to oral immediacy competence is through the series of questions posed by the audience toward a student during the critique session. The exchange of queries and input between the student and audience denotes interaction, justification, clarification and deliberation of ideas. 9 engineers supported this category. MMEEPTCS4 expressed the viewpoint in excerpt 5.61.

Excerpt 5.61 MMEEPTCS4, RA2, Line 30-32

> "…when the listeners are listening and they have the interest in the subject; then you can ***expect some form of questioning; so that could be an indication that the presentation is effective***…"

The excerpt indicates that oral immediacy competence occurred when a presentation is marked by a series of question and answers between the student and audience. Similar sentiments were expressed in the quantitative feedback (see sub-section 4.3.2, Table 4.17: Providing analytical responses to questions in a presentation). Verbal exchange is noted as one of the key elements of any speaking event (Hymes, 1972b). Thus, questioning is encouraged to create oral immediacy between the student and audience.

5.7.4.8 Overview toward oral immediacy competence

In relation to oral immediacy competence, different stakeholders indicate importance to different sub-sets associated with the construct. In terms of brevity and genre, both lecturers and students expressed their agreement on the said sub-sets. In terms of use of confident, interactive and argumentative language, lecturers and engineers expressed their concern over such linguistic and rhetorical expression in presentations. Students and language lecturers stressed on the importance of visual language. Unlike others, students stressed the importance of humor.

Both students and lecturers agreed on the importance of formality in technical oral presentations. Students require input on the level of formality required in a presentation. This has immediate effect on the type of diction chosen to befit the audience present. Language lecturers stressed on the use of personal pronouns while engineers emphasised the importance of asking questions.

There is however, no mention on the use of professional language like specialized terms such as "*Chairman*" by the students, language lecturers, lecturers or engineers. All stakeholders show agreement that such genre need not be used in the presentation sessions. It is evident that engineers are inclined toward actually seeing a student being more verbal, vocal and interactive. Language lecturers are concerned with the linguistic component of oral immediacy competence. Students indicate concern for language choice, style and use of humor. All stakeholders have preference for different types of sub-sets. ESL learners in the Malaysian setting are challenged on the importance of different sub-sets of communicative competence.

5.7.5 Linguistic Dimension: Perception of structural competence

In relation to the perceptions of importance of structural competence in technical oral presentations, 9 students, 6 lecturers, 3 language lecturers and 4 engineers emphasised this feature. Similar sentiments are expressed in the quantitative feedback (see sub-section 4.3.4, Table 4.35 on Ensure coherence in a presentation) and qualitative feedback (see 5.4.3 on Structural Construct).

The six sub-sets associated with structural competence include transition words and phrases, sectional referencing, syntax, structured explanation, simplified details and evidence, and methodological and holistic explanation. Similar mention of such linguistic competence is mentioned in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.5.1 Transition words and phrases

6 lecturers expressed the importance of transition words in presentations. This is in accordance with Celce-Murcia's concept of discourse competence as one of the sub-sets in communicative competence model (Celce-Murcia, 2007). In this context, lecturers expressed the lack of cohesiveness in students' presentations as stated in excerpt 5.62 by MPHIELCS7.

Excerpt 5.62 MPHIELCS7, RA5, Line 65-67

> "…sometimes the ***students can't relate from one area to another*** because of the poor command of English ***moving from one slide to another slide. Because of that we can't see the flow***…"

Transition cues are essential as this linguistic feature signals the students' intended purpose and direction of a presentation. Transition words allow the audience to keep track of the smooth linking in and between slides (Anthony et al., 2007). This aspect of competence termed as discourse competence is similarly expressed in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.5.2 Sectional referencing

9 students expressed the importance of sectional referencing as part of structural competence. This view is expressed by MCESCS24 in excerpt 5.63. Excerpt 5.63 indicates the students' awareness to utilise sectional referencing in a presentation.

Excerpt 5.63 MCESCS24, RA19, Line 132-133

> "…I think the first priority would be the ***content,*** that you must cover, and then others like ***introduction, methodology***, must be delivered…"

This feedback mirrors oral communication guidelines which stresses on "three-part talk structure" made up of "opening or introduction, body or main section, and conclusion or closing" (Eunson, 2008, p. 357). This feedback concurs with the questionnaire findings on the importance of sectional referencing (see sub-section 4.3.3) which amplifies use of lead-in statements, problem statement and title in the introduction stage of a presentation.

The sectional referencing is essential as it reflects one of the oldest models of communication being, "tell them what you are going to tell them; tell them and tell them what you have just told them" (Eunson, 2008, p. 239). The above excerpt points toward the said oral communicative guideline. This aspect of sequencing is also mirrored in Celce-Murcia's model of communicative competence as discourse competence (Celce-Murcia, 2007).

5.7.5.3 Syntax

3 language lecturers on the other hand expressed importance on syntax and mechanics of language. This sentiment is provided in excerpt 5.64 by MMSALCS1.

Excerpt 5.64 MMSALCS1, RA11, Line 167-168

> "…The focus must not only be on engineering content but on the ***mechanics of the language***, so if they would also see the importance of having students writing in good English with ***correct syntax, structure***…"

Language lecturers stressed the need to use the right syntax and sentence structure to enhance structural competence. This view is similarly reflected in Celce-Murcia's model of communicative competence where discourse competence is an essential sub-set of the said notion (Celce-Murcia, 2007).

5.7.5.4 Structured explanation and clarification

6 lecturers expressed the need for structured explanation to familiarize audience with unfamiliar technical terminology. A structured and detailed explanation incorporates detailed explanation from the initial until completion stages of a finding. Lack of such data creates gaps and leads to a barrage of questions by lecturers who are critical of details. MIIELCS11 highlighted the said issue in the following excerpt 5.65.

Excerpt 5.65 MIIELCS11, RA8 Line 102-106

> "…***with less engineering details in certain sections makes people question the validity of the work.*** When you suddenly see no details and you see some results; I would ask, "***How did you arrive at that stage? What are the steps***?" I mean because as an engineer will have to ***fulfill what are the steps, how did you arrive at these details***?..."

Clearly, evidence and detailed clarification is required to attain structural competence. Students are expected to provide details in project presentation. 4 engineers also held a similar viewpoint. MMEEMCS1 shared a similar view in excerpt 5.66.

Excerpt 5.66 MMEEMCS1, RA 5, Line 47-50

> "…I am more on looking at methodology; how the students solve the problem; how the students understand the problems and mention the problem statement clearly; how the ***students offer the solutions and explain the results***; if the results are not right, they can explain why…"

Students are expected to provide concise explanation for any problem statement. Even if answers are incorrect, engineers are interested to see the details that contribute to justification of a problem statement. In other words, engineers imply the need for strategic competence during a technical oral presentation (Celce-Murcia, 2007).

5.7.5.5 Providing simplified details and evidence

6 lecturers indicated the importance on providing details to support a viewpoint. MIESCS23 concurred on the said construct in the following excerpt 5.67.

Excerpt 5.67 MIESCS23, RA7, Line 29-31

> "…I think definitely the most important is being able ***to break it down to simpler patterns*. If you can break it down to that then you *have the proper structure than you can explain everything.***.."

Students are expected to provide simplified explanation of abstract concepts to ensure clarity among the audience. This finding concurs with the quantitative feedback (see sub-section 4.3.1, Table 4.10 on Application of organisational pattern in a presentation) and qualitative feedback (see sub-section on 5.4.3). This aspect is discussed as part of linguistic competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.5.6 Providing holistic explanation

6 lecturers stressed on the importance of a holistic explanation from the onset to the final slide presentation. In other words, there is a continued link between all the points presented. MIIELCS11 mentioned the significance of connection of points from the inception to the conclusion of the project. This viewpoint is explained in excerpt 5.68 by MIIELCS11.

Excerpt 5.68 MIIELCS11, RA3, Line 19-23

> "…The first perception would be one that presents everything in a flow; normally in a project ***presentation there is a flow, a design, a flow to show how something takes a final shape; so they just show how their project has evolved***…"

Lecturers were concerned that students provide a holistic explanation of the project to enable the audience to visualize the whole project. 4 engineers also expressed similar sentiments on the importance of a holistic explanation in a presentation. MMEEMCS10 shared a similar view as seen in excerpt 5.69.

Excerpt 5.69 MMEEMCS10, RA3, Line 25-26

> "…therefore a presentations' flow shall be ***organised, planned and executed accordingly***…from ***beginning till end***…"

It is obvious that students are required to provide methodological details in a presentation to allow audience to understand the connectivity and continuity of the project. A methodological explanation provides the sequence of findings prior the final conclusion of a project. MMEESSCS3 elaborated this notion in excerpt 5.70.

Excerpt 5.70 MMEESSCS3, RA3, Line 39-44

> "…I mean to me, 60 % of the stress of my question will be on the ***quality of the research itself,*** the results, the ***methodology***, how they [students] come up with the ***results*** and how they [students] ***compare the results with established literature***; and how they [students] ***explain all the deviation, the behavior; the pattern*** that they [students] found in the results; and ***they [student] need to understand why the result occurs this way***…"

The above excerpt indicates that students are expected to provide a holistic explanation for the project findings. Engineers emphasise on the importance of methodological and holistic explanation rather than just regurgitating a series of experiment findings. This feature is emphasised in Celce-Murcia's model of communicative competence and termed as strategic competence (Celce-Murcia, 2007).

5.7.5.7 Overview toward structural competence

In relation to structural competence, lecturers placed a lot of emphasis on the use of transition words and phrases, structured explanation, simplified details and providing methodological explanation in presentations. In other words, lecturers indicated the importance of establishing a coherent flow supported by detailed explanation to validate a view point. This finding also concurs with the findings in the quantitative and qualitative feedback provided to Research Question 3. ESL learners in the Malaysian setting stress on the importance of structural organisation in a layout of a presentation.

Students indicated the importance of sectional referencing. To students, these markers provided clarity in showing transition of different points between paragraphs. Such referencing enabled students to visualize the structure of a presentation. Engineers expressed importance on the need to provide structured explanation, clarification as well as methodological and holistic explanation to ensure structural competence. Engineers indicated awareness and importance of structured and justified explanation to clarify a viewpoint. The importance of detailed sequential explanation is similarly emphasised as discourse competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

Language lecturers stated the need to utilise syntax and sentence structure to ensure structural competence. It is evident that lecturers are concerned over the structural competence in flow and organisation of a presentation. Engineers are inclined toward explanation while students are concerned with micro aspect of structural competence. In other words, all stakeholders perceive varying sub-sets of communicative competence as key indicators of a successful presentation. This finding supports the underpinning principle of community of practice's participation as stipulated in the learning theory (Lave & Wenger, 1991).

5.7.6 Rhetorical Dimension: Perception of rhetorical explanatory competence

Rhetorical explanatory competence refers to students' ability to justify, interpret, apply and rationalize decision making judgments based on personal motivation. Personal motivation is indicated by the students' use and selection of analogy common to the audience's needs and cultural perspective. Rhetorical explanatory competence is emphasised when scientific evidence coupled with examples or analogy is used to support a particular claim.

Rhetorical explanatory competence is envisaged when a student provides valid circumstantial, methodological justification and explanation to rationalize a certain claim. In relation to the perceptions on level of importance of rhetorical explanatory competence, 8 students, 4 lecturers, 4 language lecturers and 10 engineers stressed the inclusion of such feature in technical oral presentations. The three sub-sets attributed to rhetorical explanatory competence include justification and rationalization ability, interpretive agility, decision making and evaluation capability.

5.7.6.1 Justification and rationalization ability

8 students realized the importance of providing justification and rationalization when conducting a presentation. In other words, the student validates decision making conducted in the duration of the project. This is exhibited by MIESCS23 in the following excerpt 5.71.

Excerpt 5.71 MIESCS23, RA 24, Line 104-105

"…mean ***why did I make these decisions*** and after making the decision, ***what did I do to make this thing work***…"

The above excerpt indicates the awareness among students to substantiate decision making conducted in the duration of the project. In fact, the ability to provide critical defense in decision making is considered an essential competency skill requirement among engineers in the workplace (Venkatesan & Ravenell, 2011). It is essential that students provide valid explanation for decisions conducted in a project. This feedback is concurred in the quantitative feedback (see sub-section 4.3.2, Table 4.17 on providing analytical responses to a question). This view is similarly emphasised as strategic competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

10 engineers hold the same view on the importance of justification and rationalization ability. MMEESSCS3 accounts for the shared view in excerpt 5.72.

Excerpt 5.72 MMEESSCS3, RA3, Line 39-43

> "…my question will be on the ***quality of the research*** itself, the results, the methodology, ***how they come up with the results and how they compare the results*** with ***established literature; and how they explain all the deviation, the behavior***; the pattern that they found in the results; and not just say that the pattern is like this…"

It is clear that competent students provide informed choices which reflect a students' ability to justify and rationalize. MMEEMDCS5 expressed a similar sentiment as seen in excerpt 5.73.

Excerpt 5.73 MMEEMDCS5, RA5, Line 57-58

> "…I just want to know ***whether its' wrong*** and ***why was it wrong***; so you got to be ***able to explain to the masses***…"

Thus, a presentation is not mere reporting of findings but requires the intellect of the student to justify any abnormalities of findings. Students are expected to deliver concise and precise justification to validate a viewpoint. The model of communicative competence states the need for strategic competence as an essential feature of effective communication (Celce-Murcia, 2007).

5.7.6.2 Interpretive agility

4 lecturers expressed consensus on the importance of interpretive agility of students. For lecturers, students should interpret the project findings from an engineering perspective and not from the marketing perspective. A lecturer sees more relevance when a student actually focuses on the analytical aspect related to the project rather than "selling a product". These learners are expected to have interpretive alertness. The said perception is expressed in the following excerpt 5.74 by MIIELCS11.

Excerpt 5.74 MIIELCS11, RA 6, Line 67-73

> "…they tend to sometimes oversell; rather than ***look at it from an engineering perspective***; that is not right, because this is a final year engineering project, ***they should be talking about the engineering aspects of the work; what is right or wrong;*** what have they ***found out*** and ***calculate*** what are ***the steps*** they have ***taken to calculate against some existing problem****…"*

This view differs from engineers who mention the importance to include "sales like talk" during presentation (see section 5.7.8.1). The excerpt clarified the importance for students to correctly interpret project findings related to engineering fundamental and not be drawn toward a marketing perspective. Students should focus and provide the correct engineering interpretation.

5.7.6.3 Decision making and evaluation skill capability

Rhetorical explanatory competence is also depicted when students provide substantial methodological scientific evidence and analytical details to support decision making in a project. The detailed methodological evidence is pertinent to validate the authenticity of data findings. This sentiment is expressed by 66.7% lecturers. MIIELCS11 shared the perception as depicted in excerpt 5.75.

Excerpt 5.75 MIIELCS11, RA8, Line 102-105

> "…there are ***less engineering details*** in certain sections, makes people ***question the validity of the work***. When you suddenly see no details and you see some results; I would ask, "***How did you arrive at that stage***?"… I mean because as an engineer, you will have to ***fulfill what are the steps, how did you arrive*** at these details?..."

The above excerpt 5.75 indicates the need to justify decision making with detailed methodological explanation for a purported claim. In other words, meticulous details and explanation are required to substantiate decision making in a presentation. Competent students indicate decision making with detailed scientific evidence. This finding concurs with Celce-Murcia's model of communicative competence which states the importance of strategic competence as part of successful communicative features (Celce-Murcia, 2007).

5.7.6.4 Overview toward rhetorical explanatory competence

It is evident that engineers and language lecturers indicated a higher level of importance on the need for students to provide detailed and methodological explanation for decision making conducted in the duration of the project. Both engineers and lecturers looked out for presentations that focus more on engineering perspective rather than sales or marketing perspective.

For students, rhetorical explanatory competence is preferred where students need to provide justification and rationalization. The feedback indicates that differing emphasis is stressed by the stakeholders on rhetorical style competence.

5.7.7 Rhetorical Dimension: Perception of rhetorical style competence

In relation to the perceptions of importance of rhetorical style in technical oral presentations, 3 students, 1 lecturer, 3 language lecturers and 4 engineers emphasised on the said sub-set of communicative competence. The four sub-sets attributed to rhetorical style include use of self-mention, personal motivation, analogy and societal motivation in a presentation. These rhetorical features are mentioned in other current presentation studies (Boiarsky, 2004; Morton, 2009; Elizabeth Rowley-Jolivet & Shirley Carter-Thomas, 2005; Zareva, 2013).

5.7.7.1 Self-mention

Language lecturers emphasised the need to indicate self-mention markers in decision making processes involved in the duration of the project (Zareva, 2013). Self-mention markers include use of personal pronouns. Such markers creates the sense of "community" between the presenter/writer/text and audience (Hyland, 2005). 3 language lecturers are of the consensuses that self-mention increased rhetorical style competence in presentations. This sentiment is expressed in the following excerpt 5.76 by FMLCLC19.

Excerpt 5.76 FMLCLC19, RA 9, Line 113-118

"…They do not make it like it was ***personally*** written, not written…**personally delivered** for a particular audience; they do not use words like, "***I***" or "***I*** wanna show you"…or…:"It is what ***we feel***…"; these pronouns that show what ***you are talking*** about has got to do with everybody…I think ***that is missing***…"

Excerpt 5.76 indicated the need for students to use personal reference during a presentation. These markers indicated the students' personal commitment and sense of ownership of the project. Language lecturers encouraged this form of rhetorical competence in presentations.

5.7.7.2 Personal motivation

Personal motivation refers to the students' ability to indicate self-driven desire and enthusiasm toward the project. Such enthusiasm is ear marked by use of phrases like "I decided to add… or "As a result of the experience, I used a different measurement…". In other words, the student is inspired to create a change due to lessons learnt. 4 engineers shared the said sentiment as provided in the following excerpt 5.77 by MMEEEECCS11.

Excerpt 5.77 MMEEEECCS11, RA18, Line 172-173

"…these are ***your words***, these are ***your findings***, and this is what that needs to be stressed out…"

The excerpt indicates engineers' preference for students to be personally motivated in sharing the findings and outcome of the study. Students are encouraged to personalize their findings, as such language used reflects a students' enthusiasm in the project.

3 language lecturers stressed the need for students to personalize the presentation with personal experiences. This is indicated by FMLCLCS16 in excerpt 5.78.

Excerpt 5.78 FMLCLCS16, RA7, Line 79-80

> "…Presenters are encouraged to voice their ***own views*** and ***opinions*** based on their ***own experiences*** and ***perspective in life***…"

FMLCLCS16 indicated the need to share personal lived experiences acquired in the duration of the project. Language lecturers are of the opinion that lived experiences enlighten an otherwise overly technical presentation. Moreover, public speaking literature mentions personal experiences as best sources of student credibility (Lucas, 2009). This rhetorical feature creates eagerness for presenters to share personal experiences as examples with the audience (Passow, 2008).

5.7.7.4 Use of analogy and ICT

Rhetorical explanatory competence is explicit when a student includes the use of analogy to explain a particular problem statement. 16 students indicated consensus to the said category. This construct is deemed important as personal motivation accelerates audience understanding of the topic. Excerpt 5.79 by MCESCS26 provided the said evidence.

Excerpt 5.79 MCESCS26, RA 6, Line 25

"…use of some real life analogy that ***helps to understand*** the term that had been used…"

At the same time, 5 language lecturers also agreed on the use of analogy to create a successful presentation. This is shown in excerpt 5.80 by FMLCLCS19.

Excerpt 5.80 FMLCLCS19, RA63, Line 563-569

"…they don't even ***know like they can add, like other information***…like I told them, you are being served "mee rebus", you have the "mee" inside, you have the gravy...***but what about the condiments?*** …***these things it got to be to make it more appealing***…after I mention all those things then only they start thinking…"

Students are expected to add finer details when explaining a technical concept. Lannon & Gurak (2011) suggest that analogies are useful in cases that involve translating "something abstract, complex or unfamiliar to something broadly familiar with the audience" (Lannon & Gurak, 2011, p. 234). This feature creates interaction with the audience as there is a common reference involved. As such this feature accentuates the interactional competence as stated in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

The use of analogy enables a presenter to clarify a technological term which may not be clearly understood by the audience (Boiarsky, 2004). The use of analogy enabled the audience to capture the meaning of an otherwise difficult technical jargon. The finding is similarly expressed in the quantitative feedback (see sub-section 4.3.4, Table 4.44 on Use of Analogy for Explanation in a presentation). Analogy can also be exemplified through the use of ICT skills which provide the necessary visual or "flash movie" electronic image of a certain technical terminology.

5.7.7.5 Societal motivation

4 engineers agreed that students should include societal motivation in their project. This means that students must indicate the impact of the environment and society from the project findings. The excerpt 5.81 by MMEEMCS10 expresses the sentiment.

Excerpt 5.81 MMEEMCS10, RA 3, Line 23-25

> "…Any presentation shall portray its own authentication that is, the real emphasis shall be put to meet to the intent or purpose of the presentation itself, the target ***audience***, the ***scenarios, the environment***…"

Rhetorical style is marked by the students' awareness to relate data findings to changes caused to the environment and society. In other words, a student is required to relate the data to a broader perspective other than a microscopic perspective (Seidel et al., 2011). This skill is crucial for engineers of the 21st century to make a difference in their innovation to the society (Seidel et al., 2011). Thus, it is imperative that ESL learners be encouraged to identify their research project from various lens or perspective. In this context, it is central that students, be alerted on the need to relate their findings to a broader context of the well being and betterment of the society and environment.

5.7.7.6 Overview toward rhetorical style competence

It is evident that language lecturers and engineers indicated a higher level of importance on the said construct in comparison to the students and lecturers. The sub-sets of rhetorical style competence include personal ownership, motivation, societal awareness, creativity and engagement that enhance audience attention.

Engineers related communicative competence to societal motivation. However, students and language lecturers did not indicate similar views. ESL learners in the Malaysian setting on the other hand, showed that the use of analogy is helpful in providing clarification for some technical concept. Students seem akin to relate to sub-sets that aid the academic findings in a presentation.

5.7.8 Rhetorical Dimension: Perception of interpersonal and interactive competence

Interpersonal and interactive competence is essential to “reduce tension and build bridges with an audience” (Eunson, 2008, p. 493). The use of interactive language employed through turn taking, clarification, affirmative and negative statements creates the space for verbal exchange to occur between the student and audience. Interactive language communicates the students’ social and ethical commitment toward a particular cause (Arnó Macià, 2009). Interaction is deemed crucial to create that “magic” in presentations (Morton, 2009). It is also stated as a crucial component termed as interactional competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

In relation to the perceptions of importance of interpersonal and interactive competence in technical oral presentations, 7 students, 6 lecturers, 5 language lecturers and 8 engineers perceived the importance of this feature. The nine sub-sets associated with interpersonal and interactive competence include "sales like talk", elaboration skills, interaction skills, student as visual aid, turn-taking, defense skill, personal experience, economic justification, transparency and open disclosure of findings.

5.7.8.1 Sales like talk

7 students agreed that sales talk should be categorized as part of interactive and interpersonal competence. Studies have also accentuated the need for sales like talk to enable "engineers to be able to *sell* a client a particular approach to an engineering problem and/or *prove* to a funding agency that a project warrants continued attention" (Darling & Dannels, 2003, p. 9). In other words, "sales like talk" is inevitable among engineers. This sentiment is indicated by MCESCS18 in excerpt 5.82.

Excerpt 5.82 MCESCS18, RA19, Line 150-151

"…how well you can present your ideas or ***sell your ideas*** in front of a group of people…"

The above excerpt implies the importance of sales like talk to the audience. This presentation style is used to persuade the audience to possibly accept the findings of the presentation. This view differs from that of lecturers who stated the opposite (see section 5.7.6.2). The students view is similarly shared by 67% of the engineers. MMEEMCS2 made this comment in the following excerpt 5.83.

Excerpt 5.83 MMEEMCS2, RA5, Line 136-137

> "…engineering is our backbone but we ***interact with people to sell our ideas*** or get projects or work…"

Engineers concurred that interaction is mandatory in an engineering profession. The profession involves engagement with audience to enhance productivity and competitiveness. This feature is also deemed crucial in the model of communicative competence (Celce-Murcia, 2007). This finding indicates that there are conflicting views expressed by lecturers and engineers on the use of sales like talk in technical and scientific presentations in the Malaysian setting. ESL learners need to be made aware if such forms of competence are required in the presentations. Thus, engineers of the 21st century need to possess genre and linguistic skills necessary for the selected audience (Davis et al., 2012).

5.7.8.2 Elaboration skill

6 lecturers stressed the need for students to elaborate data findings as lack of specific details lead to further probing by the audience. A similar concern is expressed in Celce-Murcia's model of communicative competence which emphasises on strategic and linguistic competence where language is needed to elaborate a viewpoint scientifically (Celce-Murcia, 2007). MIIELCS11 implies the importance in the following excerpt 5.84.

Excerpt 5.84 MIIELCS11, RA8, Line 102-105

> "…***less engineering details in certain sections make people question the validity of the work.*** When you suddenly see no details and you see some results, I would ask, ***"How did you arrive at that stage?...*** because as an engineer will have to fulfill ***what are the steps***…"

Students need to provide details prior to a certain claim. Such elaboration is required to validate the purported finding or claim. Scientific evidence is deemed essential to validate and enhance the presentation. Reference to scientific evidence is stated as strategic competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.8.3 Interaction skill

The ability to interact is deemed an important element of interactive and interpersonal competence. 5 language lecturers concurred that such skill is difficult and can only be acquired by a selected few. This viewpoint is exemplified in the following excerpt 5.85.

Excerpt 5.85 FMLCLCS19, RA10, Line 104-106

> "…***the interaction skill***, that one for me rates rather high…***the ability to engage with the audience, the ability to interact***…because I feel ***only certain number of students can*** do that…"

Language lecturers are of the consensus that interaction skill is a difficult skill and not necessarily mastered by many. This view is shared by 6 lecturers who held similar consensus that interaction skill is difficult to acquire. Thus, ESL learners need to be exposed to such skills in their language classrooms. MIIELCS11 stated this sentiment in excerpt 5.86.

Excerpt 5.86 MIIELCS11, RA7, Line 90-91

"…it boils down to their clarity of speaking in front of the audience; ***you can't take them by the hands and show them everything***…"

Interaction skill is necessary to create a successful presentation. Such skill allows the student to create a two-way exchange of ideas and views between the student and audience. 8 engineers also shared a similar view that students need to share findings in an interactive manner. This view is concurred by MMEEECS11 in excerpt 5.87.

Excerpt 5.87 MMEEECS11, RA 18, Line 172-173

"…***these are your words, these are your findings, and this is what that needs to be stressed out,*** rather than something I can actually read in the book…"

In other words, there must be engagement and interaction between the student and audience during a presentation. Similar importance is accorded to interactional competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007).

5.7.8.4 Student as Visual Aid

6 lecturers emphasised the need for students to act as visual aids in the presentation. Literature states that the student remains as the main focus while presentation slides are points of reference (Lucas, 2009). In other words, audience should focus on the student

and not on the slides. Visuals are intended to clarify, support, emphasise or direct audience attention to a particular point (Lannon & Gurak, 2011). MMIIELCS11 articulated such perception in excerpt 5.88.

Excerpt 5.88 MMIELCS11, RA2, Line 8-11

> "…For ***good ones***, they are the ones who actually ***do not read off from the slides*** but rather they are ones who are ***well prepared in content and material*** they have prepared, in other words, when ***they don't have refer or turn around and read from their slides*** that means that they are already well prepared…"

Students need to be well prepared and make minimal reference to the slides during a presentation. It is essential that the student retain audience attention and engage audience attention to allow interactive and interpersonal competence to occur. In fact, students commit a "cardinal sin when reading off written material" (Dixon, 2008, p. 2). Students will lose the engagement with the audience.

5.7.8.5 Turn-taking

Interactive and interpersonal competence is marked by the students' two-way exchange with the audience. 8 engineers denoted importance on turn-taking. Engineers expect the student to provide an answer to queries. This sentiment is provided in excerpt 5.89 by MMEEPTCS4.

Excerpt 5.89 MMEEPTCS4, RA8, Line 43, 46 -47

> "…how ***fast*** they can answer on the spot; …the moment that you ask, he got to start thinking how does it fit in into your work and try to ***relate to the question*** and ***try to give the appropriate answer***…"

Excerpt 5.89 shows the need for students to provide accurate responses to queries posed by the audience. This sentiment is expressed in other studies that indicate the importance of such linguistic skill (Wei Zhu & Flaitz, 2005).

5.7.8.6 Defense skill

Interactive and interpersonal competence is also depicted by the students' ability to defend a viewpoint. 6 lecturers concurred on this opinion. This view is expressed in excerpt 5.90 by MIIELCS5.

Excerpt 5.90 by MIIELCS5, RA8, Line 111-115

"…but they can defend; the industry can give any answer; but if they can justify and ***stand up with their own answers***; ***basically how they defend; why are they doing and they can really give a good picture*** why are they doing, if they can give a good picture, I think the industry can accepts…"

The ability to defend one's viewpoint also augments interpersonal and interactive competence. In doing so, a student creates that two-way exchange of ideas between the student and audience. The ability to defend opinions and decision making is expressed in the quantitative feedback (see sub-section 4.3.2, Table 4.25 on Defend Ideas when questioned in a presentation) and in the qualitative feedback (see sub-section 5.4.1 on Well-preparedness). This feature is in line with Celce-Murcia's mention of strategic competence within the communicative competence model (Celce-Murcia, 2007).

5.7.8.7 Personal experience

Interpersonal and interactive competence is boosted when a student provides snapshots of relevant personal experience. 5 language lecturers were of the opinion that such sharing heightens interpersonal competence in presentations. This view was expressed by FMMLCS16 in excerpt 5.91.

Excerpt 5.91 FMMLCS16, RA5, Line 49-50

> "…they [students] are being encouraged to voice out their ***own views and opinions*** based on ***their experiences and their perspective in life***…"

The excerpt 5.91 clearly indicates the need for students to include personal experiences to create successful presentations. Sharing of personal experiences and stories draws the audience attention to the students' presentation (Edge, Savage, & Yatani, 2013).

5.7.8.8 Economic justification

The next view that is crucial to create interpersonal and interactive competence is student awareness on economic justification. Technical students need to provide evidence of including the "utility" feature in presentations or writings (Sharma, 2007, p. 22). Utility refers to the economic benefit gained from the product/process/project findings for the organisations' benefit (Sharma, 2007).

7 students viewed this as an important category of interpersonal and interactive competence as cost effectiveness is a vital factor in the global market competitiveness. The importance of economic justification is expressed in excerpt 5.92 by MMESCS5.

Excerpt 5.92 MMESCS5, RA 8, Line 30 & 63

> "…at the same time I have to ***consider the expenses*** to construct the project...…I have to ***defend on the economic part**…*"

Students are aware that costing is a critical component for engineers. The inclusion of costing creates immediate relevance to the audience who are market players in the professional workplace. The issue of costing inadvertently triggers questions among the audience. Such interaction enhances interpersonal and interactive competence.

At the same time, 8 engineers shared similar consensus on the importance of economic justification. To engineers, it is pertinent that financial implications and return of investment are stated in a presentation (Seidel et al., 2011). Practical financial returns enhance interpersonal and interactive competence as investment opportunities and mergers are created. This is expressed by MMEEPECS12 in excerpt 5.93.

Excerpt 5.93 MMEEPECS12, RA5, Line 96-97

> "…The most important is how to get things done;… back to the financial objective**,** ***how fast is the return of investment;*** the main reason is we want to ***have the financial balanced; at the end of the returns returned by specific time***…"

The above excerpt 5.93 clearly showed the need for engineers to ensure that financial objective is met. Similar sentiment is expressed in the quantitative feedback provided by students and engineers (see sub-section 4.3.5, Table 4.46 on Include Cost Factor Analysis in a presentation).

5.7.8.9 Transparency and disclosure of findings

7 students emphasised the need to provide open disclosure of project findings to the audience. Engineers of tomorrow must be prepared to “incorporate engineering standards and take in multiple realistic constraints” such as “manufacturability, sustainability and environmental, economic, political, social and ethical issues” (Seidel et al., 2011, p. 4). ESL learners need to disclose all findings which may or may not be of an economic impetus to the audience. However, such disclosure is crucial to enhance possible strategies or decison making. Thus, it is essential that learners are transparent with their findings. The sentiment is expressed by MMESCS5 in excerpt 5.94.

Excerpt 5.94 MMESCS5, RA 8, Line 64-65

“…there are other things to consider like what are ***the risks and uncertainties***…”

The mention of projected risks and uncertainties is expected out of students’ to provide transparency of project findings to the audience. The students view was shared by the engineers. 8 engineers regarded such open disclosure on risks and uncertainty as the students’ moral obligation. Such transparency lead to enhanced interaction as audience maybe interested to ask more questions. This view is expressed by MMEEPECS12 in excerpt 5.95.

Excerpt 5.95 MMEEPECS12, RA20, Line 291-298

> "…I prefer if ***students are just open, be open, be frank***, I would ***rather rate them high*** if they do a lot ***of analysis on their project if it is not successful rather*** than think even when the results not successful and they claim that it is successful…"

Transparency is expected of students as open disclosure leads to mutual trust between the student and audience. The student is expected to project open disclosure and place audience in the know of the findings. This will create better interaction between the student and audience.

5.7.8.10 Overview toward interpersonal and interactive competence

In relation to interpersonal and interactive competence, students and engineers both indicated importance on "sales like talk", economic justification, transparency and disclosure of findings. These sub-sets are not specified by the lecturers and language lecturers. These findings indicate similarities between the students and engineers need to reach out to prospective clients by usage of sales like talk and transparency of findings that meet financial investment.

Lecturers on the other hand indicated importance to sub-sets such as elaboration skills, defend skills, and emphasis on the student as a visual aid. In other words, lecturers are concerned with the students' oral and rhetorical ability during a presentation. Both language lecturers and engineers accorded importance to interaction skills as an important category to determine interactive and interpersonal competence. Lecturers and engineers were aware of the need to ensure two-way exchange of ideas during a presentation. Language lecturers highlighted the importance of using personal experience to enhance interactivity while engineers stressed the relevance of turn-taking as an indication of interpersonal and interactive competence.

In an ESL context, various linguistic and rhetorical features have been emphasised by various focal groups. The findings also indicate lack of consensus over certain items like humor and “sales like talk” which maybe predominant in the Malaysian setting. ESL learners need to adapt and utilise the appropriate linguistic and rhetorical features when faced with their audience.

5.9 Summary on stakeholders’ perceptions of communicative competence and linguistic and rhetorical features

The feedback provided to Research Question 3 by language lecturers and lecturers indicate that similar perceptions on the constructs were held by both focal groups in the qualitative feedback. It is interesting to note that that there are similarities in both quantitative and qualitative feedback (discussed in Chapter 4). In answer to Research Question 3, both language lecturers and lecturers stressed on similar constructs, but indicate differences in the level of importance to the said items listed within the construct. Thus, ESL learners must be aware to utlize the appropriate and relevant sub-sets of linguistic and rhetorical features with the appropriate audience.

In terms of feedback to Research Question 4, the overall findings of the study indicate that students, lecturers, language lecturers and engineers placed varying level of importance to various sub-sets within the seven linguistic and rhetorical themes. The findings indicate similarities evident in the quantitative feedback. In other words, the data from multiple sources complements the investigation on the said notion.

However, certain strands are apparent from the qualitative feedback. Respective focal groups emphasised certain type of genre or discourse as a result of their legitimate peripheral participation in the said community of practice. Students utilised academic language as they indicated emphasis toward content based presentations. Students provided emphasis to technical competence and linguistic oral immediacy competence.

Lecturers also indicated a high level of agreement to disciplinary, meta-cognitive competence and linguistic oral immediacy competence. In other words, lecturers were concerned with technical knowledge, critical thinking and linguistic features that create a successful presentation. This feedback appears to support Lave & Wenger's learning theory which stipulates that communities of practice mirror specific belief, views and actions (Lave & Wenger, 1991). In the context of this study, the findings indicate that different communities of practice (i.e. students, lecturers, language lecturers and engineers) indicate differences in identifying particular elements within the communicative competence construct.

Language lecturers indicated preference toward rhetorical style competence, structural competence and interpersonal and interactive competence. These features create a creative and structured presentation that engages interactivity with the audience. It is evident that language lecturers emphasised on the rhetoric and linguistic ability in a presentation. However, language lecturers were also particular to adherence to academic guidelines like structural layout and presentation format. At the same time, language lecturers encouraged the element of interaction with the audience. In other words, language lecturers focus on the rhetoric of presentation. This finding reflects the belief held by language lecturers of the academic community.

Engineers also accorded a high level of emphasis to meta-cognitive and rhetorical explanatory competence. This implies engineers' emphasis on critical thinking and defense ability. Engineers were also concerned with the contextual application of a finding. Engineers were concerned of the implication toward the industry. In other words, engineers were concerned with market applicability and global implication. The finding is possibly indicative of Lave and Wenger theory of learning which exemplifies the legitimate peripheral participation of a community such as professionals in the engineering community (Lave & Wenger, 1991).

In other words, the findings imply that different groups of stakeholders were inclined to emphasise certain sub-sets of communicative competence. Students emphasised technical content mastery and oral immediacy competence. Lecturers stressed on content knowledge, critical thinking as well as engagement features that capture audience's interest. Language lecturers stressed on structured and personalized creative type of presentation. Engineers were concerned with critical thinking and justification ability to defend the project findings. The findings also provide various linguistic and rhetorical competencies which enhance the communicative competence model as suggested by Celce-Murcia (Celce-Murcia, 2007). The findings also attempt to address that magic or interaction lacking in oral presentations (Morton, 2009). The findings indicate emphasis on different sub-sets of linguistic and rhetorical competence by different focal groups in the Malaysian setting.

Chapter 6 will discuss the linguistic and rhetorical practice (critique session and written comments of lecturers and engineers on students' presentation) and confer if such actual practice concurred with the perceptions on linguistic and rhetorical dimension in technical oral presentation.

CHAPTER 6

FINDINGS OF THE QUALITATIVE DATA: STAKEHOLDERS' ACTUAL PRACTICE OF LINGUISTIC AND RHETORICAL COMPETENCE

6.1 Introduction

The qualitative phase of this study seeks to concur if stakeholders' perception (as discussed in Chapter 5) is consistent with the actual practice of linguistic and rhetorical competence features provided during the critique sessions and written comments by lecturers and engineers in technical oral presentations. Critique sessions refer to the oral comments provided by lecturers and engineers who performed roles as evaluators, who provide critique during the students' oral presentation sessions. Written comments refer to the compilation of lecturers' and engineers' written evaluation remarks provided in the assigned students' technical oral presentation evaluation task sheets (see Appendix L, Appendix M and Appendix N).

The findings attempt to identify the communicative competence features emphasised by lecturer and engineers, as well as identify if possible gap exists between perceptions and actual practices on communicative competence requirement in technical oral presentation. Inadvertently, the findings address the apparent academia-industry practitioner divide on communicative competence requirement among engineering students (Hafizoah Kassim & Fatimah Ali, 2010). The findings also have pedagogical implications related to ESL learners who are involved in technical and scientific presentations in the Malaysian setting. Different groups of COP place emphasis on different type of sub-sets on linguistic and rhetorical competence.

6.2 Research Objective

In this stage of qualitative data collection, findings from the technical oral presentation practices such as critique session and written comments by lecturers and engineers were analyzed to ascertain if perceptions and actual practices on linguistic and rhetorical competency features deemed necessary for successful technical oral presentation are congruent or different. In other words, is there congruence between what is perceived and practiced?

6.3 Research Question 5

Thus, in this stage of qualitative data collection, findings are required to address Research Question 5 which is,

“In practice, what do lecturers and engineers consider as essential linguistic and rhetorical features necessary for successful technical oral presentation?”

a. In practice, how similar and different are the selected lecturers’ and engineers’ critique on linguistic and rhetorical features necessary for technical oral presentations?

b. In practice, how similar and different are the selected lecturers' and engineers' written comments on linguistic and rhetorical features necessary for technical oral presentations?

This chapter will elaborate the discussion on data findings obtained from the students' technical oral presentation critique sessions and written comments provided by the lecturers' and engineers' in the students' technical oral presentation task sheets.

6.4 Methodological framework in Qualitative Findings: Actual practice of lecturers and engineers in critique sessions and written comments

The qualitative findings obtained from interviews were triangulated with students' presentation data from the critique sessions and written comments provided by lecturers and engineers in the students' evaluation task sheets to ensure internal validity of the study (Creswell, 2003). The researcher utilised Dannels' (2009) and Morton's (2009) linguistic and rhetorical framework to determine linguistic and rhetorical competence highlighted by lecturers and engineers in technical oral presentation critique sessions and written comments in the evaluation sheets. The data was transcribed using Creswell's (2003) generic process of data analysis, and the Computer Assisted Qualitative Data Analysis Software (CAQDAS) NVivo Version 11.5 was used to quantify the response. Table 6.1 provides a summary of lecturers' and engineers' actual practice of linguistic and rhetorical references stated in the critique sessions and written comments.

Table 6.1: Actual Practice of lecturers' and engineers' in linguistic and rhetorical dimension: Themes, sub-sets and number of references

Group/Data Type & Reference		Lecturers				Engineers			
		Linguistic	Ref.*	Rhetorical	Ref.*	Linguistic	Ref.*	Rhetorical	Ref.*
Critique sessions	Themes	4	236	1	4	4	166	1	2
	Sub-set	12		1		12		1	
Written comments	Themes	5	318	2	46	5	252	3	73
	Sub-set	12		5		11		4	

**Number of references*

In both types of supporting documents, i.e. critique sessions and written comments, there are more references made in the written comments as compared to the comments provided during the critique sessions. This finding could possibly be attributed to the time factor available in critique sessions. Students were timed and questioned by the panel of examiners during the presentation. Presentation slots were pre-determined to ensure that all students are provided a slot for the presentation as part of their oral assessment in the project. Therefore, there was not enough time for them to provide lengthy comments during critique sessions.

For the critique sessions, both lecturers and engineers highlighted four out of the five linguistic themes and one theme from the rhetorical perspective. For the critique session, there were 236 references made by lecturers for the linguistic dimension. At the same time, lecturers made 4 references to the rhetorical dimension during the critique sessions. Engineers, on the other hand provided 166 references to the linguistic dimension during the critique sessions. Engineers made 2 references to the rhetorical dimension during the critique session. In comparison between the two focal groups actual practice during critique sessions, the findings indicate that lecturers provided more comments during the critique sessions. Lecturers emphasised more on the linguistic dimension than the rhetorical dimension.

For written comments, both lecturers and engineers highlighted five linguistic themes. However, for the rhetorical theme, lecturers highlighted two themes while engineers highlighted three themes from the rhetorical perspective. For the written comments, there were 318 references made by lecturers for the linguistic dimension. Lecturers made 46 references to the rhetorical dimension as written comments in the students' evaluation task sheets.

Engineers provided 252 references to the linguistic dimension as written comments. Engineers, in comparison to lecturers, provided 73 written comments from the rhetorical perspective. In comparison between the two focal groups' actual practice in writing, lecturers emphasised on linguistic dimension while engineers provided more references to rhetorical dimension in their written comments. This finding suggests differences in the perceptions of different communities of practice which lends support to the situated learning theory on LPP of COP (Lave & Wenger, 1991). On the other hand, it creates awareness among the ESL learners and language and curriculum designers on the importance of different linguistic and rhetorical features stressed by different COP.

Table 6.2 illustrates the similarities and differences in lecturers' and engineers' actual practice of linguistic and rhetorical dimension, its sub-sets and number of references to each theme for the critique sessions and written comments. In the critique sessions, the 4 linguistic themes derived by lecturers and engineers include i) meta-cognitive competence, ii) technical competence, iii) disciplinary competence, and iv) structural competence. The single rhetorical theme provided by both lecturers and engineers in the critique sessions is the rhetorical explanatory competence theme.

As for written comments, the 5 linguistic themes derived by both lecturers and engineers include use of i) meta-cognitive competence, ii) technical competence, iii) disciplinary competence, iv) structural competence, and v) linguistic competence (linguistic professional language and linguistic oral immediacy). In terms of rhetorical theme within the written comments, the lecturers listed two sub-sets for each theme, such as i) justification and rationalization ability, and ii) interpretive agility. The other two sub-sets for the interactive and interpersonal theme include i) interaction skills, and ii) defense skills.

Table 6.2: Similarities and differences in lecturers' and engineers' actual practice of linguistic and rhetorical dimension

Group /Themes & Ref *		Lecturers							Engineers							
		Linguistic Theme and Sub-sets		Ref	Rhetorical Theme and Sub-sets			Ref	Linguistic Theme and Sub-sets			Ref	Rhetorical Theme and Sub-sets			Ref
Critique sessions	4 Themes	1.Meta-cognitive competence	1.Analytical ability 2.In-depth technical knowledge 3.Mental alertness	75	1 Theme	i) Rhetorical explanatory competence	1. Justification and rationalization ability	4	4 Themes	1.Meta-cognitive competence	1. Analytical ability 2. Scientific evidence 3. Literature review	67	1 Theme	i) Rhetorical explanatory competence	1. Justification and rationalization ability	2
		2.Technical competence	1. Methodological explanation of a technical problem 2.Justification and rationalization ability 3.Technical and scientific evidence	94						2.Technical competence	1. Methodological explanation of a technical problem 2.Justification and rationalization ability 3.Functional and contextual application of problem statement	53				
		3.Disciplinary competence	1.Conceptual justification 2.Real world application 3.Technical description	52						3.Disciplinary competence	1.Conceptual justification 2.Real world application 3.Economic value 4. Problem solution order	32				
		4.Structural competence	1. Structured explanation 2.Holistic explanation 3.Sectional referencing	15						4. Structural competence	1. Structured explanation 2. Holistic explanation	14				

Written Comments	5 Themes	1.Meta-cognitive competence	1.Analytical ability 2.In-depth technical knowledge 3.Familiarity of content 4.Scientific evidence	97	2 Themes	i) Rhetorical explanatory competence	1.Justification and rationalization ability 2.Intepretive agility	30	5 Themes	1.Meta-cognitive competence	1. In-depth technical knowledge 2. Familiarity of content 3. Engineering focused	87	3 Themes	i) Rhetorical explanatory competence	1.Justification and rationalization ability 2.Intepretive agility	33
		2.Technical competence	1.Methodological explanation of a technical problem 2.Functional and contextual application of problem statement	77						2.Technical competence	1.Functional and contextual application of problem statement 2.Technical and scientific evidence	57		ii) Rhetorical style competence	1.Societal motivation	23
		3.Disciplinary competence	1. Conceptual justification 2. Technical description	68		ii) Interpersonal and Interactive competence	1. Interaction skills 2. Defense skills	16		3.Disciplinary competence	1. Technical description	47		iii) Interpersonal and Interactive competence	1.Interaction Skills	17
		4. Structural competence	1.Transition words and phrases 2. Structured explanation	42						4.Structural competence	1. Transition words and phrases 2. Methodological and holistic explanation	16				
		5a.Ling. prof. language* competence	1.Professional language or genre	21						5a.Ling.prof. language* competence	1. Professional language or genre	25				
		5b.Ling. oral immediacy* competence	1.Confident, interactive language	13						5b. Ling. oral immediacy* competence	1.Confident, interactive language 2. Exchange of questions	20				

Number of References; Linguistic professional language; *Linguistic oral immediacy.

Linguistic competence theme (use of oral immediacy and professional language) was not mentioned in the critique sessions by either focal group. With the rhetorical dimension, both lecturers and engineers only mentioned rhetorical explanatory competence. Both lecturers and engineers did not refer to rhetorical style competence and interpersonal and interactive competence in the critique sessions. Thus, ESL learners must be aware of the differences in emphasis by said focal groups. The finding indicates differences during the verbal response provided during the interviews (see sub-sections 5.7.6 and 5.7.7) as opposed to verbal comments during the critique sessions in the students' presentation. This lack of linguistic emphasis in the qualitative feedback in actual practice (critique sessions) as compared to interview sessions is possibly due to the limited time available for detailed verbal comments on linguistic dimension during the oral evaluation sessions.

Differences exist among the type of individual sub-sets listed by lecturers and engineers in both the critique sessions and written comments. For written comments, both lecturers and engineers provided some emphasis on language competency, but this was absent in the critique session. This finding on lecturers' and engineers' emphasis on non-technical skills such as language competency may be contradictory to Lave & Wenger's theory of learning (1991) as this finding implies technical specialists' awareness on the importance of non-technical skills such as linguistic competence needed to enhance presentation. In other words, there is awareness amongst the technical specialists for the need of competencies other than the technical skills as practiced by the engineering community. ESL learners must be made aware of the paradigm shift of the engineering community on the importance of linguistic competence.

In the following sections, the discussion attempts to address Research Question 5 and ascertain lecturers' and engineers' actual practice of communicative competence requirement in technical oral presentations as indicated in Table 6.2. The following sections will initially focus on data obtained in the critique sessions followed by discussion on written comments.

6.5 Qualitative Findings on Language and Rhetorical Dimension: Critique sessions

The following section reports the lecturers' and engineers' communicative competence requirement practiced in 16 critique sessions. In practice (see Table 6.1), lecturers and engineers emphasised on similar themes, but showed differences in their emphasis of the sub-sets of the linguistic and rhetorical competency requirement as evidenced in the critique sessions. The findings reveal that in practice, lecturers accorded a higher level of linguistic importance (236 references) compared to engineers (166 references) in technical oral presentations. Similarly, for the rhetorical theme, findings from the written comments reveal that lecturers indicated a higher emphasis (4 references) compared to engineers (2 references). Different COP place indicate emphasis on different features (Lave & Wenger, 1991).

Table 6.2 indicates the lecturers' and engineers' emphasis on 4 linguistic (meta-cognitive, technical, disciplinary and structural) and 1 rhetorical (rhetorical explanatory) competency requirement in critique sessions. In practice, both lecturers and engineers emphasised on similar sub-sets of communicative competence on linguistic and rhetorical competency requirement. The findings reveal that in practice, lecturers when compared to engineers accorded a higher level of importance to the said sub-sets of communicative competence.

However, differences prevailed among both focal groups on the importance accorded to the linguistic and rhetorical competence sub-sets. The following section accentuates the similarities and differences of linguistic and rhetorical sub-sets featured in meta-cognitive, technical, disciplinary, structural and rhetorical explanatory competence as practiced by lecturers and engineers in critique sessions.

6.5.1 Similarities and differences in lecturers' and engineers' practice of Meta-cognitive competence: Critique sessions

Qualitative findings indicate that lecturers made 75 references while engineers made 67 references to meta-cognitive competence. This aspect is in line with Celce-Murcia's suggestion of strategic competence as a sub-set of communicative competence (Celce-Murcia, 2007). Within the practice of meta-cognitive competence, lecturers and engineers shared one common sub-set of linguistic competency requirement, i.e. use of analytical ability in critique sessions.

The differences in the stakeholders' practice of linguistic sub-sets include reference to i) in-depth technical knowledge, ii) evidence of mental alertness, iii) use of scientific evidence, and iv) literature review. The former two attributes were emphasised by the lecturers while the remaining two were emphasised by the engineers. The finding obtained is evidenced by a series of excerpts provided in critique sessions among lecturers and engineers in support of various linguistic and rhetorical construct.

6.5.1.1 Analytical ability

Both lecturers and engineers expected students to analyze the findings in a study. This is evidenced in the critique session excerpt 6.1 (M2U00467) where lecturers posed questions on data analysis and required students to interpret the data.

Excerpt 6.1 M2U00467, Line 8-11

> E1: Can you explain ***how you did*** your water bath treatment? ***What are the numbers for? What do they mean?***
> E2: Did the color change? ***Why this is so?*** Is this clear or colorless? Milky white, ***which is the color?***

Lecturers required students to provide analytical analysis of certain process involved in the duration of the study. Presentation is not merely reporting facts and figures. To lecturers, technical oral presentations center on interpretation and analysis of the findings (Venkatesan & Ravenell, 2011). Engineers also stressed the importance of analytical ability as students need to relate technical concepts to the results and data findings. This is indicated in the following excerpt 6.2 in M2U00416.

Excerpt 6.2 M2U00416, Line 74-76

> E1: ***Explain first, where is the application of maximum stress concentration factor***?...***How do you show if the pressure is not applied***? ***Will there be errors*** in our results? You need ***to clarify this*** and not provide experiments….show this in recommendation...

In the above excerpt 6.2, justification from an analytical perspective is essential.

Presentation is not merely reporting data, but involves critical interpretation and making sense of the findings in relation to the project objective (Koch, 2010). Both groups of stakeholders stressed the importance of analytical analysis during critique sessions.

6.5.1.2 In-depth technical knowledge

Lecturers stressed on the practice of in-depth technical knowledge in critique sessions. Engineers did not stress the said construct. Excerpt 6.3 in critique session M2U004015 indicates the lecturers' emphasis on the said construct. This is evident from the questions posed during the critique session.

Excerpt 6.3 M2U004015, Line 66-68

> E2: ***How do you define the nominal area?*** In one dimension can consider the area, but in ***two dimension***…it is ***difficult to clarify***…***what happens how do you define sigma marks when there are different forces of stress?...How do you explain?***

The excerpt 6.3 shows the need for students to be equipped with sound technical knowledge and ability to clarify. In other words, students need to possess in-depth technical knowledge of the experiment. In actual practice, lecturers express the importance of in-depth technical subject matter during critique sessions.

6.5.1.3 Mental alertness

Lecturers expected students to demonstrate mental alertness when responding to questions. Engineers did not practice the construct during the critique sessions. Lecturers' view is mentioned in excerpt 6.4 in M2U00467.

Excerpt 6.4 M2U00467, Line 8-11

E1: ***How do you determine strength? What method did you use?*** There seems to be an error in calculation... E2: There tensile strength for the concrete is low at less than 10 degrees, ***what is the total volume capacity of the mix?***

Excerpt 6.4 indicates the need for students to justify certain decision making conducted during the study. This implies that the students must be prepared and alert to answer questions posed by the lecturers. Lecturers expressed the importance for students to be alert and provide prompt response. This finding indicates the emphasis stressed by lecturers on mental alertness during presentations.

6.5.1.4 Scientific evidence

Engineers commented on the need to provide scientific evidence to support certain points mentioned in a presentation. Lecturers did not express the importance of this construct. Engineers require scientific justification to convince the audience on a certain view (Waljee et al., 2012). This sentiment is expressed in the excerpt 6.5 in M2U00469.

Excerpt 6.5 M2U00469, Line 21, 24-26

E1: ***How do you define tensile strength***? This is not quite clear, ***where are the points***? ***Where is the measurement?*** You are putting somebody else's measurement, whereas you must relate to your own measurement; you must ***relate to your own equation…***

The above excerpt 6.5 revealed the emphasis placed by engineers on scientific evidence and its relation to the findings.

6.5.1.5 Literature review

Engineers stressed that students should include reference to particular literature review when presenting. In other words, engineers expected students to relate the data findings to a broader perspective. Excerpt 6.6 in M2U00452 indicates the obvious.

Excerpt 6.6 M2U00452, Line 50-52

E1: ***Can you identify the preventive safety concept? Can you identify the framework;*** access to the problem, protect or remove some steps so that we can be assured of safety? ***Possibly apply it at the beginning of the design stage?***

Engineers pointed out the need to support findings with established existing framework to support the study. Engineers were concerned that findings are in line with established literature in the field. This means that ESL learners must conduct in-depth literature review and support a project with scientific evidence. Language and communication lecturers need to provide the necessary support and training for students to provide scientific justification.

In relation to the sub-sets of meta-cognitive competence, the similarity in practice is the ability to analyze data findings. The differences in practice are in terms of i) in-depth knowledge, ii) mental alertness, iii) scientific evidence, and iv) literature review. Both lecturers and engineers indicated practice of analysis in critique sessions. Lecturers stressed content competency while engineers emphasised on validation and reference to previous studies in the engineering field.

6.5.2 Similarities and differences in lecturers' and engineers' practice of Technical competence: Critique sessions

The findings indicate that lecturers provided 94 references while engineers indicated 53 references to technical competence in the critique sessions. Within the practice of technical competence, lecturers and engineers shared two common sub-sets of linguistic competency requirement on i) use of methodological explanation of a technical problem, and ii) justification and rationalization ability. The differences in the lecturers' and engineers' actual practice of linguistic sub-sets include use of i) technical and scientific evidence, and ii) functional and contextual application of a problem statement. Lecturers stressed on the former while engineers stressed on the latter. The finding obtained is evidenced by a following series of excerpts 6.7 and 6.8 as provided by the lecturers and engineers in support of the construct.

6.5.2.1 Methodological explanation of a technical problem

Both lecturers and engineers expect students to provide methodological explanation in support of any purported claims obtained in a study. As evidenced in excerpt 6.7 in M2U00405, a lecturer ceases questioning until satisfied with the response provided by the student.

Excerpt 6.7 M2U00405, Line 125-135

E1: Just a question on the difference between the ***ANSYS value and the analytical value***. ***What I er, I mean what are the factors that you decide to use ANSYS rather than the other software?*** Ss: Basically ANSYS is quite widely used ***in Engineering for the simulation***. And ANSYS ***provide more than other package software***, ANSYS provide the best measuring technique. E1: ***Only just because of the measuring techniques?***

Excerpt 6.7 shows the lecturer's continued probing the students' decision making abilities in a presentation. The lecturer stressed on the explanation on informed choices made by the student. This implies that students must provide detailed explanation in critique sessions (Passow, 2008). Engineers also expressed the need for students to provide methodological explanation in a presentation as seen in excerpt 6.8 in M2U00485.

Excerpt 6.8 M2U00485, Line 18-20

E1: ***Did you observe the mode of the failure? Did you compare and derive high and low performance concrete?*** To see the elasticity; ***how do you define the modulus of elasticity?***

The above excerpt 6.8 shows the need for students to provide a methodological explanation to any concept during the presentation session. Engineers stressed the importance of explanation to ensure a successful presentation. Both groups of stakeholders stressed the importance of providing methodological explanation during critique sessions.

6.5.2.2 Justification and rationalization ability

Both lecturers and engineers stressed the importance for students to provide justification and rationalization during critique sessions. A similar importance to strategic competence is expressed in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). This sentiment is expressed by lecturers in excerpt 6.9 in M2U00416.

Excerpt 6.9 M2U00416, Line 50-51

E1: Explain about the stress concentration factor. Where is the part of the sigma nominal? ***How do you show that? Can you explain***?... you may use the whiteboard for calculations…

Lecturers expected students to justify certain technical concepts. Such queries attempt to test students' technical knowledge. Engineers held similar views as indicated in excerpt 6.10 in critique session M2U00507.

Excerpt 6.10 M2U00507, Line 71-72

E1: Can you ***briefly explain to me how you measure the centre of gravity of the spar? How do you get that?***

The above excerpt 6.10 indicates the engineers' emphasis on the importance of providing some form of justification of certain technical concepts used during the critique sessions. Students must provide detailed explanation of certain ambiguities where necessary. Justification is required to ensure validity of the data findings (Venkatesan & Ravenell, 2011). Both groups of stakeholders stressed the importance of providing justification and rationalization during critique sessions.

6.5.2.3 Technical and scientific evidence

Only lecturers emphasised the use of technical and scientific evidence during critique sessions as illustrated in excerpt 6.11 in critique session M2U00405.

Excerpt 6.11 M2U00405, Line 112-117

E1: When you say Mud A, Mud B, Mud C, ***you have the same basic mud, but the constraint is different***. Ss: Yeah. OK. This is the result from the simulation. And this is the result for the velocity. As you can see that, at the wall here, the ***velocity is zero***. But after the wall, the velocity is very high. ... this is the result of pressure variation. And this is the result for Mud B. It's almost the same as Mud A. E1: ***The figure may be the same but the value is different a little bit.***

Excerpt 6.11 indicates the lecturers' emphasis for technical and scientific clarification. The lecturer questioned the validity as a result of varying analytical findings. This lecturer stressed on meticulous details prior a purported claim.

6.4.2.4 Functional and contextual application of a problem statement

Only engineers made reference to the sub-set on functional and contextual application of a problem statement. This is evidenced in the following excerpt 6.12 in critique session M2U00426.

Excerpt 6.12 M2U00426, Line 13-16

E1: How do you ***relate this experiment with the actual application*****?** How can you ***relate this experiment in relation to the problem statement*****?**

The above excerpt 6.12 shows the need to provide functional and contextual application to a certain concept. Engineers warrant students to contextualize data findings. This emphasis is in accordance with the strategic competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). Engineers require the inclusion of functional and contextual application to ensure audience understanding of certain concepts or technical fundamentals in a study.

In relation to the sub-sets of technical competence, the similarity in practice is the use of i) methodological explanation, and ii) justification and rationalization ability. The differences in practice are use of i) technical and scientific evidence, and ii) functional and contextual application. Lecturers emphasise methodological evidence from an academic perspective while engineers relate to the application of technical competence in the engineering field.

6.5.3 Similarities and differences in lecturers' and engineers' practice of Disciplinary competence: Critique sessions

For the disciplinary competence, lecturers accorded 52 references while engineers stated 32 references in the critique sessions. Within the practice of disciplinary competence, lecturers and engineers shared two common sub-sets of linguistic competency requirement, i.e. i) conceptual justification, and ii) real world application. The differences among the stakeholders' practice of linguistic sub-sets include evidence of i) technical description, ii) economic value, and iii) problem solution order. Technical description was emphasised by lecturers while the latter two were emphasised by engineers. The finding obtained is evidenced by a series of excerpts 6.13 and 6.14 as provided by the lecturers and engineers in support of the construct.

6.5.3.1 Conceptual justification

Both lecturers and engineers referred to conceptual justification in a presentation. Both lecturers and engineers expected students to conceptualize and justify their finding during the critique session. Lecturers' indication of this view is illustrated in excerpt 6.13 in critique session M2U00417.

Excerpt 6.13 M2U00417, Line 48 -52

E1: In order to identify and optimize the parameters, what is the current stage of the study, the stage of your study now, ***finally you may say that these are the parameters for the experimental stage of the set-up***; because my worry is that to ***publish this which comes out as the only method***; ***my worry is that we may send the wrong message to readers. My worry is to explain the why, how and what.***

Lecturers expressed the importance for students to address certain conceptual justification in terms of the data findings to ensure correct interpretation. In other words, lecturers expected students to provide an overall interpretation of certain postulates. A similar interpretation was voiced by engineers. An example is provided in excerpt 6.14 by M2U00426.

Excerpt 6.14 M2U00426, Line 31-32

E1: ***How do you relate this experiment with the actual application*? *How can you relate*** the constant ***to what you are doing*? *How and what does it represent actually?***

The above sentiment in excerpt 6.14 indicates the engineers' emphasis on the need to conceptualize and apply data findings to the context of the study. In this way, engineers can relate data findings to actual context within the discipline. Both groups of stakeholders stressed the importance of conceptual justification during critique sessions.

6.5.3.2 Real world application

As for the "real world application" feature, both lecturers and engineers expected students to contextualize data findings of the study. Lecturers expressed the view in the following excerpt 6.15 in critique session M2U00419.

Excerpt 6.15 M2U00419, Line 57- 62

E1:"…Okay, yes, but are there any possibilities ***of going beyond that form?*** So ***why don't you use that as a basis and how do you go beyond that basis because you are doing the scientific research because of this, whereby the historical perspective,*** your findings are important because the next generation will continue with your research; because if you say this is a fact, you might mislead the rest group of students or researchers who read your research..."

The above excerpt 6.15 shows that students need to relate data findings to a broader context than just mere experimental findings. Lecturers pointed out the need to interpret contents to real world context relevant to the community of practice (Alemdar Yalçin & Nursel Yalçin, 2010). In fact such reference enhances interactivity as presenters will be personally motivated to share data findings with the audience. This means that the student is able to apply the data findings to a broader context with emphasis on strategic competence (Celce-Murcia, 2007).

Excerpt 6.16 in M2U00426 is another example provided by lecturers on the practice of real world application. Lecturers pointed out that ESL students need to be able to apply study findings to broad real-world context.

Excerpt 6.16 M2U00426, Line 72-73

E1:"…Okay just like what Mr XXX said, your research is a study, ***your sample supposed to relate or the finding supposed to be able to improve on the real thing***..."

Lecturers emphasised the importance of real world application when presenting project findings. Lecturers implied that findings are not mere experiments but samples with real world application context. Similarly, engineers shared their views in excerpt 6.17 in M2U00432.

Excerpt 6.17 M2U00432, Line 12-14

E1: How serious is mercury? So what is ***contribution mercury to the production of oil and gas? How do you relate this?***

The above excerpt 6.17 indicates the need for students to relate findings to real world situations as project findings represent a sample of intended projects for the industry and discipline (Seidel et al., 2011). Engineers are interested to know the relevance and impact to real world application made relevant to the community of practice (Alemdar Yalçin & Nursel Yalçin, 2010). Both groups of stakeholders stressed the importance of real world application during critique sessions.

6.5.3.3 Technical description

As for the construct on technical description, lecturers concurred on the need to provide technical definition of certain terms and concepts during the presentation delivery. Engineers did not indicate the practice of this feature. It is essential that students provide such clarification to ensure audience understanding of a particular jargon. This is emphasised in excerpt 6.18 in M2U00485.

Excerpt 6.18 M2U00485, Line 10-11

E1: ***How do you define as strength***? Try to check on the modulus of elasticity…***How did you get the modulus of elasticity***? What do you define as its strength? ***What is the unit for strength***? Why do you choose the testing for 90 days and not 20 days?

The above excerpt 6.18 indicates that lecturers emphasised the need to define and clarify certain technical terms. Lecturers are interested to know if students understand the core content matter of technical properties. Language and communication lecturers need to ensure that ESL learners are competent in their subject matter.

6.5.3.4 Economic value

An important consideration practiced by engineers is the need to exemplify economic value in order to outbid rival competitors (Koch, 2010). This viewpoint is not practiced by the lecturers. The excerpt 6.19 in M2U00432 indicates the engineers' perceived importance on the construct. This implies that ESL learners need to incorporate this feature in their presentations.

Excerpt 6.19 M2U00432, Line 12-13

E1: The way I see that your background that you're ***talking about the economics*** ah. ***How important is oil as a commodity?***

For engineers the ability to outbid rival competitors is essential to gain a competitive edge in the industry (Arnó-Macià & Rueda-Ramos, 2011). Competitive edge is an important criterion emphasised by engineers.

6.5.3.5 Problem solution order

Another important component of disciplinary competence is the practice of problem solution order in a critique session. This sentiment is expressed by engineers. Lecturers did not make mention of the said feature in critique sessions. Excerpt 6.20 in M2U00426 indicates the importance of such sub-set.

Excerpt 6.20 M2U00426 Line 51-53

E1: We already know that fact; but ***we need to know why does the end change***, what is the trend? I mean in terms of the melting, ***why is it a straight line, why is it not a curve***, ***why is it not responstial in the curve whatsoever...that is my recommendation in the future***

Excerpt 6.20 indicates the engineers' emphasis on providing some solution to a particular query. Engineers expect students to clarify the data results and provide rationale to the findings.

In relation to the sub-sets of disciplinary competence, the similarities in practice are i) conceptual justification, and ii) real world application. The differences in practice are indication of i) technical description, ii) economic value, and iii) problem solution order. Both lecturers and engineers indicate emphasis of analytical justification and its application to the real world context.

Once again, in practice, lecturers stress more on technical knowledge while engineers are concerned with the product sustainability in the market by its pricing. Pricing remains an uppermost important factor for industries to out beat rival competitors and gain in capital. Engineers also practice the problem solution approach in critique sessions. This approach is acknowledged as one of the skills required of engineers at their daily workplace (Venkatesan & Ravenell, 2011).

6.5.4 Similarities and differences in lecturers' and engineers' practice of Structural competence: Critique sessions

As for the structural competence, lecturers stated 15 references while engineers had 14 references mentioned in critique sessions. Within the practice of structural competence, lecturers and engineers share two common sub-sets of linguistic competency requirement, i.e. i) structured explanation, and ii) holistic explanation. The differences among the stakeholders' practice of linguistic sub-sets include evidence of i) sectional referencing. The finding obtained is evidenced by a series of excerpts 6.21 and 6.22 as provided by the lecturers and engineers in support of the construct.

6.5.4.1 Structured explanation

Both lecturers and engineers emphasised on the importance of structured explanation during a presentation. Both lecturers and engineers stress the importance of connection between paragraphs. In the following excerpt 6.21 in M2U00423, lecturers expressed this practice.

Excerpt 6.21 M2U00423, Line 45-47

E1: I don't know which one is your data, which one correlate, which one to fulfill your objective, so your result should be to meet your objective this is your data and so on. So in terms **of *presentation not very clear not very well arranged*** ya... and ***hanging without conclusion*;** you should have ***one graph for the conclusion***...

It is evident that lecturers stress on coherence depicted through structural explanation. In this case, lecturers remarked that presentation is unclear as there is a lack of sequence as the points are not sequentially connected. At the same time, engineers also expressed the need to be structured during critique sessions. This is made obvious in the next excerpt 6.22 in MU00419-420.

Excerpt 6.22 MU00419- 420, Line 22-23

E1: Your slide is a bit confused, ***where are the directions? Is it left to right or right to left?***

Excerpt 6.22 indicates the engineers' emphasis on structured explanation in order to understand the data findings. Engineers stress on structured and methodological explanation. Lack of clarity leads to a questions posed by the engineers. Both groups of stakeholders stressed the importance of conceptual justification during critique sessions.

6.5.4.2 Holistic explanation

Lecturers and engineers also indicated the need to provide holistic explanation in presentations. Both lecturers and engineers stressed the need to provide a detailed and precise presentation. This sentiment is expressed by lecturers in the following excerpt 6.23 in M2U00529.

Excerpt 6.23 M2U00529, Line 47- 49

E1: What is the difference between Langmuir and Freundlich? ***What do you understand by these two isotherms***?

The above excerpt 6.23 indicates that lecturers stressed on precise explanation of technical terms. This form of questioning tests students' knowledge of related key terms and concepts. Lecturers are keen to ensure that students' are familiar with the technical key terms and possess a basic understanding of the key terms. Engineers seconded this view as expressed in excerpt 6.24 in M2U00417.

Excerpt 6.24 M2U00417, Line 21

E1: That means converted to 3%, can ***you give a summary of this finding?***

Engineers emphasised the importance to conceptualize data findings. Students need to provide a holistic explanation for audience understanding. This is also indicated in the following excerpt 6.25 in M2U00505-506.

Excerpt 6.25 M2U00505 -506 Line 31-32

E1: *Give* ***comprehensive literature review… what other people have done… what are the advancements****…*

The above excerpt 6.25 shows that engineers stressed on current research practices in the field of specialisation. In other words, students must keep abreast with current research and attempt to address possible gaps in the discipline or field of research. More importantly, students must be able to provide holistic explanation of conceptual knowledge (theories, principles) for audience understanding of the study (Passow, 2008). Both groups of stakeholders stressed the importance of holistic explanation during critique sessions.

6.5.4.3 Sectional referencing

As for this construct, lecturers indicated its importance during a presentation. Engineers did not comment on this feature during critique sessions. This sentiment is expressed by lecturers in the following excerpt 6.26 in M2U00528.

Excerpt 6.26 M2U00528, Line 22-23

E1: ***No it is in,*** what you mean you mentioned about the seconds order ***in your literature review so it is in your scope***...

The above excerpt 6.26 shows the need for students to be in sync with what is mentioned in a presentation. Lecturers pay attention to what is mentioned by the students and expect students to be consistent in their points mentioned.

In relation to the sub-sets of structural competence, the similarities in practice are the use of i) structured explanation, and ii) holistic explanation. The differences in practice is the use of i) sectional referencing. Lecturers are aligned to structured and methodological evidence from an academic perspective while engineers relate to the application of structural competence from a holistic perspective. Thus, ESL learners and language and communication lecturers in the Malaysian context need to be aware of the differences in perceptions on communicative competence stressed by different focal groups.

6.5.5 Similarities and differences in lecturers' and engineers' practice of Rhetorical Explanatory competence: Critique sessions

The only form of rhetorical emphasis is the use of rhetorical explanatory coherence. Both lecturers and engineers indicated indicated their support the use of justification and rationalization in presentations. Both lecturers and engineers indicated reference to this construct (see Table 6.1) where lecturers mentioned 4 references and engineers stated 2 references to the construct. The following excerpts 6.27 and 6.28 indicate support for the rhetorical dimension.

6.5.5.1 Justification and rationalization ability

Lecturers and engineers stressed the importance for students to provide justification and rationalization ability. This sentiment was expressed by one of the lecturers in excerpt 6.27 in M2U00416.

Excerpt 6.27 M2U00416, Line 50-51

E1: Explain about the stress concentration factor. Where is the part of the sigma nominal?;..***How do you show that? Can you explain***?...Yes you may use the whiteboard for calculations

Lecturers expect students to justify certain technical concepts. Such queries attempt to test students' technical knowledge. At the same time, engineers also expressed the need to inculcate the said feature. The following excerpt 6.28 in M2U00507-508 reflects the said sentiment.

Excerpt 6.28 M2U00507 - 508, Line 71-72

E1: Can you ***briefly explain to me how you measure the centre of gravity of the spar? How do you get that?***

The above excerpt 6.28 indicates engineers' emphasis on the importance of providing some form of justification of certain technical concepts used during the critique sessions. Justification is required to ensure validity of the data findings (Venkatesan & Ravenell, 2011). Lecturers and engineers stressed the importance of justification and rationalization during critique sessions. In relation to the sub-sets of rhetorical explanatory competence, both lecturers and engineers showed a similarity in practice during critique sessions.

6.6 Overview of lecturers' and engineers' practice of linguistic and rhetorical findings: Critique sessions

Both lecturers and engineers indicated similarities and differences to certain sub-sets of communicative competence. Both lecturers and engineers indicated consensus to methodological, structured and critical justification in critique sessions. Certain differences exemplified in critique sessions are lecturers' emphasis toward structured and content based evidence whereas engineers state inclination toward holistic explanation as well as economic justification to beat rival competitors in the workplace.

Both lecturers and engineers did not make any reference to the use of linguistic oral immediacy nor the use of linguistic professional language competence. There was also no mention of rhetorical style and interpersonal and interactive competence. The discrepancy can possibly be attributed to the theoretical implication of the learning theory practiced by different communities of practice (Lave & Wenger, 1991). For lecturers and engineers, the attributes related to language proficiency is not expressed in critique sessions. Emphasis is accorded to cognitive, analytical and justification ability of the students.

6.7 Qualitative Findings on language and rhetorical dimension: Written comments

The following section reports the practice of lecturers and engineers written comments on communicative competence requirement. A total of 137 lecturers' and 117 engineers' written comments were analyzed based on the linguistic and rhetorical dimension. In practice (see Table 6.1), both lecturers and engineers have emphasised on similar themes but incur differences in the sub-sets of the linguistic and rhetorical competency requirement as evidenced in the written comments. The findings reveal that in practice, lecturers accorded a higher level of linguistic importance (318 references) compared to engineers (252 references) in technical oral presentations. However, as per rhetorical theme, engineers indicated a higher level of importance (73 references) compared to lecturers (46 references).

Table 6.2 indicates lecturers' and engineers' emphasis on 5 linguistic (meta-cognitive, technical, disciplinary, structural, linguistic competence - professional language and linguistic oral immediacy) and 2 rhetorical competency requirements (rhetorical explanatory, rhetorical style and interpersonal and interactive) in written comments. Both lecturers and engineers indicated similarities to the themes, but showed differences in the sub-sets related to communicative competence as per the written comments. The following section accentuates the similarities and differences of linguistic and rhetorical sub-sets featured in meta-cognitive, technical, disciplinary, structural, linguistic professional language, linguistic oral immediacy, rhetorical explanatory, rhetorical style, and interpersonal and interactive competence as practiced by lecturers and engineers in written comments.

6.7.1 Similarities and differences in lecturers' and engineers' practice of Meta-cognitive competence: Written comments

For meta-cognitive theme, lecturers indicated 97 references while engineers stated 87 references in the written comments. Within the practice of this competence, lecturers and engineers share two common sub-sets of linguistic competency requirement, i.e. i) in-depth technical knowledge, and ii) familiarity of content in written comments. The differences among the lecturers and engineers practice of linguistic sub-sets include references to i) analytical ability, ii) scientific evidence, and iii) engineering focused.

Lecturers stressed on i) scientific evidence, and ii) analytical ability. Engineers included i) engineering focused as another important sub-set of meta-cognitive competence. The inclusion of these features as sub-sets of meta-cognitive competence relate to Celce-Murcia's proposed strategic competence (Celce-Murcia, 2007). The findings obtained are evidenced by a series of Excerpts provided by the lecturers and engineers in support of the meta-cognitive construct in written comments.

6.7.1.1 In-depth technical knowledge

Lecturers and engineers indicated the importance of meta-cognitive competence. Both lecturers and engineers concur on the importance of this construct in the written comments. The following excerpt 6.29 by FMMEL25 on ME7 indicates lecturers' written emphasis on the importance of in-depth technical knowledge in a presentation.

Excerpt 6.29 FMMEL25; ME7

> scope of study is very good for various application but need ***to improve on the experiment setup to ensure quality results***

As indicated in excerpt 6.29, the lecturer commented on the need to improve technical experimentation requirement in order to achieve better findings. Students must have in-depth knowledge on prior experimentation set-up to maximize desired data results. Engineers concurred with the practice of the said construct in their written comments. Excerpt 6.30 by MICVE3 on CV5 indicates engineers' emphasis of in-depth technical knowledge.

Excerpt 6.30 MICVE3; CV5

> Fairly good presentation but needs ***better understanding of geotechnical concepts***.

The above excerpt shows the importance of in-depth technical knowledge exemplified in written comments by engineers. For technical students to be successful, students are expected to have in-depth knowledge of the subject matter. Both groups of stakeholders stressed the importance of in-depth technical knowledge in written comments.

6.7.1.2 Familiarity of content

Lecturers and engineers expressed the need to be familiar with the content. This view is expressed in excerpt 6.31 by MIMEL26 on ME24.

Excerpt 6.31 MIMEL26, ME24

> "…the treatment is quite superficial ***without understanding the physics of the process***…"

The above excerpt 6.31 shows the emphasis on familiarity of content as a crucial factor necessary in presentations. Lecturers are able to decipher if a student is well versed with the content matter of the project presentation. Engineers expressed similar concern. If students are familiar with the content matter, students should be well-prepared in facing the barrage of questions posed by the audience. This viewpoint is shown in excerpt 6.32 by MMME11 on ME 43.

Excerpt 6.32 MMME11; ME 43

> "…need to ***spend more effort*** and ***collaboration*** on the questions asked by examiners…"

Excerpt 6.32 shows engineers' emphasis for students' readiness and familiarity in content matter. Students are encouraged to identify possible questions related to the study. Both groups of stakeholders stressed the importance of familiarity of content in written comments.

6.7.1.3 Scientific evidence

Lecturers indicated the need to provide scientific evidence for successful presentations to occur. Engineers did not express the similar view in the written comments, but stated otherwise in critique sessions. The need to indicate cognitive abilities is also mentioned as strategic competence in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). The excerpt 6.33 by MMMEL8 on ME1 shows the written comments by the lecturer.

Excerpt 6.33 MMMEL8, ME1

> "…result/ ***findings are very poor***; ***needs to provide credible substance***…"

Excerpt 6.33 shows the lecturers' emphasis in written comments to provide scientific evidence. It is clear that use of scientific evidence is necessary to validate findings in technical oral presentations.

6.7.1.4 Analytical ability

The next construct emphasised by lecturers include analytical ability. This view is evident in the following excerpt 6.34 by MMEL3 on ME29.

Excerpt 6.34 MMEL3; ME29

> "…too many remarks which is ***not tied with the results and discussion***. ***Methodology presented is not clear.*** Student needs to redo on discussion…"

The above excerpt 6.34 indicates the need to analytically analyze data findings and relate such analysis in the discussion. Such analysis is necessary to ensure that the student relates the findings to the objective of the study. Lecturers emphasised this in written comments. Critical thinking is an essential requirement in engineering profession as engineers are required to be involved in decision making processes as part of the job scope (Venkatesan & Ravenell, 2011).

6.7.1.5 Engineering focused

Engineers stressed on the importance of being engineering focused. Lecturers did not share a similar viewpoint in written comments. This sentiment is expressed in the following excerpt 6.35 by MICVE3 on CV26.

Excerpt 6.35 MICVE3; CV26

"…better understanding of engineering principles needed…"

For engineers, meta-cognitive competence is an essential requirement in presentations. In-depth understanding of engineering principles enables the student to understand the project better. In this instance, engineers have written that presentations need to be discipline and field related.

In relation to the sub-sets of meta-cognitive competence, the similarities in practice are the use of i) in-depth technical knowledge, and ii) familiarity of content. The differences in practice is the use of i) scientific evidence, ii) analytical ability and iii) engineering focused. Lecturers are aligned to technical evidence from an academic perspective while engineers relate to the application of meta-cognitive competence from an engineering discipline perspective.

6.7.2 Similarities and differences in lecturers' and engineers' practice of Technical competence: Written comments

In terms of technical competence, there were 77 references made to it by the lecturers and 57 references by the engineers in the written comments. Within the practice of technical competence, lecturers and engineers shared a common sub-set of linguistic competency requirement, i.e. functional and contextual application in written comments.

The differences among the stakeholders' practice of linguistic sub-sets include confirmation of i) methodological explanation, and ii) technical and scientific evidence. Lecturers stressed on methodological explanation while engineers included technical and scientific evidence. The findings obtained are evidenced by a series of Excerpts provided by the lecturers and engineers in support of the technical competence construct in written comments.

6.7.2.1 Functional and contextual application of a problem statement

Both lecturers and engineers showed the importance of indicating functional and contextual application of a problem statement. This is signified in the written comments provided by the lecturers in the following excerpt 6.36 by FMMEL23 on ME11.

Excerpt 6.36 FMMEL23, ME11

The ***project has not been concluded***.

It is obvious that successful presentations occur when the student provides a conclusion to the study. If such explanation is not applied, lecturers would consider such presentations incomplete. Students should provide concluding remarks of their study to enable future researchers to continue further investigation (Polonsky & Waller, 2004). Essentially, students follow the principle of "tell 'em what you're going to tell them, tell 'em and tell 'em what you have told 'em" (Dixon, 2008).

At the same time, engineers have also concurred with the said sentiment. Excerpt 6.37 by MMME2 on ME13 indicates the engineers' emphasis of the said construct in technical oral presentations. To engineers, findings need to be contextualized and applied to the field of study. The view is indicated in excerpt 6.37.

Excerpt 6.37 MMME2; ME13

"…can improve on the Question & Answer especially on matters ***outside the project scope…"***

The above excerpt 6.37 shows evidence to relate data findings to contextual matters related to the study. In other words, the student should provide evidence of contextualizing the findings. Both groups of stakeholders stressed the importance of providing functional and contextual application in written comments.

6.7.2.2 Methodological explanation of a technical problem

In terms of the use of methodological explanation of a technical problem, lecturers stressed its importance to technical competence construct. This feature is also exemplified in Celce-Murcia's model of communicative competence as discourse competence (Celce-Murcia, 2007). Engineers did not comment on this construct in the written task sheets. The excerpt 6.38 by FMMEL22 comments on ME6 indicates the said sentiment.

Excerpt 6.38 FMMEL22; ME6

> "…Good project but the presentation could be further improved by the student with ***clear and concise explanations***…"

Excerpt 6.38 shows the need to provide a methodological explanation on any purported claim. Explanations enable audience to attain understanding and relevance of the project findings. In this aspect, only lecturers have indicated its importance in the written comments.

6.7.2.3 Technical and scientific evidence

In terms of the use of technical and scientific evidence, only engineers have implied its importance in the written comments. Lecturers did not highlight such construct in the written comments. Excerpt 6.39 by MMME1 on ME5 indicates engineers' emphasis of technical and scientific evidence. Engineers expected students to substantiate data findings with scientific evidence. This is evident from the written comments made in the following excerpt 6.39.

Excerpt 6.39 MMME1; ME5

> Good in responding to questions and had ample ***evidences to support/ justify***

Excerpt 6.39 shows the engineers written emphasis on technical and scientific evidences to support a purported claim. Engineers stressed the importance of justification by use of scientific and technical evidence.

In relation to the sub-sets of technical competence, the similarity in practice are the use of i) functional and contextual application of a problem statement. In other words, both lecturers and engineers indicated the importance to contextualize a problem statement. The differences in practice are the use of i) methodological explanation of a technical problem, and ii) technical and scientific evidence. Lecturers looked for structured explanation while engineers preferred to see technical and scientific evidence to support the findings. Both agree on the importance to contextualize the findings.

6.7.3 Similarities and differences in lecturers' and engineers' practice of Disciplinary competence: Written comments

Lecturers made 68 references while engineers' made 47 references to the need for disciplinary competence in technical oral presentations. The single sub-set common to both groups of stakeholders is the use of technical description in technical oral presentations. The differences among the stakeholders' practice of linguistic sub-sets include confirmation of conceptual justification. Lecturers included the sub-set on conceptual justification within the disciplinary competence construct. The findings obtained are evidenced by a series of excerpts provided by the lecturers and engineers in support of the disciplinary competence construct in written comments.

6.7.3.1 Technical description

Technical description was considered important by both lecturers and engineers. The said sub-set related to disciplinary competence is to provide technical description. This is exemplified by one of the lecturers in the following excerpt 6.40 by FMMEL22 on ME6.

Excerpt 6.40 FMMEL22; ME6

> "…Presentation could be further ***improved*** by the student with ***clear and concise explanations***…"

The lecturers' written comment provided in excerpt 6.40 shows the need to provide some form of clarification to ensure audience understanding of the data presented. At the same time, engineers indicated the lack of technical description in technical oral presentations. The excerpt 6.41 shows the importance to include the said construct.

Excerpt 6.41 MMME11; ME2

> Fairly good presentation but needs ***better understanding of geotechnical concepts***.

The student must be equipped with fundamental knowledge to provide technical description of terms and terminology in the study. Both groups of stakeholders stressed the importance of providing technical description in written comments.

6.7.3.2 Conceptual justification

As for the next construct on conceptual justification, lecturers emphasised its importance. Engineers did not stress on the practice of this construct in written comments but stated it in critique sessions. The said view is upheld in the following excerpt 6.42 by MIMEL26 on ME9.

Excerpt 6.42 MIMEL26; ME9

> The project is carried out well, but ***without full understanding of the physics***.

Excerpt 6.42 clearly indicates the need for students to ensure that data findings are conceptualized within the area of discipline. The relevance is obvious when such interpretation is provided. Another Excerpt to exemplify the emphasis is provided in excerpt 6.43 by MMCVL9 on CV10. Lecturers have indicated this emphasis in written comments.

Excerpt 6.43 MMCVL9; CV10

> Need to add 2 or 3 journal papers in the Literature Review. Results and findings are quite comprehensive but ***must be able to explain why (scientifically) mix 3 is the best sample***.

Excerpt 6.43 signifies the importance of students being able to provide the significance and relevance of data findings to the project. The students were expected to rationalize the data findings.

In relation to the sub-sets of disciplinary competence, the similarities in practice are in the use of technical description. Both lecturers and engineers stressed on its inclusion in the written comments. The differences in practice are the reference to conceptual justification. Lecturers stressed on conceptual justification. However, engineers did not indicate similar sentiment. Engineers stressed on technical elaboration as part of its disciplinary competence. In this sense, engineers were content focused when related to disciplinary competence.

6.7.4 Similarities and differences in lecturers' and engineers' practice of Structural competence: Written comments

Within the structural competence component, lecturers showed 42 references while engineers accorded 16 references to the said structural theme. Engineers accorded higher importance compared to lecturers to structural competence in the written comments. This finding can possibly be attributed to the workplace requirement which requires one to be structured to ensure audience understanding of a presentation (Waljee et al., 2012). The single sub-set common to both lecturers and engineers is the use of i) transition words and phrases. The importance is similarly echoed in Celce-Murcia's model of communicative competence in the form of discourse competence (Celce-Murcia, 2007).

The differences among the stakeholders' practice of linguistic sub-sets include confirmation of i) structured explanation, and ii) methodological and holistic explanation. The findings obtained are evidenced by a series of excerpts provided by the lecturers and engineers in support of structural competence construct in written comments.

6.7.4.1 Transition words and phrases

Lecturers and engineers concurred on the importance of transition words and phrases. Both lecturers and engineers agreed to the practice of this feature to ensure structural competence. This view was upheld by lecturers as shown in the following excerpt 6.44 by FMMEL5 on ME16.

Excerpt 6.44 FMMEL5; ME16

Need to remove flow chart in conclusion part. Many findings, but a poorly presented discussion, ***unable to see the continuity and conclusion***.

The above excerpt 6.44 indicates the importance to show connection of ideas between paragraphs and points. Lack of such connectors creates confusion in audience understanding of presentation. Engineers also concurred and expressed importance on the inclusion of transition words and phrases. The following excerpt 6.45 by MMCHE1 on CH34 indicates the sentiment.

Excerpt 6.45 MMCHE1; CH34

"…please pay attention to reasoning ***when linking points or from slide to slide***…"

Excerpt 6.45 showed the importance to ensure linkage between paragraph and points in presentation. Students should exhibit use of transitional phrases to ensure such linkage. Both groups of stakeholders stressed the importance of providing transition words and phrases in written comments.

6.7.4.2 Structured explanation

As for the structural explanation construct, lecturers indicated the need for the said construct. Engineers did not stress on this construct. This sentiment is indicated in excerpt 6.46 by FMMEL5 on ME16.

Excerpt 6.46 FMMEL5; ME16

Very ***disorganised presentation***

The comments provided by the lecturers signify the need to be structured and avoidance of a disorganised presentation. ESL learners must be made aware of the importance of organisation of ideas in a presentation.Students must conduct mock practice sessions among peers prior the actual delivery of the presentation to ensure coherent flow and transition of ideas in a presentation.

6.7.4.3 Methodological and holistic explanation

As for the methodological and holistic explanation construct, engineers emphasised the said feature. Lecturers did not highlight this sub-set of structural competence. The construct is emphasised by engineers in excerpt 6.47 by MMCHE19 on CH47.

Excerpt 6.47 MMCHE19; CH47

Introduction e.g. CO2 removal in natural gas ***did not*** actually ***jive*** with the ***experiment*** using air/water

The above excerpt 6.47 shows the emphasis by engineers on the importance of providing a methodological and holistic explanation.

In relation to the sub-sets of structural competence, the similarity in practice is the use of i) transitional words and phrases. In other words, both lecturers and engineers indicated the importance of such connectors to link ideas between paragraphs. The differences in practice are the use of i) structured explanation, and ii) methodological and holistic explanation. It is evident that lecturers favored structured presentation while engineers seek application of a broader contextual and holistic approach.

6.7.5 Similarities and differences in lecturers' and engineers' practice of Linguistic Professional Language competence: Written comments

As indicated in Table 6.2, lecturers accorded 21 references while engineers stated 25 references to the use of professional genre in technical oral presentations. Engineers accorded higher emphasis to this construct. There are no differences among lecturers and engineers on the sub-sets related to the practice of professional language use. The following excerpt shows support of linguistic competence on the use of professional language.

6.7.5.1 Professional genre

Lecturers expressed the need to use professional genre in presentations. This sentiment is expressed in excerpt 6.48 by MIEEL2 on EE4.

Excerpt 6.48 MIEEL2; EE4

Good interaction; student is confident; knows his contents, able to answer question and answer; acknowledges doubt where unsure; ***meets expectation of diverse audience***

The above excerpt 6.48 indicates lecturers' written emphasis on students' ease of using professional language. In other words, students utilise appropriate language that caters to audience from different background. At the same time, engineers indicated the importance of professional genre as indicated in excerpt 6.49 by MMCHE24 on CH75.

Excerpt 6.49 MMCHE24; CH75

Very focus presentation, able to answer questions ***without hesitation***

Excerpt 6.49 shows the engineers emphasis on students' ability to respond to audience queries without hesitation. Engineers are eager to listen to students who are able to respond by using relevant genre common to the industry and discipline. In relation to the sub-set of professional language competence, the similarity in practice is the use of i) professional genre. Both lecturers and engineers indicated the need for students to utilise genre used in the said community of practice. There are no differences between lecturers and engineers on the sub-sets related to this competency.

6.7.6 Similarities and differences in lecturers' and engineers' practice of Linguistic Oral Immediacy competence: Written comments

Within the linguistic oral immediacy competence component, lecturers made 13 references while engineers attributed 20 references to this construct as an important feature in technical oral presentations. Engineers accorded higher importance compared to lecturers in the written comments. The sub-set common to both lecturers and engineers include the use of i) confident, interactive and argumentative language for the said construct. The differences among the stakeholders' practice of linguistic sub-sets include use of i) exchange of questions. The findings obtained are evidenced by a series of excerpts provided by the lecturers and engineers in support of linguistic oral immediacy construct in written comments.

6.7.6.1 Confident, interactive and argumentative language

Lecturers and engineers expressed written emphasis on the need to utilise confident, interactive and argumentative language in technical oral presentations. The following excerpt 6.50 by MIEEL2 on EE4 indicates the support to the said construct.

Excerpt 6.50 MIEEL2; EE4

good interaction; students is ***confident***; knows his contents, ***able to answer question and answer***;

The confidence of a student is a crucial skill requirement for an effective student. In order to do so, the student needs to demonstrate the confidence through linguistic competence throughout the presentation and critique session. At the same time, engineers provided similar emphasis to the construct. This is evidenced in excerpt 6.51 by MIEEE4 on EE10.

Excerpt 6.51 MIEEE4; EE10

Good presentation skills. Good knowledge of subject matter.

The above excerpt 6.51 indicates the importance of linguistic competence to ensure a successful presentation from a linguistic dimension. Both groups of stakeholders stressed the importance of utilizing confident, interactive and argumentative language to be competent presenter.

6.7.6.2 Exchange of questions

For the construct on exchange of questions, engineers indicated written emphasis on the use of this linguistic oral immediacy competence in presentations. Lecturers did not indicate emphasis for this construct in the written comments. This is evidenced by the following excerpt 6.52 by MMCHE21 on CH60.

Excerpt 6.52 MMCHE21; CH60

Very clear presentation. ***Able to answer question***

Excerpt 6.52 shows the importance of interaction during the critique sessions. A student is expected to create that immediacy by reciprocating to questions asked by the audience. In relation to the sub-sets of linguistic oral immediacy competence, the similarity in practice include the use of i) confident, interactive and argumentative language. The difference in practice is the use of i) exchange of questions. Lecturers and engineers are keen to ensure two-way engagement and interaction as stipulated in other studies (Morton, 2009). At the same time, engineers relate linguistic oral immediacy competence to student ability to provide feedback to audience queries.

6.7.7 Similarities and differences in lecturers’ and engineers’ practice of Rhetorical Explanatory competence: Written comments

Within the rhetorical explanatory competence component, lecturers made 30 references while engineers made 33 references to this construct. Engineers accorded higher importance compared to lecturers in the written comments. The sub-set common to both lecturers and engineers include the use of i) justification and rationalization ability, and ii) interpretive agility for the said construct. There are no differences for this said dimension. The findings obtained are evidenced by a series of excerpts provided by the lecturers and engineers in support of rhetorical explanatory competence construct in written comments.

6.7.7.1 Justification and rationalization ability

In terms of the above construct, both lecturers and engineers provided written evidence on the need to include justification and rationalization when delivering a technical oral presentation. In other words, both lecturers and engineers support the practice of this construct. The following excerpt 6.53 by FMMEL25 on ME23 indicates the lecturers' sentiment to this construct.

Excerpt 6.53 FMMEL25; ME23

Conclusion has to be made and put into a much ***more clearer and tied with problem*** statements

The above excerpt 6.53 shows the lecturers' written emphasis on the need to justify a viewpoint. Students are not only expected to deliver data findings but also to indicate ability to justify and rationalize data findings to the study. At the same time, engineers expressed written importance on justification and rationalization ability. The following excerpt 6.54 provides the said evidence.

Excerpt 6.54 MMME1 on ME5

Good in responding to questions and had ample evidences ***to support/ justify***

Excerpt 6.54 shows the engineers' emphasis for evidence to justify any purported claim made in a presentation. Both groups of stakeholders stressed the importance of

justification and rationalization ability in the rhetorical explanatory competence construct.

6.7.7.2 Interpretive agility

For the interpretive agility construct, lecturers and engineers indicated its emphasis in technical oral presentations. The said sentiment is evidenced in the following excerpt 6.55 by MMMEL15 on ME15.

Excerpt 6.55 MMMEL15; ME15

"…materials were presented well; student is able to ***provide reasonable answers to questions***…"

The above excerpt 6.55 indicates lecturers' emphasis on the need for interpretation in a presentation. Engineers expressed the importance of interpretive agility as evidenced in excerpt 6.56 by MMCHE18 on CH52.

Excerpt 6.56 MMCHE18; CH52

Good presentation and findings**. *Explore on effect of temperature*** on foaming characteristic (solvent & contaminants)

The above excerpt 6.56 shows the need to relate data findings to related field of interest. In this context, the engineer expressed the need to interpret data findings to related area of discipline. Both groups of stakeholders stressed the importance of interpretive agility as a feature in the rhetorical explanatory competence construct. In relation to the sub-sets of rhetorical explanatory competence, the similarity in practice is the use of i) justification and rationalization ability, and ii) interpretive agility. This implies that both lecturers and engineers acknowledged the need for justification and interpretation in presentations. There are no differences between lecturers and engineers on the sub-sets of rhetorical explanatory competence. Both groups of stakeholders shared similar viewpoint on the sub-sets related to this competence.

6.7.8 Similarities and differences in lecturers' and engineers' practice of Rhetorical Style competence: Written comments

Within the rhetorical style competence component, the engineers made 23 references to this construct as an important feature in technical oral presentations. There are no sub-sets common between lecturers and engineers for this construct. The difference among the stakeholders' practice of linguistic sub-set include the reference to i) societal motivation. This implies that lecturers and engineers did not share any common feature for this construct. The findings obtained are evidenced by a series of excerpts provided by the lecturers and engineers in support of rhetorical explanatory competence construct in written comments.

6.7.8.1 Societal motivation

Engineers indicated the importance of societal motivation in a presentation. Lecturers did not indicate any significance to this feature. The evidence is indicated in the following excerpt 6.57 by MMCHE18 on CH51.

Excerpt 6.57 MMCHE18; CH51

Good presentation. Need to ***relate to some level of industrial application*** such as temperature change.

The above excerpt 6.57 shows that it is important for engineers to relate data findings to industrial needs. In other words, data findings are required to address existing problems faced in the industry. Data findings do not make any significance if it is a mere experiment with no industrial significance. In relation to the sub-sets of rhetorical style competence, although there are no similarities in practice, the features identified relate to theoretical implication of the learning theory (Lave & Wenger, 1991). Engineers focused on societal needs which is an essential criteria in the impact to the society (Seidel et al., 2011). Both groups of stakeholders shared different viewpoints on the sub-sets related to this form of competence.

6.7.9 Similarities and differences in lecturers' and engineers' practice of Interpersonal and Interactive competence: Written comments

Within the practice of interpersonal competence construct, lecturers made 16 references while engineers made 17 references to this construct. Both lecturers and engineers accorded importance to the said feature. As for this construct, the common sub-set is i) interaction skills. Lecturers, however, also focused on the use of defense skills as additional critical component of interpersonal and interactive competence. This view on the inclusion of interactive competence is expressed in other studies that emphasise on the need for interactivity in presentations (Morton, 2009).

6.7.9.1 Interaction skills

Lecturers and engineers indicate the stress on interaction during a presentation. This view is evident in the lecturers' excerpt 6.58 by MMEEL1 on EE2.

Excerpt 6.58 MMEEL1; EE2

Lack interaction; monotony in presentation

Excerpt 6.58 shows the lecturers' emphasis on creating engagement with the audience during a presentation. This finding concurs with other studies that propose a similar need to inculcate interactive competence (Morton, 2009). Others such as Trevelyan (2009) also resonate the need for engineering presentations to be presented as a two-way communication. Engineers also shared similar sentiment on interaction skills. Engineers similarly are encouraged by responses to questions. This is evident in the following excerpt 6.59 by MMME1 on ME5.

Excerpt 6.59 MMME1; ME5

Good in ***responding to questions*** and had ample evidences to support/ justify

The above excerpt shows engineers emphasis on student's ability to interact by responding to questions supported with scientific evidence. Engineers stressed on interaction when presenting.

6.7.9.2 Defense skills

Lecturers also considered defense skills as an important criterion in a presentation. This sentiment is expressed by lecturers as seen in the following excerpt 6.60 by MMMEL4 on ME29.

Excerpt 6.60 MMMEL4; ME29

ability to defend need to be improved

The above excerpt 6.60 shows the lecturers' emphasis on defense skills during the presentation. Students need to advocate their data findings to gain audience acceptance of a certain viewpoint. The lecturers were aware that students were required to defend their project findings. The engineers have also expressed similar sentiment on defense skills in students' presentations. The following excerpt 6.61 by MCME6 on ME25 indicates the said sentiment.

Excerpt 6.61 MCME6; ME25

need to be confident in ***defending Q&A***. the decision must be checked. Criteria of XXX were not shown.

The above excerpt 6.61 shows engineers' emphasis on the ability to provide defense to support a certain viewpoint. In relation to the sub-sets of interpersonal and interactive competence, both lecturers and engineers concurred on the importance of interaction with the audience during critique or question and answer sessions. Lecturers have emphasised on the importance of interactive and defense skills as required criteria to enhance interpersonal and interactive competence (Rohani Othman & Zubaidah Awang, 2008). Both groups of stakeholders shared similarities on the sub-sets related to this construct.

6.8 Summary of lecturers' and engineers' practice on linguistic and rhetorical dimension

In relation to the research question, the findings obtained in critique sessions and written comments indicated certain similarities and differences between lecturers' and engineers' practice of linguistic and rhetorical features deemed necessary in technical oral presentations. A synopsis of the said features listed in critique sessions and written comments is provided.

6.8.1 Similarities and differences among lecturers' and engineers' on linguistic and rhetorical dimension: Critique sessions

Both lecturers and engineers shared similar sentiment that the linguistic competency requirement in critique sessions includes i) technical competence, ii) meta-cognitive competence, iii) disciplinary competence, and iv) structural competence. As for rhetorical dimension, both lecturers and engineers practiced rhetorical explanatory competence.

Both groups acknowledged the importance of technical mastery and in-depth technical knowledge of the subject matter. Both lecturers and engineers concurred that presentations must be presented in a methodological, structured format justified with analytical explanation based on technical and scientific evidence. Both lecturers and engineers recognized the importance of conceptualizing data findings beyond data analysis.

However, the linguistic practices that differentiate the two groups is the application of data findings. Lecturers emphasised micro level application, i.e. content based application, while engineers implied broader functional and contextual application of data findings. The findings suggested that lecturers are content and data focused, while engineers are contextually driven. Lecturers indicated the need to emphasise and interpret the results of the data findings.

While lecturers centered their interpretation on data findings, the engineers encouraged the practice of interpreting the data beyond that of facts and figures. The engineers attempted to relate data findings to real world and industry based application. The engineers were interested in relating figures to the current scenario and to apply such findings to the real world context. In other words, the engineers were interested to relate the data findings to current market application.

At the same time, engineers differ from lecturers as engineers included economic value as an added criterion. Industry practitioners are profit driven to sustain in a competitive global market. This finding concurs with previous studies which indicate significant difference in competency requirement between academics and industry (Allan & Chisholm, 2008).

6.8.2 Similarities and differences among lecturers' and engineers' on linguistic and rhetorical dimension: Written comments

Compared to critique sessions, lecturers and engineers expressed more similarities in sub-sets of communicative competence in written comments. This could possibly be attributed to time constraint faced in critique sessions. However, the similarities in themes include i) meta-cognitive competence, ii) technical competence, iii) disciplinary competence, iv) structural competence, v) linguistic professional language competence, and vi) linguistic oral immediacy competence. As for rhetorical dimension, the sub-sets include i) rhetorical explanatory competence, ii) rhetorical style competence, and iii) interpersonal and interactive competence.

Findings in written comments included similarities with that from critique sessions. Both lecturers and engineers specify the need for a technical presentation that illustrates a critical and analytical, technically structured and methodological presentation justified by engineering focused evidence. Engineers narrowed the focus to specific industry needs in certain niche areas. Lecturers were inclined to academic and data based evidence, while engineers prefer holistic presentation. This is possibly indicative of the COP of the said groups (Norback et al., 2010). In other words, language and communication lecturers need to impart such awareness to ESL learners on the importance emphasised on different sub-sets of communicative competence by different focal groups.

In addition, both lecturers and engineers stressed the need of professional genre as a feature of linguistic professional language competence. Knowledge and familiarity with workplace genre is an asset to enhance communicative competence. In terms of linguistic oral immediacy competence, there is no common sub-set. Lecturers stressed on the use of confident, interactive and argumentative language, while engineers stress on exchange of questions. Lecturers focused on delivery while engineers stressed on interactive discourse. As for rhetorical explanatory competence, both lecturers and engineers acknowledged the importance of justification and interpretation. Interpretive agility is considered an important rhetorical feature.

As for rhetorical style competence construct, lecturers stressed on creative presentation style while engineers focused on societal motivation. Lecturers emphasised on rhetoric in presentation, while engineers catered toward industry and societal needs. Lecturers focused on results of data findings. Engineers are inclined toward workplace and industry application.

Both lecturers and engineers indicated to the need of interpersonal and interactive competence which concurs with engineering communication studies which specify on rhetorical competence in presentations (Morton, 2009). Both lecturers and engineers agreed that interactivity is important to ensure a two-way engagement between students and audience during a presentation. Both lecturers and engineers indicated the importance of interactivity is an important rhetorical element in acquiring communicative competence in technical oral presentations.

In practice, what can be summarized is that lecturers and engineers both acknowledged the inclusion of linguistic and rhetorical elements in order to deliver a methodological, structured, analytical technical presentation justified with technical and scientific details. From the lecturers' perspective, a technical oral presentation should show evidence of content and contextual interpretation of data findings spiced with the rhetorical interactive element. For engineers, presentations need to be technically well versed and yet incorporate holistic interpretations which illuminate elements of real world perspective, industry specific, market driven, price competitiveness and society driven.

In other words, engineers relate communicative competence to more than just an aspect of technical mastery, but interpretation of data findings to a holistic and market related perspective. These findings exemplify the differences in perceptions as held among different focal groups on the notion of communicative competence. It is evident that focal groups from the academic and engineering community have different emphasis as a result of their legitimate peripheral participation in their community of practice.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.0 Introduction

The aim of this study is to ascertain the communicative competence features necessary in technical oral presentations. As the notion is deemed lacking from the linguistic and rhetorical dimension in technical oral presentations, the study is investigated from the socio-linguistic perspective. Knowledge of communicative competence features, in particular, linguistic and rhetorical features, enable stakeholders to participate effectively and achieve their own goals in the said communities of practice.

Based on the stakeholders' perceptions and practice of communicative competence requirements, a proposed communicative competence framework from the linguistic and rhetorical perspective is suggested. An implication of the study is the need to re-look at existing ESP and communication related courses, curriculum design, and align its linguistic and rhetorical expectations to that of the industry. Findings from the quantitative phase have ascertained the essential presentation constructs necessary to deliver a successful presentation.

The qualitative stage illuminated the notion of communicative competence from the linguistic and rhetorical dimension as perceived by various stakeholders involved in the business of technical oral presentations. The linguistic and rhetorical facet enhance the existing notion of communicative competence as ascertained by Celce-Murcia (2007). A mapping of the quantitative and qualitative feedback is provided (see Appendix O: Mapping of Quantitative Constructs and Qualitative Themes).

7.1 Research Questions

In relation to the study, the central research question posed was,

“What are the selected stakeholders’ perceptions of communicative competence in a technical oral presentation?”

In order to derive findings to the central research question, the research questions posed in the study included:

1. What are the students’ perceptions of communicative competence requirement in technical oral presentation?
    a. What are the students’ perceptions of presentation skills required in technical oral presentation?
    b. What are the students’ perceptions of attributes required in technical oral presentation?

2. What are the engineers’ perceptions of communicative competence requirement in technical oral presentation?
    a. What are the engineers’ perceptions of presentation skills required in technical oral presentation?

b. What are the engineers' perceptions of attributes required in technical oral presentation?

3. What are the lecturers' and language lecturers' perceptions of communicative competence requirement in technical oral presentation?
    a. How similar are they in their perceptions of presentation skills and attributes required in technical oral presentations?
    b. How different are they in their perceptions of presentation skills and attributes required in technical oral presentations?

4. What are the stakeholders' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?
    a. How similar are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?
    b. How different are the selected students', lecturers', language lecturers' and engineers' perceptions of linguistic and rhetorical features necessary for successful technical oral presentations?

5. In practice, what do lecturers and engineers consider as essential linguistic and rhetorical features necessary for successful technical oral presentations?
    a. In practice, how similar and different are the selected lecturers' and engineers' critique on linguistic and rhetorical features necessary for technical oral presentations?

b. In practice, how similar and different are the selected lecturers' and engineers' written comments on linguistic and rhetorical features necessary for technical oral presentations? What are the students' perceptions of communicative competence requirement in technical oral presentation?

7.2 Findings of the Study

Quantitative analysis to Research Questions 1 and 2 provided an insight into communicative competence features considered of high importance by the end users of technical oral presentation, i.e. students and engineers. The initial phase of the study was essential to gain an insight of the general consensus of students' and engineers' perceptions toward various variables considered crucial in acquiring communicative competence in technical oral presentations. Items chosen were adapted from various established research instruments to seek the views of students and engineers on the level of importance accorded to each variable within the construct.

The qualitative phase probed the notion from a linguistic and rhetorical perspective as perceived by the stakeholders involved in technical oral presentations. Qualitative analysis to Research Questions 3, 4 and 5 provided an insight to stakeholders' perceptions and actual practice of communicative competence with emphasis on the linguistic and rhetorical dimension. The qualitative analysis provided feedback to queries which were not available in the quantitative findings. Multiple sources of data (i.e. supporting documents and unobtrusive observation) were triangulated to understand a single phenomenon, i.e. the notion of communicative competence in technical oral presentations.

7.2.1 Quantitative Analysis: Phase One (Research Questions 1 and 2)

The quantitative analysis provided data findings to Research Questions 1 and 2. In reference to Research Questions 1 and 2, the similarity between students' and engineers' perceptions is that both groups identified the five constructs i.e. i) presentation skills and attribute, ii) behavioral skills and attribute, iii) content, iv) language competency, and v) non-verbal skills as not significant. This means that both groups of stakeholders agreed on the inclusion of the said variables listed within the five constructs.

However, the differences exist on the content dimension (introduction stage). Engineers have indicated a higher emphasis compared to students for the said items. Students indicated emphasis on language use whereas engineers indicated emphasis on functional (verbal) style items within the construct which concurs with studies in style in presentations (Cannon & Sendall, 2006). In relation to Research Questions 1 and 2, this means that both students and engineers considered all items (with the exception of content construct on introduction stage) as essential items necessary to attain communicative competence. The constructs echoed the subsets proposed in Celce-Murcia's model of communicative competence, namely i) strategic competence, ii) socio-cultural competence, iii) interactional competence, iv) linguistic competence, and v) discourse competence (Celce-Murcia, 2007).

However, the quantitative findings suggest that there is some discord between students' and engineers' perception of communicative competence requirement in content dimension (introduction stage). Thus, language and communication lecturers need to impart the appropriate communicative competence requirements to the ESL learners. At the same time, although the quantitative findings indicated that results are not significant, inferential test results, however, indicated differences in emphasis provided by students and engineers to certain variables listed within the five constructs.

In the presentation skills and presenter ability construct, 13 items were listed. Of the 13, 7 items were considered as significant of which 3 were accorded higher emphasis by students. The 3 significant items accorded a higher emphasis by students include i) memorization, ii) audience technical knowledge, and iii) audience non-technical knowledge. Engineers accorded higher emphasis to 4 significant items, namely i) purpose, ii) scope, iii) analytical ability, and iv) composure. It is evident that students were content and academic focused while, engineers indicated preference for holistic and professional perspective. In fact, these elements i.e. effective communication and higher order thinking skills have been deemed as "21^{st} century skills" necessary for students' workplace participation (Eisner, 2010). Thus, it is possible to interpret that the students' findings are inclined to academic practices while engineers' findings are aligned to industry needs.

As for the next construct on behavioral skills, 9 items were listed. However, only two items were considered as significant out of the 9 items. Engineers accorded higher level of importance to i) analytical response, and ii) being courteous. This finding is akin to the importance accorded to strategic competence as mentioned in Celce-Murcia's model of communicative competence (Celce-Murcia, 2007). These two features are closely related to skill requirement of professional engineers at the workplace (Venkatesan & Ravenell, 2011). Being critical and yet maintaining professionalism in tense moments such as question and answer sessions are essential skills that reflect the communicative competence of would-be presenters.

For students, although four of the behavioral items were listed as not significant, higher emphasis was accorded to i) audience reflect, ii) inviting audience, iii) providing response, and iv) defend ideas. Essentially, students were aware of the importance of maintaining interactivity and two-way communication with the audience. Maintaining two-way communication is a critical component to ensure audience understanding (Trevelyan, 2009). Language communication experts must ensure that ESL learners create interactivity during presentations.

This finding complements Celce-Murcia’s suggestion that interactional competence is an essential feature in communicative competence (Celce-Murcia, 2007). The findings indicated engineers’ continual stress on critical analysis and professionalism, while students emphasised audience interaction and the ability to provide defense during critique sessions. Professionalism depicted through presenters’ confidence and well preparedness in slide presentation creates that impact necessary in workplace setting (Carter, 2013).

In the following construct on content dimension (introduction, while and conclusion stage), both students and engineers were aware of the importance of the need for a structured and methodological presentation. As for the introduction stage, engineers accorded a higher level of importance to 6 out of 7 items. For engineers, the introduction provides a snapshot of the presentation. Students focused on literature review. Structured and methodological presentations are essential for effective communication purposes as indicated in Celce-Murcia's discourse competence, an essential communicative competence feature (Celce-Murcia, 2007).

In the content dimension (while presentation stage), the students focused on the aesthetics of visual slides. Visual aesthetics is essential to ensure the success of technical oral presentation delivery (Waljee et al., 2012). Engineers, however, focused more on coherence and use of visual diagrams to ensure successful delivery. In other words, to engineers, the cause for concern was audience understanding while students were concerned with aesthetics and the visual presentation of slides. This finding can possibly be attributed to the learning theory (Lave & Wenger, 1991). While presentation is of importance, the coherence and delivery is critical in ensuring communicative competence.

As for the conclusion stage, engineers indicated a higher level of importance to 7 out of 8 items. For engineers, they stressed on the importance of stating the cost, restating the purpose and continued discussion on the findings. Engineers looked for presentations that denote cost-competitive products that exceed or meet market needs (Seidel et al., 2011). For engineers, the critical analysis and interpretation is significant skill requirement expected of engineers.

For students, the only item mentioned with higher level of importance was the issue on restating the relevance. The finding clearly indicates the impact of the stakeholders' participation and its impact on the perceptions of the said communities of practice. It is clear that engineers were focused toward the overall interpretation of data findings at a holistic perspective, while students were focused on the integral issues of content matter, structural and methodological flow of contents from an academic perspective.

In terms of the language competency construct, 8 items were listed as not significant. However, out of the 8 items, 6 were accorded a higher level of importance by the engineers. Engineers realized the importance of linguistic competency through use of grammar, articulation, enunciation, pronunciation, simple language and word choice as the criteria to ensure audience understanding of a presentation. This finding is equally emphasised in the linguistic competence construct as a sub-set of communicative competence (Celce-Murcia, 2007). This means that ESL learners irrespective of their engineering specialisation must be competent linguistically.

The findings indicate that engineers were aware that linguistic and rhetorical competency are essential in ensuring communicative competence in technical oral presentations (Montero-Fleta, 2012). The findings challenge Lave & Wenger’s learning theory (1991) where stakeholders from a community of practice such as technical specialists like engineers and lecturers from the engineering background indicate an awareness on the importance of non-technical skills, other than technical skills.

Students, on the other hand, valued the importance of i) language use, and ii) comprehension among the audience, within the language construct. This means that students were concerned with linguistic use, but not as highly compared to engineers. To the students, as long as language use and audience understanding is achieved, communicative competence is attained.

To engineers, however, the finer aspects of linguistic and rhetorical competency were essential to ensure professionalism during such oral communicative events. To engineers, presentations are a form of impact created on the audience. Successful presentations are a combination of both surface (non-verbal) and functional (verbal) style of the presenter (Cannon & Sendall, 2006). Thus, it is essential that a student is able to project both technical and non-technical mastery for an impactful presentation.

In terms of non-verbal construct, 10 items were listed of which 7 were accorded higher emphasis by engineers. Engineers accorded higher level of emphasis to volume, vocal fillers, rate, vocal variety, facial expressions, extemporaneous and culturally observant. For students, the 3 items given stress include use of i) pauses, ii) non-verbal gestures and iii) stand/move. The findings indicate that engineers were aware of the importance of non-verbal skills in workplace presentations. This finding concurs with other studies that state the importance of audience understanding during oral presentations (Mohammad Ali Moslehifar & Noor Aireen Ibrahim, 2012).

Pauses are considered important as this feature enables audience to internalize a certain viewpoint before another viewpoint is introduced (Freeley & Steinberg, 2009). A presentation is not merely seen as a presentation or report of data findings, but one that engages and “talks with an audience” (Koch, 2010, p. 109). For students, the feedback shows that the items exemplified include non-verbal skills which were possibly part of language input in the speaking course conducted in the university.

On the other hand, findings indicate engineers' perceptions are a reflection of workplace participation. Engineers placed greater emphasis on the non-verbal skills as a result of real workplace environment which emphasises on both verbal and non-verbal skills (Bulca & Safaei, 2013). Although students were aware of the importance of non-verbal skills, the emphasis provided by engineers was higher. A possible explanation can be attributed to the community of practice that the stakeholders are engaged in. Students participated at an academic platform, and thus the language input may possibly be inclined to an academic perspective while engineers are inclined to a broader context which is workplace, area and industry driven (Morton, 2012).

This means that the quantitative analysis shows that different groups of stakeholders emphasise communicative competence from different perspectives. It can be summarized that the quantitative analysis reveal students' and engineers' approach to communicative competence differs as a result of the communities of practice participation in different setting. It can be assumed that both students and engineers did agree on the inclusion of variables, but indicated different levels of importance to the said items.

Students stressed on structured content and methodological presentation with elements of rhetorical competence, i.e. interactivity with the audience. Students took a scholastic approach toward presentations. Engineers, on the other hand, perceived communicative competence as a combination of technical, linguistic and rhetorical competence viewed from a holistic, economic and real world application perspective.

Engineers exemplified professionalism earmarked by technical mastery, critical analysis, market relevance, economic value and societal motivation. In some ways, engineers were similar with students in defining the construct (technical competence, linguistic and rhetoric ability), but differed in their contextual interpretation. Students equated presentations to a scholastic approach, while engineers were concerned with real world application.

7.2.2 Qualitative Analysis: Phase Two (Research Questions 3, 4 and 5)

The qualitative phase attempted to ascertain the perceptions of various stakeholders in technical oral presentations on communicative competence with particular focus on the linguistic and rhetorical dimension, an area deemed lacking in research. The qualitative analysis allows the researcher to listen to the voice of the stakeholders which is not attainable through a questionnaire.

In relation to Research Question 3, language lecturers and lecturers acknowledged the importance of five constructs, namely, i) presentation skills and attribute, ii) behavioral skills and attribute, iii) structural competence, iv) language competence and v) non-verbal cues. These findings concur with Celce-Murcia's notion of communicative competence (Celce-Murcia, 2007). The feedback indicates that there is awareness among the technical skilled group such as lecturers on the importance of non-technical skills to enhance communicative competence constructs in technical oral presentations. Technical experts realized the importance of non-technical skills for effective workplace participation (Venkatesan & Ravenell, 2011).

In reference to Research Question 4, stakeholders such as students, lecturers, language lecturers and engineers were required to provide their perception on communicative competence from a linguistic and rhetorical dimension. The qualitative phase provided and insight of plausible linguistic and rhetorical features deemed necessary to create that “magic” or interactivity needed in presentations (Morton, 2009). It is in this phase that five linguistic and two rhetorical themes were derived. Findings revealed the linguistic emphasis on i) technical competence, ii) disciplinary competence, iii) meta-cognitive competence, iv) linguistic competence (oral immediacy competence), and v) structural competence. The two rhetorical themes include i) rhetorical competence (rhetorical explanatory competence and rhetorical style competence), and ii) interpersonal and interactive competence.

The investigation further revealed the prevalence of thirty linguistic and sixteen rhetorical sub-sets of communicative competence. These findings indicated congruence with the sub-sets mentioned in Celce-Murcia’s model of communicative competence, but exhibit in-depth linguistic and rhetorical markers specific for technical oral presentations. As such the findings reveal the prevalence for scientific evidence, societal and personal motivation, economic value, microscopic and yet broad contextual application of data findings.

The findings reveal that the said focal groups expressed awareness on the importance of linguistic and rhetorical competence in technical oral presentation, but indicated differences on the emphasis on different sub-sets within the themes. Students and lecturers indicated inclination toward academic oriented content centered presentations, while language lecturers emphasised on the rhetoric of communication, and engineers focused on broad contextual application that is industry driven.

Essentially, the notion of communicative competence prescribes to the Aristotelian concept of “ethos (credibility), logos (reason) and pathos (emotion)” where the effectiveness of a presentation relies on the rhetorical competence (credibility and emotion) and linguistic competence (reason) of the presenter (Edge et al., 2013). Details on the similarities and differences by stakeholders (students, lecturers, language lecturers and engineers) is discussed in later sections in this chapter (refer to sections 7.2.2.1 and 7.2.2.2).

In relation to Research Question 5, the findings suggest that there are similarities and differences in what was perceived during interview sessions and actually practiced by the lecturers and engineers in critique sessions and written comments in the students’ technical oral presentation evaluation task sheets. The findings suggest that during interview sessions, both lecturers and engineers mentioned the importance of linguistic and rhetorical competency features in technical oral presentations. However, differences emerge during the actual practice such as oral comments provided during the critique sessions and in the written comments.

In the critique sessions, there was no mention of linguistic dimension (linguistic oral language and linguistic oral style) which was mentioned during the written feedback. Details of the similarities and differences accorded by lecturers and engineers in their perceptions and actual practice is discussed in this chapter (refer to sections 7.2.2.1 until 7.2.2.4). The following discussion will initially elaborate on the stakeholders’ perception of similarities and followed by differences on the five linguistic and two rhetorical themes.

7.2.2.1 Similarities on perceptions of communicative competence between students, lecturers, language lecturers and engineers: Linguistic and rhetorical dimension

In relation to Research Question 4, the similarities attained in the perception held by the four focal groups of stakeholders (i.e. students, lecturers, language lecturers and engineers) shows awareness by all on the importance of five sub-sets of linguistic and two sub-sets of rhetorical dimension in technical oral presentations. In terms of similarities, all stakeholders have unanimously agreed on the essential criteria of technical competence (refer to section 5.7.1). Technical competence implies “content mastery, application of technical knowledge through use of specific genre in the discussion points of a presentation” (Robinson et al., 2005).

The next sub-set of communicative competence accorded a high level of emphasis by all groups is on oral immediacy competence (refer to section 5.7.4). Oral immediacy refers to connectedness created by use of “you approach” or personal pronouns. Students, lecturers, language lecturers and engineers shared a similar viewpoint in determining this sub-set as a crucial component to enhance communicative competence in technical oral presentations. Other studies accord similar emphasis on the use of personal pronouns in presentations (Elizabeth Rowley-Jolivet & Shirley Carter-Thomas, 2005). Such features enhance interactional competence in presentation sessions (Celce-Murcia, 2007).

The next sub-set accorded which was similarly emphasised by all focal groups is meta-cognitive competence (refer to section 5.7.3). Meta-cognitive competence refers to the use of analytical and critical thinking justified with scientific evidence. In this finding, all focal groups state the prominence of meta-cognitive competence to enhance communicative competence in technical oral presentations. This finding concurs with studies that indicate the relevance of critical thinking as an important employability skill requirement (Venkatesan & Ravenell, 2011).

The next form of sub-set accorded emphasis by all focal groups is structural competence (refer to section 5.7.5). Structural competence essentially refers to the use of linguistic markers to connect points from one point to another. All members of the focal groups accord importance to this said construct as it enhances coherence and flow of ideas (Koch, 2010).

Similarly, equal emphasis is accorded to the importance of rhetorical explanatory competence (refer to section 5.7.6). Rhetorical explanatory competence refers to justification skills, decision making and evaluative skills necessary to validate a viewpoint. Engineers, in particular, stressed the significance of this construct toward enhancing communicative competence in technical oral presentations. Engineers look out for critical analysis by means of detailed justification, rationalization and interpretation on the part of presenters when trying to validate a view point during presentations.

The responses provided by students, lecturers, language lecturers and engineers indicate that all stakeholders agreed that technical competence undoubtedly is fundamental to enhance communicative competence in technical oral presentations. Competency in critical analysis, genre and disciplinary competence are also significant in contributing to the notion of communicative competence. At the same time, linguistic elements like oral immediacy and rhetorical sub-sets like rhetorical explanatory competence, and interpersonal and interactive competence heighten interaction in presentations.

This finding concurs with other engineering communication studies which highlight the magnitude of interactive competence in presentations (Morton, 2009). Thus, language and communication lecturers in the Malaysian context need to impart the necessary communicative competency features to ESL learners so that these students can be competent in both the academic and professional engineering community. The relevant input and emphasis enables the students to be better engineers of tomorrow.

Thus, it can be possibly assumed that the similarities of linguistic competence knowledge include reference to i) technical competence, ii) meta-cognitive, iii) oral immediacy competence, and iv) structural competence. The similar rhetorical competence knowledge includes use of i) rhetorical explanatory competence, ii) rhetorical style competence, and iii) interpersonal and interactive competence.

7.2.2.2 Differences on perceptions of communicative competence between students, lecturers, language lecturers and engineers: Linguistic and rhetorical dimension

In relation to Research Question 4, there are obvious differences in the perceptions held by the four focal groups of participants (i.e. students, lecturers, language lecturers and engineers). The immediate difference can be seen in the perceptions of the four groups toward disciplinary competence (refer to section 5.7.2).

For this particular competence, language lecturers did not indicate emphasis to the said sub-set of communicative competence. A possible explanation for such occurrence could possibly be attributed to learning theory principle advocated for communities of practice (Lave & Wenger, 1991). In this context, it can be interpreted that disciplinary competence dealing in genre and content terminology could possibly be the concern of experts in the field. In this case, the experts of the field are lecturers and engineers.

This finding indicates language lecturers' apparent lack of insight and knowledge on engineering related materials (Bhattacharyya & Zullina Hussain Shaari, 2012). This finding concurs with studies which indicate the need for educators to be involved in the design and planning of ESP materials so required by students to perform effectively in target situations (Hutchinson & Waters, 1987). Specificity in ESP materials is threatened by the move toward generic skills transferable to other multidisciplinary fields which limits emphasis toward designing ESP materials (Hyland, 2002, 2007). As such, it is important that renewed emphasis be provided toward access of ESP language materials for both students and language lecturers.

The next form of discrepancy lies in the perceptions toward rhetorical oral style competence (refer to section 5.7.7). Although all groups provide support to the inclusion of this feature, students, lecturers and engineers provide minimal reference to such competence. Language lecturers provided the most support to this feature. Once again a possible explanation for such finding can be attributed to the situated theory of learning (Lave & Wenger, 1991).

It can be ascertained that in terms of differences, students have basically stressed on the importance of technical, disciplinary and oral immediacy competence (refer to sections 5.7.1, 5.7.2 and 5.7.4). In addition, students adhere to the importance of structural competence (refer to section 5.7.5). It is evident that students' emphasis is a reflection of the academic language input and participation in the academic setting. This finding concurs with other studies which mention the emphasis accorded to academic language as a result of teaching learning approaches practiced in the classroom (Fraser, 2010).

The findings reveal that lecturers accorded similar stress on features like the students such as technical knowledge, disciplinary competence and oral immediacy features (refer to sections 5.7.1, 5.7.2 and 5.7.4). The findings indicate that lecturers and students share similarities in emphasis. This finding can possibly be attributed to the theoretical underpinning of the learning theory (Lave & Wenger, 1991).

As for language lecturers, the linguistic emphasis included technical competence, meta-cognitive and oral immediacy competence. The rhetorical feature emphasised was that of interpersonal and interactive competence. It can be ascertained that language lecturers differ from students and lecturers as language lecturers emphasise content, critical thinking, linguistic competence and interactivity as the essential criteria in communicative competence in technical oral presentations. In other words, language lecturers accentuate language proficiency and rhetorical competence in communication. Such perception can be inferred to the Aristotelian concept of “ethos” (credibility), “logos” (reason), and “pathos” (emotion) concept in a presentation (Dixon, 2008; Gurak, 2004).

As for engineers, the linguistic emphasis includes technical and meta-cognitive competence while rhetorical emphasis comprises rhetorical explanatory competence, linguistic oral immediacy, and interpersonal and interactive competence (refer to section 5.7). The findings indicate engineers stress on technical knowledge, critical thinking, language fluency as well as rhetorical competence as fundamental employability skill requirement of prospective graduates prior workplace entry (Venkatesan & Ravenell, 2011).

The findings reveal that all stakeholders indicated awareness but differed on variables within the linguistic and rhetorical dimension required for technical oral presentations. For students and lecturers, emphasis is toward academic language focus, structural competence and disciplinary competence. Students and lecturers center more on the Aristotelian concept of sequential understanding or “logos” (reason) where deductive learning is applied to abstract concepts (Dannels, 2003; Felder & Brent, 2004).

For language lecturers, the stress is inclined toward linguistic and rhetorical ability but engineers favor critical interpretation and evaluative decision making of the findings. It is possible to state that stakeholders are aware of the importance of various sub-sets of communicative competence, but each group tend to stress on certain variables within the linguistic and rhetorical dimension.

7.2.2.3 Similarities and differences on actual practice of communicative competence between lecturers and engineers in critique sessions: Linguistic and rhetorical dimension

In reference to Research Question 5, this phase was elicited to corroborate if perceptions were actually practiced by the said lecturers and engineers. As discussed in Chapter 6 (refer to section 6.4, Table 6.2), the findings indicate similarities and differences in lecturers' and engineers' actual practice of communicative competence in critique sessions and written comments. This section will elaborate on the actual practice of communicative competence in critique sessions.

As indicated in Table 6.2, both focal groups, i.e. lecturers and engineers accorded similar inclusion of linguistic and rhetorical themes in critique sessions but differed in the emphasis on the type of variables within the said themes. The similar references to linguistic themes include i) meta-cognitive competence, ii) technical competence, iii) disciplinary competence, and iv) structural competence while the sole rhetorical theme mentioned is rhetorical explanatory competence.

This means that both lecturers and engineers acknowledged that the notion of communicative competence is associated with one's technical, critical, methodological and rhetorical explanatory mastery in the field of specialisation. The findings confirm the lecturers' and engineers' perception of the notion of communicative competence where emphasis is stressed on technical mastery, critical analysis of the discipline and effective rhetorical delivery in a structured layout.

The differences among lecturers and engineers in actual practice in critique sessions lie in the variables accorded to afore-mentioned competency themes. For lecturers, meta-cognitive competence includes mental alertness while engineers make reference to literature review. This implies that lecturers associate meta-cognitive competence to the presenters' ability in providing prompt responses and justification when queried, while engineers refer to ones' reference to current gaps in literary readings.

In terms of technical competence, lecturers differed from engineers with reference to literature evidence while engineers associate the feature to ones' ability to provide technical justification. In terms of disciplinary competence, the difference is accentuated with the engineers' reference to economic value and providing solutions to problems. This aspect was not mentioned by the lecturers.

Thus, the qualitative analysis shows consistency among lecturers and engineers on certain sub-sets of communicative competence. Lecturers and engineers shared similarities in accordance to the themes accorded to the notion, but varied slightly on variables within the said themes. It can be possibly inferred that both focal groups relate communicative competence to one's mastery and critical analysis within the field of specialisation.

For lecturers, this concept is amplified when one provides a structured and sequential understanding of the said concept. In other words, lecturers are academically inclined in their perception and actual practice on the notion of communicative competence. For engineers, the notion is perceived from a holistic and industrial perspective with reference to economic and real life problem solving application.

7.2.2.4 Similarities and differences on actual practice of communicative competence between lecturers and engineers in written comments: Linguistic and rhetorical dimension

In reference to Research Question 5, this phase was intended to corroborate if perceptions were actually practiced by the said lecturers and engineers. This section discusses the overall similarities and differences in written comments between lecturers and engineers (refer to section 6.4, Table 6.2). This section will elaborate on the actual practice of communicative competence in written comments.

As indicated in Table 6.2, both focal groups, i.e. lecturers and engineers accorded similar inclusion of linguistic themes but differ in the rhetorical themes in written comments. Like critique sessions, differences in written comments are depicted among variables within the said themes. The similar references to linguistic themes include i) meta-cognitive competence, ii) technical competence, iii) disciplinary competence, iv) structural competence, and v) linguistic competence. As for the rhetorical theme, the similar themes emphasised by both focal groups include i) rhetorical explanatory competence, and ii) interpersonal and interactive competence. The difference is engineers' emphasis on rhetorical style, which was not indicated by lecturers in the written comments.

Both lecturers and engineers stated similar emphasis on various sub-sets of communicative competence during the critique sessions and in the actual practice of written comments of the students' oral presentation. Both groups mentioned the importance of critical analysis (meta-cognitive competence), technical competence, disciplinary competence and methodological presentation (structural competence).

However, the difference in written comments is the inclusion of linguistic competence which was not highlighted during the critique sessions. One possible explanation for such exclusion is possibly attributed to the learning theory where perceptions are a reflection of COP (Lave & Wenger, 1991). In this instance, the exclusion of linguistic competence in critique sessions is indicative that professionals from the technical background focus on technical content and area of specialisation.

The differences among lecturers and engineers in actual practice in written comments is depicted by the engineers' emphasis on exchange of questions as part of the sub-set within the linguistic oral immediacy theme (refer to section 6.4, Table 6.2). For engineers, the series of exchange of questions enhances oral immediacy and two-way interaction between the presenter and audience. Presentations mirror verbalized critical discourse on a specialized field between the technical experts and novice engineers. To lecturers and engineers, presentations are not mere reporting of data findings but one must be mindful of the non-technical competencies such as linguistic and rhetorical dimension to create that interaction and engagement with the audience.

Thus, the qualitative analysis indicates emphasis to the linguistic competence not mentioned in the critique sessions. The findings show that both lecturers and engineers acknowledge the significance of linguistic competence as an essential feature to enhance the notion of communicative competence in technical oral presentations.

7.3 Summary of stakeholders' perceptions and actual practice of communicative competence from the linguistic and rhetorical dimension

In terms of perception and actual practice, the responses provided by the said stakeholders like students, lecturers, language lecturers and engineers indicate that there are similarities and differences between perceptions and actual practices on communicative competence requirement in technical oral presentations. In both perceptions and actual practices all focal groups have acknowledged the importance of linguistic and rhetorical themes as illustrated in Chapter 4 (refer to section 4.3, Table 4.1); Chapter 5 (refer to sections 5.4 and 5.7); and in Chapter 6 (refer to section 6.4, Table 6.2).

Members of the focal groups acknowledge the importance of fundamental technical knowledge and critical analysis to interpret the scientific and technical information to meet the needs of the audience to attain effective workplace participation and own goals within the said COP. However, the findings in both perceptions and actual practices reflect the individuals' participation and needs within the said workplace environment. Thus, in this context what can be established is that members from different focal groups place emphasis on common and yet differ in the choice of variables within the said themes.

In this context, students and lecturers have indicated emphasis toward an academic and deductively inclined presentation that centers more on the deliberation of data contents and methodological explanation toward decision making processes conducted during the duration of the project. This indicates that students and lecturers are more inclined to a linear way of thinking as focus is placed on the sequential details leading to the completion of the project. However, students and lecturers are also aware of the importance to inculcate critical analysis and contextualization of data findings to real world application purposes.

On the other hand, although language lecturers denote the importance of technical knowledge and critical analysis of scientific and technical information, language lecturers specify the importance of linguistic competence and rhetorical ability to create interactivity in presentations. Language lecturers amplify the need for use of appropriate choice of genre to enhance two-way engagement between the presenter and the audience. Specific linguistic markers and rhetorical devices like use of personal experiences, stories, analogy and examples are strategies to enhance audience's understanding. The inclusion of such features creates rapport and engagement with the audience.

Engineers associate technical oral presentations to one's technical presentation that involves critical analysis and interpretation thorough scientific and technical evidence to support a purported claim in the study. In addition to the data findings, engineers raise technical oral presenters' awareness to contextualize microscopic interpretation to a broad industrial relevance. In other words, engineers employ inductive thinking in real life application and decision making processes (Felder & Brent, 2004). Engineers challenge students to think in a non-linear manner, and apply data findings to a broader context (Seidel et al., 2011).

Thus, to be competent presenters of the 21st century, students are expected to be critical decision makers and possess the linguistic ability to articulate and validate their decision making judgments (Saleh Freihat & Khalaf Al-Machzoomi, 2012; Venkatesan & Ravenell, 2011). A student is not only required to be equipped with presentation skills and attribute requirements (as indicated in quantitative findings) but over and above such presentation competence, a technical presenter needs to "speak like an engineer" (Darling & Dannels, 2003). In order to do so, students need to possess linguistic and rhetorical competence to linguistically articulate grammatically coherent sentences, deliver specialized contextual technical genre and information in the most effective, interactive and interesting approach deemed befitting for the type of audience present as listeners in a presentation.

These findings point toward Morton (2009) disclosure where ESP studies divulge the need to relook at students' linguistic ability to determine the disciplinary competence and presenter interactivity associated with the students' "confidence, assuredness, competence and artistic exuberance" (Morton, 2009, p. 227). Simply put, further studies are required to extrapolate students' linguistic, rhetorical, disciplinary and behavioral competency requirement in delivering scientific and technical oral presentations. The qualitative phase of the study attempts to address the linguistic and rhetorical gap prevalent in ESP studies such as workplace communicative events like technical oral presentations (Hyland, 2002).

Students are expected to possess that linguistic and rhetorical ability to denote technical prowess, and verbal competence to engage the audience as mutual participants involved in a project presentation. Needless to say that "magic" or interaction (Morton, 2009) required in technical oral presentations is illuminated when the students engage the audience and reinforce the aspect of "talking *to* and not *at* the audience" (McCarthy & Hatcher, 2002, p. 4).

7.4 Recommendation of Linguistic and Rhetorical framework for technical oral presentation

The findings from the study indicate that communicative competence refers to a combination of various skills, attribute and knowledge. To be competent presenters, the quantitative findings indicated that students require both verbal and non-verbal skills. However, the qualitative phase provided insight from the linguistic and rhetorical perspective. Presentation competence coupled with linguistic and rhetorical emphasis provide the students that linguistic and interactive competence deemed essential to create that "magic" or interaction and engagement in technical oral presentations (Morton, 2009). The findings suggest the need for language and communication lecturers to reconsider the criteria of essential sub-sets of communicative competence in the presentation evaluation criteria.

The quantitative findings revealed that five constructs, which are presentation skill and presenter ability, behavioral skill, content requirement, language competency and non-verbal skills are indispensable features for such oral communicative event. These items can be categorized as linguistic, rhetorical, structural and behavioral competence requirements necessary for technical oral presentations. The sub-items listed within each construct are as follows:

- *Presentation skill and presenter ability dimension*: purpose, scope, organisation pattern, time, analysis of data information, memorization, anticipatory skills on possible questions, clarification of technical terminology, audience's technical knowledge, audience's non-technical knowledge, humor, composure and attitude,
- *Behavioral skill dimension*: analytical ability, meeting audience's needs, courteous, audience's receptivity, participatory, incorporate audience feedback, listening skills, response to sudden queries and defending skills in handling critique session,
- *Content requirement dimension*: state the introduction, title, problem statement, relevance, research methodology, objective, literature review, appropriate delivery style, use supporting materials, incorporate visual charts, use appealing materials, use gannt chart, appropriate choice of font color, appropriate font size, ensure word limit, use analogy, ensure coherence, state key milestones, ensure creativity, state cost factor, discuss finding, restate purpose, provide concise closure, restate relevance and propose feasible suggestions,
- *Language competency dimension*: consistent choice of grammar, appropriate language, simple language, avoidance of complex language, articulation, enunciation, pronunciation and diction,
- *Non-verbal skills dimension*: rate, volume, vocal fillers, pause, vocal variety, appropriate use of non-verbal gestures, stance, facial expressions, appear extemporaneous and exhibit cultural sensitivity.

In addition, the seven themes were derived from the linguistic and rhetorical dimension necessary to create that "magic" or interaction deemed lacking in presentations. The linguistic and rhetorical constructs include:

- *Technical competence*: clarity in explanation of technical jargon, appropriate and contextual technical genre, use of technical language expressions, provide technical and scientific explanation, literature review, conceptualize project, wide register of technical genre and terminology; avoid meaningless clichés, mastery of technical and non-technical terms, provide technical clarification and methodological interpretation,

- *Rhetorical competence*: use of analogy, demonstrate use of realia, provide credible justification, rationalize, validate and support a personal value judgment, show personal and cultural motivation and engagement in a project, real-world context and relate to engineering perspective, decision making choices; value judgments; employ grammatical pronouns and fluent deliberation of the project,

- *Disciplinary competence*: use of contextual genre in area of specialisation, terms of reference in area of specialisation, simple and complex terminology in the field of specialisation, contextualize discipline to workplace context, economic benefit of project, critical analysis and rationale, technical content matter and parametric of project, technical clarification and justification of experimental results, provide problem-solution approach and in-depth analytical explanation of relationships between parameters,

- *Meta-cognitive competence*: decision-making and in-depth critical thinking analysis, argumentative language, numerical evidence of value judgments, interpretation of problem statement, reasoning and critical thinking ability, conceptualize the project, literature review and relate to existing studies and real-world industry application, fundamental knowledge of the project, content response to questions posed in critique session, methodological justification, clarity in problem-solution approach, justify or deduce correlation or relationship of parameters within a project, justified argument with scientific evidence to support or refute an earlier claim,

- *Linguistic demands (oral genre competence)*: use of visual, interactive and professional language, personal language, personal pronouns, personal experience, analogy, humor, contextual technical genre, technical clarification of specialized terminology in simple language, clarity, key points, layman terms, methodological structural coherence, accurate and factual information of content, use of linguistic markers, use of associated terms for global concepts, incorporate closely related concepts, clarification of technical ambiguities and keywords, verbal explanation of presentation slide, brevity in sentences, avoid circumlocution and verbosity, clear and precise sentences and use of observable action verbs,

- *Linguistic demands (professional language)*: academic language that uses artificially created workplace language, pronouns, self-mention, personal engagement markers, argumentative language such as ability to validate, generate, substantiate and justify knowledge claims, emphasis on confident language, ability to justify and validate personal decision-making claims, incorporate critique within explanation and defense ability in critique session,

- *Structural competence*: section referencing, thematic consistency, holistic language, sequence connectors, transition word or phrase, holistic markers, accuracy and clarity through structural methodology, repetition of keywords, forecasting statements, explicit signals, verbal signposts, structural markers, clear sectional referencing, thematic referencing, structural organisation of project from inception to completion, sequential and methodological build-up of data or experimental results, coherent and methodological flow of ideas/findings,

- *Interpersonal and interactive competence*: turn-taking, clarification, clarity in explanation, use of interactive features, affirmative and negative statements, use of grammatical pronouns to indicate personal ownership and commitment, repetition, clarification, turn-taking during critique session, justification and defense of findings, realistic justification with moral and social conscience, provide personal experience, scientific evidence to support purported claim, detailed methodological explanation of research process, project ethos (credibility), pathos (emotion) and logos (logical reasoning), interactive language with minimal reference to slides, counter-argue or provide different viewpoint, clarify any abnormalities of findings.

The finding on the linguistic and rhetorical framework is recommended as the suggested criteria to evaluate the ESL learners or engineering students' communicative competence in technical oral presentation sessions. The above linguistic and rhetorical criterion provides students that communicative ability to exhibit engineering excellence when one is able to shape technical mastery and communication skills to enrich, clarify and create accurate expressions necessary to enrich technical processes in such oral project presentations (Whitcomb & Whitcomb, 2013). Language and communication lecturers and curriculum designers need to incorporate the linguistic and rhetorical features to enable students to be engaged with members from different COP.In addition, such linguistic and rhetorical criteria can be utilized among language and communication experts in the evaluation of technical oral presentations.

Thus, the findings obtained from this study documents the importance of required presentation skills and attribute enhanced with linguistic and rhetorical dimension to create that communicative competence finesse deemed lacking in required technical oral presentations. The suggested theoretical and linguistic framework proposed for technical oral presentations implies the need for realignment on communicative competence requirement in the current language and communication courses.

Curriculum designers as well as language and ESP practitioners need to address the underlying presentation skill requirement and enhance the linguistic and rhetorical input required for competent communication within technical oral presentations. Practice mock evaluation sessions must be held among students prior to the real final session to ensure students incorporate linguistic and rhetorical features in their presentations.

If stakeholders from both the academic and professional engineering community wish to address the said academia-industry practitioner divide on communication skill requirement of prospective graduates in the workplace (Bhattacharyya, 2011; Eisner, 2010; Norback & Hardin, 2005), efforts cannot be spared any further on enhancing such linguistic and rhetorical competency features necessary to enhance oral competency required among human capital necessary for nation-building plans (Ministry of International Trade and Industry, 2006).

7.5 Implications of the Linguistic and Rhetorical framework toward the stakeholders within the ESL context

The suggested framework has far reaching pedagogical implications for stakeholders, both in the academic and professional engineering community, involved in technical oral presentations within the ESL context. The following sections will discuss its impact on the teaching and learning practices within the said context.

7.5.1 Implication of technical oral presentation theoretical framework to students within the ESL context

The immediate implication of the said linguistic and theoretical framework is the impact on technical oral presentation evaluation criteria, and the emphasis toward inclusion of linguistic and rhetorical theme in students' technical oral presentation practice sessions. As mentioned by Gurak (2004), for students to be considered competent, presenters must possess five main concepts in classical rhetoric such as "invention, arrangement, style, delivery and memory" which essentially concurs with competency findings obtained in this study (Gurak, 2004, pp. 22-24).

Gurak's study mirrors Dannels et al., (2008) presentation competency criterion as "cognition skills, behavioral skills and performance" in presentation classes (Dannels et al., 2008, p. 12). It is essential that students be equipped with fundamental presentation skills and attribute requirements, but possess that extra communicative competency edge to provide that "magic" or interactivity deemed missing in oral presentation classes (Morton, 2009).

Students should empower themselves with in-depth genre and rhetorical competency requirement as per competency criterion mentioned in the theoretical framework suggested for technical oral presentation. It becomes crucial for students to master the finer elements of oral presentation genre and rhetorical features when involved in future technical oral communication events.

The students' ability to practice and apply the said linguistic and rhetorical features in a technical oral presentation creates the interactive and interpersonal engagement, and rapport between the students and the audiences or listeners. Coupled with intellectual critical thinking analysis ability and a familiarity of contextual genre, audiences would hardly lose interest in a said communicative event.

Students need to enhance such genre and rhetorical competency features as part of oral presentation evaluation criteria so that with eventual progressive practice, students are able to improve on their linguistic and rhetorical challenges. Students may require additional input and practice on genre and rhetorical dimension in communication classes conducted within the curriculum program prior the final year project presentation.

7.5.2 Implication of technical oral presentation theoretical framework to lecturers within the ESL context

The impact on lecturers as a result of the study findings may not significantly impact the engineering lecturers, but may require some linguistic input on evaluating the linguistic and rhetorical component of the presentation. The immediate difference to lecturers would be the criterion translated in the technical oral presentation criteria with added linguistic and rhetorical dimension emphasis.

All individual items may not be realistically incorporated due to focus and time constraint within a timed oral presentation. However, what can be suggested is the possibility for slightly higher grading coverage to be accorded to linguistic and rhetorical competence criteria within the technical oral presentation evaluation criteria.

The existing criteria listed in the evaluation score sheet places emphasis on the technical content, research methodology, discussion of findings and conclusion. The focus and emphasis is more content and objective centred rather than linguistic and rhetorical competence centred. This implication is possibly an indication of the situated learning theory principle accorded to participants' legitimate peripheral participation within a said community of practice (Lave & Wenger, 1991; Wenger, 1998).

In addition, apparent inconsistency between perception and actual practice of certain competences like oral immediacy and rhetorical explanatory competence indicates the need for lecturers to be consistent in their responses. Lecturers may need to realign the current practices stipulated in the evaluation criteria. Efforts are required to ensure consistency in lecturers' perception and actual practices on sub-sets of communicative competence from a linguistic and rhetorical perspective.

Lecturers should strive and place equal importance on communicative competence criteria aside from technical competence. The need for change among lecturers' mindset on the importance of soft skills is inevitable. If lecturers wish to enhance students' communicative competence, efforts must be aligned to inculcate linguistic and rhetorical features in the evaluation task sheet. Language must be comprehended as the tool for a prospective engineer to verbalize his competence.

7.5.3 Implication of technical oral presentation theoretical framework to language lecturers within the ESL context

The proposed theoretical and linguistic framework implies the need for language and communication specialists to provide greater emphasis on genre and rhetorical competence. Students need oral presentation practice sessions prior to their entry to the final year engineering curriculum. There is a need for language and communication specialists to stress language and rhetorical devices necessary for students to create that "magic" or interactivity deemed lacking in technical oral presentations (Morton, 2009).

In other words, there is a need for language and communication specialists to relook at the technical oral presentation criteria embedded within the language or communication courses in the engineering curriculum. There is a need to place greater emphasis on linguistic and rhetorical style requirement.

Technical oral presentations set within an ESL context calls for the need for language specialists to enhance linguistic input and guidelines on the appropriate use of linguistic and rhetorical competence indicators to be used within a presentation. Lecturers' awareness of students' proficiency level indicates the level of input and practice required by the student.

Language and communication specialists' emphasis on the rhetoric of communication drives the importance of instilling "ethos, pathos and logos" among engineering students prior to entering the workplace as professionals within the community (Dixon, 2008; Figueiredo, 2008; Gurak, 2004). Language and communication lecturers must provide opportunities for students to employ various types of language use in an extemporaneous manner. Through such prior practice, students begin to employ the “tapestry of competencies” in a most natural like state when presenting (Dannels et al., 2008, p. 12). He or she would then be gauged as a competent presenter.

7.5.4 Implications of the linguistic and rhetorical framework toward engineers within the ESL context

With the suggested theoretical framework proposed for technical oral presentation, engineers involved in technical oral presentations within the ESL context are required to consider the pedagogical implication of their roles. Engineers, like lecturers, must provide due consideration to incorporate linguistic and rhetorical elements as criterion for communicative competence.

The findings indicate that engineers are aware of the importance of non-technical competence such as rhetorical explanatory competence but inconsistency is still evident in actual practice. Thus, similar to lecturers, engineers need to realign efforts to incorporate linguistic and rhetorical competence as essential criteria in technical oral presentation delivery. Engineers must continue to instill the importance of communicative competence among novice engineers. Engineers must provide encouragement to ensure that novice engineers be able to express and articulate their thoughts in a variety of engineering situations and settings (Whitcomb & Whitcomb, 2013).

Through such exposure and practice, students would become familiar with linguistic and rhetorical expressions required in such workplace environment. Such awareness would possibly aid in bridging the assumed academia-industry practitioner divide on communication skills among students (Bhattacharyya, 2011; Norback & Hardin, 2005).

7.6 Implications of the Linguistic and Rhetorical framework toward CLT Curriculum in Higher Education

The suggested theoretical framework on linguistic and rhetorical dimension required for technical oral presentation undoubtedly creates pedagogical implication on linguistic and rhetorical focus in the CLT curriculum in higher education. Curriculum designers, and language and communication specialists involved in teaching technical oral presentations within the ESL context will need to realign efforts toward enhancing the linguistic and rhetorical dimension deemed lacking in ESP studies (Hyland, 2002; Orr, 2005).

The following sections discuss the pedagogical implication toward curriculum, and language and communication practitioners involved in technical oral presentations in higher education settings.

7.6.1 Implication of technical oral presentation theoretical framework in ESP language and communication courses

The apparent academia-industry practitioners divide on graduate students' lack of communication skills can possibly be reduced if pedagogical efforts are undertaken to provide the necessary linguistic and rhetorical impetus toward communicative competence in technical oral presentation practice sessions. In other words, there must be language sessions embedded within the CLT framework within the ESL context.

What this translates to is the provision of various words, phrases, linguistic expressions and examples of suggested cohesive and rhetorical devices to signify communicative competence, and subsequently create that "magic" or interactivity deemed lacking in technical oral presentation sessions (Morton, 2009). Students should be familiar with the use of specific ESP related contextualized genre used in the field of specialisation in order to utilise and apply the said expressions correctly as practiced by the said community of practice (Ferris, Sitnikova, & Duff, 2010) .

Knowledge and engagement in the use of such discourse features in classroom presentation sessions is envisaged as "legitimate part of student trajectory toward membership in the professional community of practice" (Morton, 2012, p. 100). Although students may not indicate equivalent communicative skills as projected by professionals in the said community of practice, nevertheless such academic platforms provide the window of opportunity and platform for students to be critically assessed as prospective employees for the workplace (Dannels, 2009; Morton, 2012).

As studies indicate the lack of corpus available on genre in technical oral presentations, pedagogical efforts are required toward bridging the apparent gap in genre and rhetorical features in ESP and language related courses (Luzón, 2005; Elizabeth Rowley-Jolivet & Shirley Carter-Thomas, 2005). Efforts can be aligned to enhance use of “self-mention” or personal pronouns to indicate ownership in decision making (Whitcomb & Whitcomb, 2013). This study confirms the need to enhance the linguistic and rhetorical competence required in technical oral presentations.

If pedagogical measures are left unchecked, engineers’ lament over graduates’ apparent lack of communication skills will continue to flood global and national headlines (Bernama, 2011; Hariati Azizan & Lee, 2011; Harris, 2012). It is timely to relook at the importance, and practice of language and oral style in language and communication courses within CLT practices in the ESL context.

7.6.2 Implication of technical oral presentation theoretical framework in critique sessions of technical oral presentations

As a result of the suggested theoretical framework for technical oral presentations, efforts to incorporate some elements of linguistic and rhetorical features can be included in the evaluation criteria for technical oral presentations. Some elements to indicate emphasis on language and oral style is necessary to indicate the importance of linguistic and rhetorical competency in delivering technical oral presentations. Although situated as a technical course component of the engineering degree program, the language element cannot be downplayed. Use of clear and concise language avoids ambiguity and confusion (Verderber, Verderber, & Sellnow, 2010).

Critique sessions represent opportune presentation platforms for students to present and verbalize contextualized genre within the specific fields to experts within the field (Morton, 2012). As such, it is pertinent that both experts from both the academia and professional engineering community incorporate linguistic and rhetorical devices as essential criterion in the evaluation process. It can be suggested that the technical oral presentation is not merely based on the end result of experimental or research findings, but of equal importance is the communicative competence in delivering a clear message across to the audience. ESL learners in the Malaysian context need to be equipped with the relevant linguistic and rhetorical features to be competent presenters in both the academic and professional engineering context.

7.7 Contribution

The findings of the study can possibly contribute to the field on communicative competence such as the linguistic and rhetorical framework which enhances an apparent fuzzy notion within the language and communication studies. This study has contributed to the existing communicative competence model propagated by Celce-Murcia (2007). The findings obtained enable stakeholders to ascertain the linguistic and rhetorical features necessary for novice engineers to be specialized in prior to their entry at the professional workplace.

Inadvertently, the study contributes to lessening the apparent academia-industry practitioner divide on communication skills requirement in the workplace. The findings indicate a growing awareness among engineers on the importance of linguistic and rhetorical competence in technical oral presentations. In other words, the findings suggest that there is a change in the way industry practitioners view non-technical competence and its contribution toward excellence in communication in various settings.

However, an added feedback from the study is certain inconsistencies in responses provided by lecturers and engineers between perceptions and actual practices on communicative competence in technical oral presentations. The findings indicate certain similarities and differences in perceptions and actual practices of communicative competence in technical oral presentations.

Efforts are required to ensure consistency is maintained in stakeholders' perceptions and actual practices of communicative competence requirement in technical oral presentations. The continued effort by all stakeholders will eventually contribute to enhanced communicative competence among students from ESL background which eventually aims to create that "magic" or interactivity devoid in presentations and be competent communicators in a variety of professional and technical settings (Morton, 2009).

The study has also provided an insight to the perception and actual practice of stakeholders on communicative competence in an ESL setting. It reaffirms the theoretical underpinning stipulated in the learning theory (Lave & Wenger, 1991), but creates that awareness in the way stakeholders such as students, lecturers, language lecturers and engineers perceive the notion of communicative competence in a technical university.

The findings have indicated engineers' awareness toward linguistic and rhetorical competence. This shows a change in the way industry practitioners view the notion of communicative competence. At the same time, the findings indicate the continued need to create that awareness on the importance of such criterion to align perceptions and actual practices on communicative competence.

The mixed method design adopted in this study has also provided quantitative and qualitative responses not possible to be attained if a single method was chosen for the study. The quantitative phase provided an insight to the essential constructs necessary for technical oral presentation, while the qualitative phase exemplified the linguistic and rhetorical perspective both in perception and actual practice.

7.8 Summary and Recommendations

The discussions in the above sections divulge interesting revelation drawn from the quantitative dimension and qualitative findings of the study. It is possible to ascertain that contradiction exists among students' and engineers' perception of presentation skills and attribute requirement. Linguistic and rhetorical contradictions arise due to the very nature of the participants' legitimate peripheral participation in respective communities of practice. However, despite the different practices by the said stakeholders, participants acknowledge the prevalent gap in communicative competence requirement in technical oral presentations.

ESL learners and language and communication lecturers in the Malaysian context need to be aware of the differences in perceptions on communicative competence stressed by different focal groups. To lessen the academia-industry practitioner gap on the construct of communicative competence and knowledge of communicative ability of engineering students or ESL learners in a Malaysian setting, it is recommended that networking between the supervisors of the technical project (i.e. the lecturer and the engineer) together with the student conduct some initial discussion on the project and focus to be conducted among the said participants. The choice of topics of the research projects is essential as the relevance determines the real world application. It is advisable that students are encouraged to conduct preliminary visits to selected OPU's and clarify the relevance of topics or intended research projects with the knowledge of lecturers and engineers involved in the project. Thus, synergy and communication among the members within a project group begins at the onset of a project.

Language and communication lecturers need to impart the appropriate communicative competence requirements to the ESL learners. This means that during mock practice presentation sessions prior the actual presentation, students must be provided with examples of phrases, words and genre that reflect the linguistic and rhetorical dimension in a technical oral presentation.

For example, to ensure the element of “interpretive agility”, as per the responses provided by the lecturers and examiners, language and communication lecturers must provide examples of sentences and phrases that will indicate the students’ ability to interpret data findings. In this context, an example to illustrate such a dimension is as follows:

> “…**The rise in temperature indicates** that the measurement of XXg in this experiment is not conducive to attain the desired result of XX degree Celsius. **However, in the next experiment**, readings indicate that a desired result is achieved when a solution is XXg. **Similar results are indicated over a period** of week at constant time. **Thus, we can assume** that …..”

The above statement is a simple example to indicate the coherence in the students’ or ESL learners’ interpretive skills based on the data findings of an experiment. It clearly shows that the student has based the assumption on scientific evidence. The critical thinking ability of the student is exemplified when there is a detailed and systematic deliberation of data findings that lead to a particular assumption. The student has derived the assumption based on the scientific data.

The study recommends that language communication experts must ensure that ESL learners create interactivity during presentations. This means that during mock practice sessions, language and communication lecturers must stress the importance of interactivity through the use of simple questions asked by the presenter like, “ So, at this point **are there any questions** thus far?” or “ **If there are any inquiries thus far, please feel free to ask any questions**”. Other useful phrases that a presenter can incorporate are, “Well, at this point, I hope **everyone is able to follow the data findings** that have been presented. **Now, moving on to my next finding** and that is ….”

It is through the use of such genre that the linguistic and rhetorical dimension will be enhanced in a technical oral presentation. Moreover, with the use of such phrases, the audience will have the opportunity to clarify any doubts raised in a technical oral presentation session. In addition, the use of such phrases helps create that necessary engagement between the presenter and the audience. Such phrases when repeatedly uttered by students during mock technical oral presentation sessions should provide the necessary platform in improving the students' communicative competence prior the actual presentation. Language and communication lecturers must stress that this element is a crucial determinant in the construct of communicative competence in technical oral presentations.

Findings from the quantitative and qualitative phase of the study provide a suggested theoretical and linguistic framework that acts as a catalyst for such remedial change. Efforts need to be consolidated by all stakeholders to enhance communicative competence by means of the proposed theoretical and linguistic framework for technical oral presentations. This framework can be recommended and tested as the linguistic and rhetorical framework for evaluating technical oral presentations in institutions of higher learning. ESL, ESP, language and communication experts and curriculum designers can utilize the framework as the communicative competence evaluation criteria when evaluating engineering students from an ESL background in the Malaysian context. Future researchers may also decide to expand the linguistic and rhetorical framework by proposing suggested phrases and sentences required for each sub-set within the said framework.

LIST OF PUBLICATIONS AND PAPERS PRESENTED

1. Book Published

- New Media Communication Skills for Engineers and IT Professionals: Trans-National and Trans-Cultural Demands.Release Date: March, 2012. Copyright © 2012. 273 pages; http://www.igi-global.com/book/new-media-communication-skills-engineers/59719; DOI: 10.4018/978-1-4666-0243-4, ISBN13: 9781466602434, ISBN10: 1466602430, EISBN13: 9781466602441.

2. Publication in Journal/Conference Book Proceeding/Book Chapter

- Communicative Competence In Technical Oral Presentation: ESL Educators and Professional Engineers' Perspective In *Pertanika J. Soc. Sci. & Hum*. 22 (S): 1 - 16 (2014) URL Link available at http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2022%20(S)%20Jan.%202014%20(View%20Full%20Journal).pdf

- Engineering students' communicative competence in Technical Oral Presentations: What do students and engineers have to say about their speech act? In *Pertanika J. Soc. Sci. & Hum*. 22 (S): 51 - 63 (2014) URL Link available at http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2022%20(S)%20Jan.%202014%20(View%20Full%20Journal).pdf

- Walk the talk: Technical Oral Presentations of Engineers in the 21st century – Conference proceedings published in *Procedia - Social and Behavioral Sciences* by Elsevier.

- To speak like an Engineer: Communicative Competence in Technical Oral Presentations through the lens of Students and Industry Practitioners in *IEEE Explore.*

- Communicative Competence: Novice versus Professional Engineers' Perceptions in World Academy of Science, Engineering and Technology, pp.233-238, Issue 72, December 2012, Penang.

- Communicative Competence in Technical Oral Presentation: That "Magic" Perceived by ESL Educators Versus Content Experts in World Academy of Science, Engineering and Technology, pp.239-242, Issue 72 December 2012, Penang.

- Communicative Competence Requirement in Technical Oral Presentation in Engineering Education: Stakeholder Perceptions in a Malaysian Context, Published in March 2011 – *Journal of Applied Sciences*, Volume 11, No.4 pg 1291- 1296, 2011 (DOI: 10.3923/jas.2011.1291.1296 and URL link available at the website http://scialert.net/abstract/?doi=jas.2011.1291.1296

- Internship Students' Workplace Communication Skills: Workplace Practices and University Preparation in *The International JOURNAL OF LEARNING*, Volume 16, Number 11, 2009.

- Methodology in seeking stakeholder perceptions of effective technical oral presentations: an exploratory pilot study"(Report), Published in December 2010 - *The*

Qualitative Report (Available at the website http://www.highbeam.com/doc/1G1-242016920.html

o Students' Perceptions of the Importance of Presentation Skills to Succeed in the Workplace Book Chapter In: READINGS IN ENGLISH FOR SPECIFIC PURPOSES (ESP) AND TECHNOLOGIES IN EDUCATION, UPM Press (2009).

3. Published Conference Proceedings

o Walk the talk: Technical Oral Presentations of Engineers in the 21st century – Conference proceedings published in Procedia - Social and Behavioral Sciences by Elsevier following 6th Teaching and Learning Conference (TTLC2013): Transformative Higher Education Teaching and Learning In Practice, 23rd November 2013 at Taylor's University College, Subang Jaya, Kuala Lumpur, Malaysia.

o To speak like an Engineer: Communicative Competence in Technical Oral Presentations through the lens of Students and Industry Practitioners - Conference Proceedings presented will be uploaded to IEEE Xplore following TALE Conference 2013, 25th - 29th August 2013 at Bali, Indonesia.

o Communicative Competence: Novice versus Professional Engineers' Perceptions, pp.233-238, Issue 72 December 2012 Penang. pISSN 2010-376X or eISSN 2010-3778.

o Communicative Competence in Technical Oral Presentation: That "Magic" Perceived by ESL Educators Versus Content Experts in World Academy of Science, Engineering and Technology, pp.239-242 in Issue 72 December 2012 Penang. pISSN 2010-376X or eISSN 2010-3778.

o The Technical Oral Presentation Skills and Attributes in Engineering Education: Stakeholder Perceptions and University Preparation in a Malaysian Context", Published at 20th Australasian Association for Engineering Education Conference Proceedings University of Adelaide. (Available at website http://aaee.com.au/conferences/AAEE2009/PDF/AUTHOR/AE090118.PDF) with pp. 1029-1036. ISBN 1 876346 59 0 © 2009.

4. Paper Presentations

o Walk the Talk: Technical Oral Presentations of Engineers in the 21st century at 6th Teaching and Learning Conference (TTLC2013): Transformative Higher Education Teaching and Learning In Practice, 23rd November 2013 at Taylor's University College, Subang Jaya, Kuala Lumpur, Malaysia.

o To speak like an Engineer: Communicative Competence in Technical Oral Presentations through the lens of Students and Industry Practitioners at TALE Conference 2013, 25th - 29th August 2013 at Bali, Indonesia.

o Communicative Competence: Novice versus Professional Engineers' Perceptions at World Academy of Science, Engineering and Technology, 6th-7th December, 2012, Bayview Hotel, Lebuh Farquhar, Penang, Malaysia.

o Communicative Competence in Technical Oral Presentation: That “Magic” Perceived by ESL Educators Versus Content Experts at World Academy of Science, Engineering and Technology, 6th-7th December, 2012, Bayview Hotel, Lebuh Farquhar, Penang, Malaysia.

o Student and Employer perception of effective Technical Oral Presentation at the 3rd Malaysia International Conference on Academic Strategies in December 2010 at English Language Teaching (My_CASELT 2010), at The Saujana, Kuala Lumpur, Malaysia.

o Engineering Students Perceptions of Technical and Non-Technical skills in Technical Oral Presentation and University Preparation in June 2010 at International Conference on Fundamental and Applied Sciences (ICFAS) International Conference, Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur, Malaysia.

o The Technical Oral Presentation Skills and Attributes in Engineering Education: Stakeholder Perceptions and University Preparation in a Malaysian Context in 6th-9th December, 2009 at the 20th Annual Australasian Association for Engineering Education (AAEE) Conference University of Adelaide, Adelaide, Australia.

o Student Perceptions of Technical Oral Presentation: A UTP Exploratory Study in June 2008 at 7th Malaysia International Conference on English Language Teaching (MICELT) Conference in Seremban, Negeri Sembilan, Malaysia.

o Methodology in Perceptions of the Academic and Non-Academic Community on Notions of Effectiveness in Technical Oral Presentations: A Qualitative Exploratory Pilot Study in September 2007 at Qualitative Research Association of Malaysia/ Qualitative Research Convention (QRAM/QRC), Kuala Lumpur, Malaysia.

o Students’ Perceptions of Employer Expectation of Professional Technical Oral Presentations in June 2007 at International Literacy Conference (LITCON) Conference, Penang, Malaysia.

o Strategies To Propel Technical Students Towards Acquiring Oral Presentation Skills and Being Competent Speakers in May 2004 at 5th Malaysia International Conference on English Language Teaching (MICELT) International Conference, Malacca, Malaysia.

5. Informal Discussion and Postgraduate Seminar Discussion with Visiting Professors

o Researcher had the opportunity to discuss framework with Visiting Professors Ken Hyland, Professor Christopher Candlin and Professor Srikant Sarangi.

o Stakeholder Perception of Communicative Competence in Technical Oral Presentations, Presented to postgraduate students at Postgraduate Seminar Discussion in Faculty of Language and Linguistics, English Department, University of Malaya, Kuala Lumpur, Malaysia. Presented in June 2011 to Professor Srikant Sarangi (Visiting Professor for University of Malaya), Staff of School of English Communication and Philosophy, Cardiff University, Wales, United Kingdom.

APPENDIX A: FYP2 Part II Final Oral Presentation Task Sheet

Category	Criteria for Judging Quality
Introduction	Background of Study Problem Statement Problem Identification Significant of the Project Objective and Scope of Study The Relevancy of the Project Feasibility of the Project within the Scope and Time frame
Literature Review and/or Theory	No. of references Critical analysis of literature Citation and cross referencing Relevancy and recentness of the literature
Methodology	Research Methodology Project activities Key milestone Gantt Chart Tools (eg. Equipment, hardware, etc.) required.
Result and Discussion	Findings Data Gathering/ Data Analysis Experimentation/Modeling/ Prototype/Project Deliverables
Conclusions and Recommendations	Relevancy to the Objectives Suggested Future Work for Expansion and Continuation
Clarity of presentation	Fluency and choice of words (using language clearly and accurately) Pronunciation, articulation Use of aids (graphs, diagrams, objects etc) Continuity of Presentation
Non-verbal Communication	Appearance; Facial expression; Confidence Gesture; Eye Contact, Pauses
Questions and Answers	Technical and factual accuracy; Grasp of subject Creativity – use of example Convincing Answer, Showing creativity and Innovativeness

Source: UTP Final Year Project Presentation Guideline with Permission

APPENDIX B: Student Questionnaire

STUDY ON STAKEHOLDER PERCEPTION OF PRESENTATION SKILLS AND ATTRIBUTES FOR TECHNICAL ORAL PRESENTATION

There are five sections **(Section A** until **Section E**) in the said questionnaire. This study seeks to understand the different perceptions on presenter skills and attributes required for technical oral presentation. All information will be kept in **strictest confidence**.

Instruction: Please answer **all** questions accordingly and place a tick (√) at the appropriate box.

Section A: INFORMATION ON STUDENT BACKGROUND

1. Gender:

1	Male		2	Female	

2. Nationality:

1	Malaysian		2	International	

3. Race:

1	Malay		2	Chinese		3	Indian		4	Others:	

4. Program:

1	Chemical Eng		2	Civil Eng	
3	Elec. & Electronics Eng		4	Mechanical Eng	

5. Have you taken the presentation course?

1	Yes		2	Currently taking	

6. Grade obtained for presentation course:(if you have taken the course):

1	A		3	B+		5	C+		7	D+		9	F	
2	A-		4	B		6	C		8	D		10	Currently taking	

Section B: PRESENTER'S PRESENTATION SKILLS AND ATTRIBUTES

For all statements, indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	**Presentation skills and speaker ability includes the presenter's ability to**	SD (1)	D (2)	U (3)	A (4)	SA (5)
B1	understand the purpose of the presentation.	1	2	3	4	5
B2	understand the scope of the presentation.	1	2	3	4	5
B3	apply the correct organisation pattern.	1	2	3	4	5
B4	present within the time limit.	1	2	3	4	5
B5	analyze data information (if necessary).	1	2	3	4	5
B6	memorize the points of the presentation.	1	2	3	4	5
B7	anticipate the possible type of questions asked.	1	2	3	4	5
B8	clarify any technical terms used in the presentation.	1	2	3	4	5
B9	be aware of audience's technical knowledge.	1	2	3	4	5
B10	be aware of audience's non-technical knowledge.	1	2	3	4	5
B11	incorporate humor to ease the tension.	1	2	3	4	5

B12	maintain composure during the question answer session.	1	2	3	4	5
B13	accept criticisms with a positive attitude.	1	2	3	4	5

Section C: PRESENTER'S BEHAVIORAL SKILLS AND ATTRIBUTES
For all statements, indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Behavioral skills includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
C1	be analytical in their answers to audience queries.	1	2	3	4	5
C2	be flexible to meet audience's needs.	1	2	3	4	5
C3	be courteous to the audience.	1	2	3	4	5
C4	allow audience time to reflect on the topic.	1	2	3	4	5
C5	invite the audience to ask questions.	1	2	3	4	5
C6	listen attentively to questions posed by the audience.	1	2	3	4	5
C7	incorporate audience feedback for further improvement.	1	2	3	4	5
C8	respond to sudden unexpected queries.	1	2	3	4	5
C9	defend ideas when questioned.	1	2	3	4	5

Section D: STRUCTURE AND CONTENT DIMENSION
Indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Content and structural elements required in introduction stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D1	begin with an introduction (if leading the presentation).	1	2	3	4	5
D2	provide a title for the presentation.	1	2	3	4	5
D3	identify the problem statement.	1	2	3	4	5
D4	state the relevance of the presentation.	1	2	3	4	5
D5	state the research methodology.	1	2	3	4	5
D6	clarify the objective of the presentation.	1	2	3	4	5
D7	clarify the source of literature review.	1	2	3	4	5

No	Content and structural elements required for the while presentation stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D8	use the correct delivery style.	1	2	3	4	5
D9	provide supporting materials for elaboration.	1	2	3	4	5
D10	check the visual presentation of all slides.	1	2	3	4	5
D11	ensure that materials used are visually appealing.	1	2	3	4	5

D12	use gannt charts for explanation.	1	2	3	4	5
D13	select the right color for the wording.	1	2	3	4	5
D14	select the right font size for the wording.	1	2	3	4	5
D15	limit the number of words used in each slide.	1	2	3	4	5
D16	use simple analogy when explaining a point.	1	2	3	4	5
D17	ensure coherence in points delivered.	1	2	3	4	5

No	Content and structural elements required for the conclusion stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D18	state key milestones (where necessary).	1	2	3	4	5
D19	apply creativity in the presentation.	1	2	3	4	5
D20	include cost factor analysis.	1	2	3	4	5
D21	discuss the findings related to topic.	1	2	3	4	5
D22	restate the purpose in the conclusion.	1	2	3	4	5
D23	provide closing statement for the entire topic.	1	2	3	4	5
D24	restate the relevance of the presentation.	1	2	3	4	5
D25	propose suggestions relevant for consideration.	1	2	3	4	5

Section E: LANGUAGE COMPETENCY AND NON-VERBAL SKILLS

Indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Language competency includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
E1	use correct grammar at all times.	1	2	3	4	5
E2	use appropriate language throughout the delivery.	1	2	3	4	5
E3	ensure language used is easily understood.	1	2	3	4	5
E4	avoid using complex language.	1	2	3	4	5
E5	articulate the words well.	1	2	3	4	5
E6	enunciate the words clearly.	1	2	3	4	5
E7	pronounce words and names clearly.	1	2	3	4	5
E8	choose the appropriate words.	1	2	3	4	5

No	Non-verbal competency includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
E9	speak at an appropriate rate.	1	2	3	4	5
E10	use appropriate volume loud enough for the size of the room.	1	2	3	4	5

E11	use vocal fillers in the presentation.	1	2	3	4	5
E12	pause to ensure that the message is understood.	1	2	3	4	5
E13	use vocal variety in the speech presentation.	1	2	3	4	5
E14	use appropriate non-verbal gestures for emphasis.	1	2	3	4	5
E15	stand and move in non-distracting ways.	1	2	3	4	5
E16	use effective facial expressions to reinforce the message.	1	2	3	4	5
E17	appear extemporaneous and not memorized.	1	2	3	4	5
E18	be culturally observant in code of conduct.	1	2	3	4	5

Thank you very much for completing this questionnaire.

APPENDIX C: Engineer Questionnaire

STUDY ON STAKEHOLDER PERCEPTION OF PRESENTATION SKILLS AND ATTRIBUTES FOR TECHNICAL ORAL PRESENTATION

There are five sections **(Section A** until **Section E**) in the said questionnaire. This study seeks to understand the different perceptions on presenter skills and attributes required for technical oral presentation. All information will be kept in **strictest confidence**.
Instruction: Please answer **all** questions accordingly and place a tick (√) at the appropriate box.

Section A: INFORMATION ON EXTERNAL EXAMINER BACKGROUND

1. Gender:

1	Male		2	Female	

1. Nationality:

1	Malaysian		2	International	

2. Race:

1	Malay		2	Chinese		3	Indian		4	Others:	

3. Area of Specialisation:

1	Chemical Eng		2	Civil Eng	
3	Elec. & Electronics Eng		4	Mechanical Eng	

4. Position Held In Company:

1	Technical		2	Administrative		3	Management	

5. Type of industry:

1	Finance, Banking, Insurance		9	Transportation	
2	Government		10	Oil/ Gas Business	
3	Manufacturing		11	Healthcare	
4	Logistic and Maritime		12	Construction, Building	
5	Hotel/ tourism		13	Agriculture	
6	Technology/ IT		14	Telecommunication	
7	Consultancy		15	Research Centre/ R&D	
8	Wholesale/ Retail Trade		16	Others (Please specify: _________)	

6. Company:

1	PETRONAS and OPUs'		4	Foreign Multinational company	
2	Local Malaysian company		5	Others (please specify: ____________)	
3	Malaysian Multinational company				

7. Division/ Department attached to:

1	Technical		5	Training/Corporate Affairs	
2	Administrative		6	Recruitment	
3	Management		7	Sales and Marketing	
4	Product/Services		8	Others: please indicate (____________)	

8. Years of industrial experience:

1	No experience at all		5	5 -10 years	
2	Less than 1 year		6	10 -15 years	
3	1- 3 years		7	More than 15 years	
4	3 - 5 years				

9. Types of Formal Presentation Activities: (Tick wherever appropriate)

1	Final Project Presentation		8	Briefings	
2	Vendor Presentation		9	Workshops	
3	Report Presentation		10	Speeches	

4	Proposal Presentation		11	Road show	
5	Sales Presentation		12	Training Seminars	
6	Product Demonstration		13	Technical Meetings	
7	Panel and Conference Discussions		14	Others (Please specify:________)	

11. Engineering Program Currently Involved in university:

1	B. Eng CHE		2	B. Eng CVE		3	B. Eng EE		4	B. Eng ME	

12. Years of experience as an External Examiner:

1	5 years		2	5-8 years		3	8 -10 years	
4	More than 10 years							

Section B: PRESENTER'S PRESENTATION SKILLS AND ATTRIBUTES

For all statements, indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Presentation skills and speaker ability includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
B1	understand the purpose of the presentation.	1	2	3	4	5
B2	understand the scope of the presentation.	1	2	3	4	5
B3	apply the correct organisation pattern.	1	2	3	4	5
B4	present within the time limit.	1	2	3	4	5
B5	analyze data information (if necessary).	1	2	3	4	5
B6	memorize the points of the presentation.	1	2	3	4	5
B7	anticipate the possible type of questions asked.	1	2	3	4	5
B8	clarify any technical terms used in the presentation.	1	2	3	4	5
B9	be aware of audience's technical knowledge.	1	2	3	4	5
B10	be aware of audience's non-technical knowledge.	1	2	3	4	5
B11	incorporate humor to ease the tension.	1	2	3	4	5
B12	maintain composure during the question answer session.	1	2	3	4	5
B13	accept criticisms with a positive attitude.	1	2	3	4	5

Section C: PRESENTER'S BEHAVIORAL SKILLS AND ATTRIBUTES

For all statements, indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Behavioral skills includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
C1	be analytical in their answers to audience queries.	1	2	3	4	5
C2	be flexible to meet audience's needs.	1	2	3	4	5
C3	be courteous to the audience.	1	2	3	4	5
C4	allow audience time to reflect on the topic.	1	2	3	4	5

C5	invite the audience to ask questions.	1	2	3	4	5
C6	listen attentively to questions posed by the audience.	1	2	3	4	5
C7	incorporate audience feedback for further improvement.	1	2	3	4	5
C8	respond to sudden unexpected queries.	1	2	3	4	5
C9	defend ideas when questioned.	1	2	3	4	5

Section D: STRUCTURE AND CONTENT DIMENSION

Indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Content and structural elements required in introduction stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D1	begin with an introduction (if leading the presentation).	1	2	3	4	5
D2	provide a title for the presentation.	1	2	3	4	5
D3	identify the problem statement.	1	2	3	4	5
D4	state the relevance of the presentation.	1	2	3	4	5
D5	state the research methodology.	1	2	3	4	5
D6	clarify the objective of the presentation.	1	2	3	4	5
D7	clarify the source of literature review.	1	2	3	4	5

No	Content and structural elements required for the while presentation stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D8	use the correct delivery style.	1	2	3	4	5
D9	provide supporting materials for elaboration.	1	2	3	4	5
D10	check the visual presentation of all slides.	1	2	3	4	5
D11	ensure that materials used are visually appealing.	1	2	3	4	5
D12	use gannt charts for explanation.	1	2	3	4	5
D13	select the right color for the wording.	1	2	3	4	5
D14	select the right font size for the wording.	1	2	3	4	5
D15	limit the number of words used in each slide.	1	2	3	4	5
D16	use simple analogy when explaining a point.	1	2	3	4	5
D17	ensure coherence in points delivered.	1	2	3	4	5

No	Content and structural elements required for the conclusion stage includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
D18	state key milestones (where necessary).	1	2	3	4	5

D19	apply creativity in the presentation.	1	2	3	4	5
D20	include cost factor analysis.	1	2	3	4	5
D21	discuss the findings related to topic.	1	2	3	4	5
D22	restate the purpose in the conclusion.	1	2	3	4	5
D23	provide closing statement for the entire topic.	1	2	3	4	5
D24	restate the relevance of the presentation.	1	2	3	4	5
D25	propose suggestions relevant for consideration.	1	2	3	4	5

Section E: LANGUAGE COMPETENCY AND NON-VERBAL SKILLS

Indicate the degree of your preference by placing a **circle/tick** to each statement whether you strongly disagree (SD), disagree (D), undecided (U), agree (A) or strongly agree (SA) to the statements.

No	Language competency includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
E1	use correct grammar at all times.	1	2	3	4	5
E2	use appropriate language throughout the delivery.	1	2	3	4	5
E3	ensure language used is easily understood.	1	2	3	4	5
E4	avoid using complex language.	1	2	3	4	5
E5	articulate the words well.	1	2	3	4	5
E6	enunciate the words clearly.	1	2	3	4	5
E7	pronounce words and names clearly.	1	2	3	4	5
E8	choose the appropriate words.	1	2	3	4	5

No	Non-verbal competency includes the presenter's ability to	SD (1)	D (2)	U (3)	A (4)	SA (5)
E9	speak at an appropriate rate.	1	2	3	4	5
E10	use appropriate volume loud enough for the size of the room.	1	2	3	4	5
E11	use vocal fillers in the presentation.	1	2	3	4	5
E12	pause to ensure that the message is understood.	1	2	3	4	5
E13	use vocal variety in the speech presentation.	1	2	3	4	5
E14	use appropriate non-verbal gestures for emphasis.	1	2	3	4	5
E15	stand and move in non-distracting ways.	1	2	3	4	5
E16	use effective facial expressions to reinforce the message.	1	2	3	4	5
E17	appear extemporaneous and not memorized.	1	2	3	4	5
E18	be culturally observant in code of conduct.	1	2	3	4	5

Thank you very much for completing this questionnaire.

APPENDIX D: Interviewee details of Students, Lecturers, Language lecturers and Engineers (In Code)

STUDENT CATEGORY					
NO	**CASE STUDY CODE**	**SEX**	**RACE**	**DESIGNATION**	**AREA OF SPECIALISATION**
1	MCESCS1	MALE	CHINESE	STUDENT	CIVIL ENGINEERING SPECIALIZE IN OFFSHORE ENGINEERING
2	MMESCS2	MALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN ENGINEERING CONSTRUCTION TECHNOLOGY
3	FMESCS3	FEMALE	MALAY	STUDENT	ELECTRICAL AND ELECTRONIC ENGINEERING
4	MMESCS4	MALE	MALAY	STUDENT	CIVIL ENGINEERING
5	MMESCS5	MALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN COASTAL EROSION
6	MMESCS6	MALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN PETROLEUM ENGINEERING
7	MCESCS7	MALE	CHINESE	STUDENT	MECHANICAL ENGINEERING SPECIALIZE IN PETROLEUM ENGINEERING
8	MMESCS8	MALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN URBAN ENGINEERING
9	FMESCS9	FEMALE	MALAY	STUDENT	ELECTRICAL AND ELECTRONICS ENGINEERING SPECIALIZE IN WIRELESS COMMUNICATIONS
10	FMESCS10	FEMALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN URBAN ENGINEERING
11	FMESCS11	FEMALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN URBAN ENGINEERING
12	MCESCS12	MALE	CHINESE	STUDENT	CIVIL ENGINEERING SPECIALIZE IN URBAN ENGINEERING
13	FMESCS13	FEMALE	MALAY	STUDENT	ELECTRICAL AND ELECTRONIC ENGINEERING SPECIALIZE IN COMPUTER SYSTEMS
14	MCESCS14	MALE	CHINESE	STUDENT	CIVIL ENGINEERING SPECIALIZE IN OFFSHORE ENGINEERING
15	MMESCS15	MALE	MALAY	STUDENT	CIVIL ENGINEERING SPECIALIZE IN ENGINEERING CONSTRUCTION TECHNOLOGY
16	FIESCS16	FEMALE	INDIAN	STUDENT	ELECTRONIC AND ELECTRICAL ENGINEERING SPECIALIZE IN CONTROL SYSTEMS
17	FIESCS17	FEMALE	INDONESIAN	INTERNATIONAL STUDENT	ELECTRONIC AND ELECTRICAL ENGINEERING SPECIALIZE IN COMMUNCATION
18	MCESCS18	MALE	CHINESE	STUDENT	ELECTRONIC AND ELECTRICAL ENGINEERING SPECIALIZE IN CONTROLLED INSTRUMENTATION
19	FCESCS19	FEMALE	CHINESE	STUDENT	ELECTRICAL AND ELECTRONIC ENGINEERING
20	MCESCS20	MALE	CHINESE	STUDENT	MECHANICAL ENGINEERING SPECIALIZE IN PETROLEUM ENGINEERING
21	MCESCS21	MALE	CHINESE	STUDENT	ELECTRICAL AND ELECTRONIC ENGINEERING SPECIALIZING IN TELECOMMUNICATIONS SYSTEM
22	FCESCS22	FEMALE	CHINESE	STUDENT	CIVIL ENGINEERING SPECIALIZING IN PETROLEUM ENGINEERING
23	MIESCS23	MALE	INDIAN	STUDENT	ELECTRICAL AND ELECTRONICS ENGINEERING SPECIALIZE IN COMPUTER SYSTEMS
24	MCESCS24	MALE	CHINESE	STUDENT	MECHANICAL ENGINEERING SPECIALIZE IN PETROLEUM ENGINEERING
25	MIESCS25	MALE	INDIAN	STUDENT	MECHANICAL ENGINEERING SPECIALIZE IN PETROLEUM ENGINEERING
26	MCESCS26	MALE	CHINESE	STUDENT	ELECTRICAL AND ELECTRONIC ENGINEERING SPECIALIZE IN COMPUTER SYSTEMS

ACADEMIC RESPONDENT CATEGORY (INTERNAL EXAMINERS AND LECTURERS)					
NO	CASE STUDY CODE	SEX	RACE	DESIGNATION	AREA OF SPECIALISATION
1	MMSALCS1	MALE	MALAY	STUDENTS AFFAIRS HEAD AND SENIOR LANGUAGE LECTURER	TEACHING OF ENGLISH AS A SECOND LANGUAGE
2	FMIELCS2	FEMALE	MALAY	SENIOR LECTURER WITH FUNDAMENTAL AND APPLIED SCIENCES DEPARTMENT	CHEMICAL ENGINEERING
3	MMIELCS3	MALE	MALAY	LECTURER	CHEMICAL ENGINEERING
4	MMIELCS4	MALE	MALAY	SENIOR LECTURER	CHEMICAL ENGINEERING
5	MIIELCS5	MALE	INDIAN	LECTURER	CIVIL ENGINEERING
6	FMIELCS6	FEMALE	MALAY	SENIOR LECTURER	STATISTICS AND ELECTRICAL AND ELECTRONIC ENGINEERING SPECIALIZE IN DESIGN COMPUTER SYSTEMS
7	MPHIELCS7	MALE	PUNJABI	HEAD OF FUNDAMENTAL AND APPLIED SCIENCES DEPARTMENT	ELECTRICAL AND ELECTRONIC ENGINEERING
8	MMIELCS8	MALE	MALAY	LECTURER	MECHANICAL ENGINEERING
9	MSIELCS9	MALE	SUDANESE	SENIOR LECTURER	CHEMICAL ENGINEERING
10	MMIELCS10	MALE	MALAY	ASSOCIATE PROFESSOR	CIVIL ENGINEERING
11	MIIELCS11	MALE	INDIAN	SENIOR LECTURER	ELECTRICAL AND ELECTRONIC ENGINEERING
12	MMIELSC12	MALE	MALAY	SENIOR LECTURER	ELECTRICAL AND ELECTRONIC ENGINEERING
13	MIIELCS13	MALE	INDIAN	SENIOR LECTURER	CHEMICAL ENGINEERING ATTACHED TO FUNDAMENTAL AND APPLIED SCIENCES DEPARTMENT
14	MIIELCS14	MALE	INDIAN	PROFESSOR	CIVIL ENGINEERING
15	MMLCLCS15	MALE	MALAY	LANGUAGE AND COMMUNICATION LECTURER	TEACHING OF ENGLISH AS A SECOND LANGUAGE
16	FMMLCS1 6	FEMALE	MALAY	LANGUAGE AND COMMUNICATION LECTURER	APPLIED LINGUISTICS
17	FMILCS17	FEMALE	MALAY	LANGUAGE AND COMMUNICATION LECTURER	LITERATURE AND EDUCATION
18	MMILCS18	MALE	MALAY	LANGUAGE AND COMMUNICATION LECTURER	TEACHING OF ENGLISH AS A SECOND LANGUAGE
19	FMLCLCS19	FEMALE	MALAY	LANGUAGE AND COMMUNICATION LECTURER	MASS COMMUNICATIONS AND TESL

PROFESSIONAL ENGINEERING RESPONDENT CATEGORY (EXTERNAL EXAMINERS)					
NO	**CASE STUDY CODE**	**SEX**	**RACE**	**DESIGNATION**	**AREA OF SPECIALISATION**
1	MMEEMCS1	MALE	MALAY	SENIOR HEAD RESEARCHER	ELECTRO CHEMICAL MATERIAL PROGRAM
2	MMEEMCS2	MALE	MALAY	MANAGER	CHEMICAL ENGINEERING IN CONSTRCTION AND GAS PLANT
3	MMEESSCS3	MALE	MALAY	SENIOR STAFF	AMMONIA AND FERTILIZATION
4	MMEEPTCS4	MALE	MALAY	PROCESS TECHNOLOGIST	ADVANCED PROCESS CONTROL
5	MMEEMDCS5	MALE	MALAY	MANAGING DIRECTOR	CONSULTANCY IN OIL AND GAS BUSINESS
6	MMEECISCS6	MALE	MALAY	CHAIRMAN, INDUSTRIAL SUPERVISOR, DIRECTOR	CONSTRUCTION RESEARCH
7	MMEESCCS7	MALE	MALAY	SENIOR CONSULTANT	CONSULTANCY IN OIL AND GAS BUSINESS
8	MMEESECS8	MALE	MALAY	SENIOR ENGINEER	PROCESS AND ANALYTICAL FACULTY
9	MMEESECS9	MALE	MALAY	SENIOR ENGINEER	PROPANE DEHYDROGENATION
10	MMEEMCS10	MALE	MALAY	MANAGER	PROCESS SAFETY, ENGINEERING DIVISION
11	MMEEECCS11	MALE	MALAY	ENGINEERING CONSULTANT AND MANAGER	CONSULTANCY IN OIL AND GAS BUSINESS
12	MMEEPECS12	MALE	MALAY	PRINCIPAL ENGINEER	ELECTRICAL AND ELECTRONIC ENGINEERING

APPENDIX E: Interview Consent Form

UNIVERSITY OF MALAYA

The Leader in Research & Innovation

UNIVERSITI TEKNOLOGI PETRONAS

engineering futures

[STAKEHOLDER PERCEPTION OF TECHNICAL ORAL PRESENTATION]

INTERVIEW CONSENT FORM

Date: ________________

I hereby grant Madam Ena Bhattacharyya (661029-13-5012) permission to document through audio and/or video recording and transcription oral history interview(s) for the purpose of protection, preservation, and encouragement of doctoral study documentation evidence only. The information I agree to share with the interviewer is to be used solely for the purposes of identification and protection of University Malaya, Universiti Teknologi PETRONAS and affiliated selected companies where respondents are involved as examiners for the student final year project presentation. The knowledge contained in the oral histories will not be given to any non-project staff except in cases where it is useful for protection and preservation purposes. When this material becomes available, it may be read, quoted, or cited from and disseminated for educational and scholarly purposes only. The findings are intended for scholarly publications only.

This consent does not preclude any use, which I may want to make of the information contained in the recordings or transcription.

It is desired that the following restrictions be placed on this material: The audio/video recording remains the sole custody of the researcher and that all respondents involved will be kept in the strictest confidence.

______________________________ Signature of Interviewee

______________________________ Signature of Interviewer

______________________________ (Name In Full & Designation)

ENA BHATTACHARYYA

Senior Language and Communication Lecturer, Universiti Teknologi PETRONAS, 31750 Tronoh, Perak Darul Ridzuan, Malaysia

Date: ______________________________

APPENDIX F: Interview Questions with Student

Interview Protocol:

Introduce self and rationale of the interview and mention that conversation will be audio taped for transcription purposes. Provide Interview Consent Form.

Interview Questions:

Background

1. Please provide a brief introduction of yourself - your education background, area of program and specialisation in UTP.

2. Perhaps you can share with me a little about your final year project, what it was on and how did you go about it.

Opinion on Technical Oral Presentation

3. In your opinion, what is a "technical oral presentation"?

4. In your opinion, would you consider the Final Year Project 2 as technical presentation and say why?

5. In your opinion, what are the important elements required for a technical oral presentation?

6. Why are these elements important in a technical oral presentation? How do you indicate the importance of these elements in your presentation?

7. What was the main emphasis in your presentation? What was your scope in the presentation?

COP Skills and Attribute Requirement

8. What is your comment on essential presentation skills and attributes required for a presentation? As you know there are many skills and attributes required, but what do you think is important to you as a student?

9. In your opinion, what presenter skills and attributes set a presenter apart from the rest of the presenters? In other words, what makes a presentation an "A" grade presentation?

10. During your Final Year Project 2 session, what do you think is the emphasis of the internal and external examiners? The internal examiners refer to your engineering lecturers, supervisors and external examiners refer to the industrialists. Could you explain what were they interested in? Why is this so?

11. What is your comment on audience receptivity? How will you be able to gauge that the audience have understood your presentation? What is the audience expectation of a presentation?

Language and Content requirement

12. In your opinion, can you provide some comment on content requirement? Is this important in technical oral presentations? Please explain your view.

13. In your opinion, did you receive sufficient input on effective presentation skills? Please explain. Was it sufficient?

14. What is your comment on language input? Did you receive sufficient language input on presentation skills in your preparatory years in your institution? Please explain.

15. In your experience as a presenter, what is your comment on emphasis on feedback provided by the panel of examiners? Was there emphasis on language or content dimension or otherwise? Please explain.

Challenges

16. In your opinion, what are the challenges faced by the academic community in meeting the challenges of effective presentation/communication at the workplace?

17. What is the greatest challenge for a student in delivering a technical oral presentation?

Solution

18. What would be some possible solutions to enhance the effectiveness of presenter skills and attributes and content requirement in technical oral presentations in the university?

19. In your opinion, are there any other suggestions that can help prospective graduates become better presenters to meet the workplace presentation requirements?

APPENDIX G: Interview Questions with Lecturer
Interview Protocol:

Introduce self and rationale of the interview and mention that conversation will be audio taped for transcription purposes. Provide Interview Consent Form.

Interview Questions:
Background

1. Please provide a brief introduction of yourself - your education background, area of specialisation and work experience.

2. How long have you been involved as an examiner for the Final Year Projects? Perhaps you can share with me an sight of a recent project you evaluated.

Elements in Technical Oral Presentation

1. What are the essential elements a student must possess to be an effective presenter?

2. So maybe you can give feedback on student's presentation skill and attributes, what do you think are essential skills that are required to being an effective presenter?

COP Presentation Skills and Attribute Requirement

3. In our experience as internal examiner have you encountered with student that performed well? If so, what were the outstanding aspects that really captured your attention?

4. Which ones would really stand out as a student deserves an “A” or “B”? Despite the fact of an evaluation criteria, but the first perception when you see a presentation that deserves an “A” or a “B”? What is most important to you?

5. How do you gauge an “A” presenter?

6. What stands outs to show that a student is confident in his presentation?

Language and Content Dimension

7. What is your comment on the language component in the students report or presentation?

8. Are you satisfied with the content matter that you have seen so far in the evaluation form?

9. Which is more important to you as an examiner, language or content matter?

10. Besides the visual and confidence level and ability to answer during the answer question session, what other areas can be improved?

11. What is your comment on the QA section? Is this an important section when looking at presentation skill?

12. Can you comment if there is any deliberation between supervisors and students on the choice of topics? Are there issues of importance that we can help improvise or collaboration?

13. In other aspects can you comment on the type of projects being done by the student on its relevance; time worthy and related to the workplace or just confined to the university?

Challenges

14. Do they have any difficulty in relating to the objective of the project where in the FYP2 there are when you have a mixture form the industry and academic, technical and non-technical people in the audience?

15. Do they have a problem relating to different views and how do you handle the differences in opinions if any? What are the challenges encountered by educators when there is a diverse audience present?

Suggestions

16. In relation to the Final Year Project 2 technical oral presentation evaluation criteria, are there areas for possible suggestions for improvement? Do you think the criteria on introduction, methodology, question and answer, findings, non verbal cue should be improved?

17. Do you have any other suggestions how engineers can help prospective engineering graduates' to be better presenters?

APPENDIX H: Interview Questions with Engineer
Interview Protocol:

Introduce self and rationale of the interview and mention that conversation will be audio taped for transcription purposes. Provide Interview Consent Form.

Interview Questions:

Background

1. Please provide a brief introduction of yourself - your education background, area of specialisation and work experience.

2. What are the types of technical oral presentations expected of engineers? Are there different types of presentations conducted by engineers of different levels?

Technical oral presentation and experience

3. How would you define a “technical oral presentation”?

4. What are some essential criteria of a technical oral presentation?

5. Would you consider the Final year project as a technical oral presentation? Please explain why.

6. Did you have experience being involved in the Final year engineering project 2?

COP Presentation Skill and attribute requirement

7. Do you think employers place any importance on presentation skills at the workplace? Please explain.

8. In your daily experience as an engineer and as an external examiner for FYP2, which aspect such as content or delivery is more emphasised when doing a presentation? What is the focus? Why is this emphasised by engineers?

9. In your capacity as an external examiner, what would strike you most to denote an effective presentation when listening to a presenter present? What skills and attribute should a presenter possess to ensure the success of his or her presentation? Why is this so?

10. What is the professional engineers’ expectation when listening to a presentation? Why is this important to an engineers’ presentation?

11. What is the importance of audience knowledge to the presenter? Is an engineer aware of his audience needs prior and during a presentation?

12. In your view, what are workplace engineers’ expectations of engineering graduates oral communication proficiency? Is this made known to the prospective graduates? Please explain.

Language and Content Dimension

13. What is your comment on the aspect of language use in the technical oral presentation? Is there focus provided by the panel of internal and external examiners (ie the lecturers of the academic community and professional engineers) on language component? What is your comment on this?

14. What is your comment on the aspect of content? Is this an important feature in technical oral presentations?

15. Which aspect is more crucial – i.e language or content in a technical oral presentation?

Challenges

16. During a Final Year Project 2 evaluation session, a panel of examiners both from the academic community and the industry will be present to evaluate the student presentation. Do you notice any similarities or differences in the angle of questioning as posed by this panel of examiners?

17. In cases where there may be differences in feedback provided to the student, how is such a situation handled?

Suggestions

18. In relation to the Final Year Project 2 technical oral presentation evaluation criteria, are there areas for possible suggestions for improvement? Do you think the criteria on introduction, methodology, question and answer, findings, non verbal cue should be improved?

19. Do you have any other suggestions how engineers can help prospective engineering graduates' to be better presenters?

APPENDIX I: Interview Questions with Language lecturer
Interview Protocol:

Introduce self and rationale of the interview and mention that conversation will be audio taped for transcription purposes. Provide Interview Consent Form.

Interview Questions:

Background

1. Please provide a brief introduction of yourself - your education background, area of specialisation and work experience.

2. Have you been involved in evaluating students' Final Year Projects? If so, please explain your role. If not, have you been involved in evaluating other project presentations?

Technical oral presentation

3. Are students expected to be involved in a lot of oral communication activities?

4. How would you define a "technical oral presentation"? What are some features of a technical oral presentation?

COP Presentation Skills and attribute requirement

5. What in your opinion is an outstanding technical oral presentation? What to you is an "A" presenter?

6. What do you think are important elements/skills to a language lecturer that makes a student an effective speaker in delivering his presentation? Please explain.

7. What is the essential presenter attributes required to deliver a technical oral presentation effectively?

8. What other skills should be emphasised to create an effective delivery of a presentation?

9. Are these skills made known and available to the students' prior their presentation?

10. What is the importance of audience knowledge to the presenter? Is an engineer aware of his audience needs prior and during a presentation?

Language and Content Dimension

11. What is your comment on the aspect of language use in the technical oral presentation? Is there focus provided by the panel of internal and external examiners (ie the lecturers of the academic community and professional engineers) on language component? What is your comment on this?

12. What is your comment on the aspect of content? Is this an important feature in technical oral presentations?

13. Which aspect is more crucial – i.e language or content in a technical oral presentation?

Challenges

14. In your experience as a language and communication lecturer, do you think that our students are aware of the importance of presentation skills?

15. In your opinion, are these presentation skills being emphasised to our students? Please explain.

16. How can we ensure that students are aware of the importance of such skills?

17. What is missing in our students' presentation skills during an oral presentation session? How do we emphasise the importance of such features to the students?

Suggestions

18. In relation to the Final Year Project 2 technical oral presentation evaluation criteria, are there areas for possible suggestions for improvement? Do you think the criteria on introduction, methodology, question and answer, findings, non verbal cue should be improved?

19. Do you have any other suggestions how engineers can help prospective engineering graduates' to be better presenters?

APPENDIX J: Excerpt of Follow-Up Interview Session Conducted with a Lecturer

1Q16S2 refers to Interview Question 15, Session 2. RA16S2 denotes Respondent Answer Number 16 in Session 2. (S2 denotes Interview Session 2; Question marked with “Q” and Answers are marked as “A”)

1Q16S2: One of the engineers I interviewed mentions a suggestion whether of the possible inclusion of industry feedback as one small component in the evaluation. What is your comment on that?

RA16S2: But the industry examiners are already from the industry, but you know sometimes we have problem in the sense that, industries are very secretive with their data example in my case dealing with waste water; even with the sample of waste water, even sample of raw waste water or treated sample, they don’t want to give; we contact three companies, they called us back and said that they cannot give it to us unless we go to the DOE or Department of Environment and force them to give it to us; that’s the problem so I do not like, if you put in a component of industrial component it may come in as a bonus component but not as a compulsory component because of the practical problems. It will be good but there are constraints.

IQ17S2: What’s your opinion on public speaking opportunities or platforms for students?
RA17S2: Yes its very good platform but I wish but normally those public speaking platforms are already dominated by those who are already good in public speaking. It should be compulsory for those who are not good, who are weak, for practice, if the public speaking platform is for good students, then what is the point? They are already good; so how do we improve the lower portion…and theatre, of course…

IQ18S2: What is the most critical aspect or component that you would like to see in a student?
RA18S2: To me as a theatre person, confidence, just confidence. Even though the research may not be substantial or may not be working, but he is confident and he knows that it does not work and he takes it confidently.

IQ19S2: Do the students and supervisors have any inhibitions toward negative results? Are they open enough to share?

RA19S2: I think that is the misconception that we have, we still do have these inhibitions, if it does not work, we do not show it, and sometimes the students delete the whole thing; why do you delete? Oh sir, because it does not work…but you need to show that to the audience why does it not work; I told them to show it to the audience; you found that there was no relationship between these two; I told them that you have to put everything down because this is what you have done in the research; and this is what research is all about, if it does not work we are worried and so we delete the whole thing; so they delete all the experiments and put only the successful ones; which is wrong, to me it is wrong because we did not show the how whole process; I think we are still lacking on this even among the supervisors.

APPENDIX K: Technical Oral Presentation Observation Sheet

Name of Student:____

Title of Presentation: ____

Date and Time: ____________________ Venue: ___________________

Examiners: ____

Construct	**Detail**	**Tick (/) if present or (X) if absent**
1. Presentation Slides: Preview and Visual Clarity	Stated Not stated	
2. Structure Outline:	Stated Not stated	
3. Purpose: Clear and well defined	Clear and well defined Unclear, Needs refinement	
4. Content: Complete project details with adequate sample of tests/experiments	Complete Details Incomplete Details	
5. Language Fluency: technical and non-technical jargon, proficient/ weak in English language	Good command Fair command Weak command	
6. Grammar/Language Emphasis by examiners	Stated Not stated	
7. Type of questions posed:	Definition/Technical/Conceptual/Application/Wh-questions/Content/ Methodology/Result	
8. Critique Session: (during or after presentation)		
a) Student able to defend with justification and evidence		
b) Student able to defend but require more evidence, justification		
c) Student lack examples/details		
d) Student unable to defend/unable to provide details		
9) Questions and comments posed by examiners on student project presentation:		
10) Overall observation of student presentation: Message clearly understood; not understood by audience; audience receptivity to the presentation		

APPENDIX L: Sample 1 of Examiners' Written Comments in Students' Technical Oral Presentation Evaluation Task Sheet

CE 43

APPENDIX 3-10

Doc. Ref. No.	Issue Version	Date
UTP-ACA-PROG-FYP-01.08	2.0	Xx xx

FORM 10

UNIVERSITI TEKNOLOGI PETRONAS

FYP Part II – FINAL ORAL PRESENTATION SCORE SHEET

(To be completed by Supervisor/Examiner)

Student's Name :

Project Title : BIOLOGICAL REMOVAL OF FERTILIZER WASTEWATER USING BIOLOGICAL TREATMENT

Programme : CIVIL ENGINEERING

Category	Criteria for Judging Quality	Please circle the appropriate grade for each category									(Marks Awarded)
		Excellent	Very, Very Good	Very Good	Good	Above Average	Just Average	Poor	Very Poor – Marginal Pass	Very Bad - Failure	
Introduction (10)	• Background of Study • Problem Statement - Problem Identification - Significant of the Project • Objective and Scope of Study • The Relevancy of the Project • Feasibility of the Project within the Scope and Time frame	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	6.5
Literature Review and/or Theory (10)	• No. of references • Critical analysis of literature • Citation and cross referencing • Relevancy and recentness of the literature	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	5.5
Methodology (10)	• Research Methodology • Project activities • Key milestone • Gantt Chart • Tools (eg. Equipment, hardware, etc.) required.	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	6.5
Result and Discussion (20)	• Findings • Data Gathering/ Data Analysis • Experimentation/Modelling/ Prototype/Project Deliverables	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	11
Conclusions and Recommendations (10)	• Relevancy to the Objectives • Suggested Future Work for Expansion and Continuation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Clarity of presentation (10)	• Fluency and choice of words (using language clearly and accurately) Pronunciation, articulation • Use of aids (graphs, diagrams, objects etc) • Continuity of Presentation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	6.5
Non-verbal Communication (10)	• Appearance; Facial expression; Confidence • Gesture; Eye Contact, Pauses	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Questions and Answers (20)	• Technical and factual accuracy; Grasp of subject • Creativity – use of example • Convincing Answer, Showing creativity and Innovativeness	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	11
										TOTAL SCORE	62 /100
										OVERALL GRADE (refer to UTP Grading Scheme below)	

Comments:

Need to understand and appreciate purpose of experiment then she would be able to present with confident

Supervisor/Examiner's signature

Name :

Date : 2/6/08

APPENDIX M: Sample 2 of Examiners' Written Comments in Students' Technical Oral Presentation Evaluation Task Sheet

APPENDIX 3-10

Doc. Ref. No.	Issue Version	Date
UTP-ACA-PROG-FYP-01.08	2.0	16/11/2007

FORM 10

UNIVERSITI TEKNOLOGI PETRONAS

FYP Part II – FINAL ORAL PRESENTATION SCORE SHEET

(To be completed by Supervisor/Examiner)

Student's Name :

Project Title :

Programme :

Category	Criteria for Judging Quality	Please circle the appropriate grade for each category									(Marks Awarded)
		Excellent	Very, Very Good	Very Good	Good	Above Average	Just Average	Poor	Very Poor – Marginal Pass	Very Bad - Failure	
Introduction (10)	• Background of Study • Problem Statement - Problem Identification - Significant of the Project • Objective and Scope of Study • The Relevancy of the Project • Feasibility of the Project within the Scope and Time frame	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Literature Review and/or Theory (10)	• No. of references • Critical analysis of literature • Citation and cross referencing • Relevancy and recentness of the literature	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Methodology (10)	• Research Methodology • Project activities • Key milestone • Gantt Chart • Tools (eg. Equipment, hardware, etc.) required.	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Result and Discussion (20)	• Findings • Data Gathering/ Data Analysis • Experimentation/Modelling/ Prototype/Project Deliverables	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	13
Conclusions and Recommendations (10)	• Relevancy to the Objectives • Suggested Future Work for Expansion and Continuation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	6.5
Clarity of presentation (10)	• Fluency and choice of words (using language clearly and accurately) Pronunciation, articulation • Use of aids (graphs, diagrams, objects etc) • Continuity of Presentation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	7.5
Non-verbal Communication (10)	• Appearance; Facial expression; Confidence • Gesture; Eye Contact, Pauses	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	6.5
Questions and Answers (20)	• Technical and factual accuracy; Grasp of subject • Creativity – use of example • Convincing Answer, Showing creativity and Innovativeness	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	13
										TOTAL SCORE	69 /100
										OVERALL GRADE (refer to UTP Grading Scheme below)	

Comments:

Should validate result with other equipment.

Get close to the subject matter through literature review.

Supervisor/Examiner's signature

Name : Staff Engineer PGB

Date : 29/05/08

APPENDIX N: Sample 3 of Examiners' Written Comments in Students' Technical Oral Presentation Evaluation Task Sheet

UNIVERSITI TEKNOLOGI PETRONAS

APPENDIX 3-10

Doc. Ref. No.	Issue Version	Date
UTP-ACA-PROG-FYP-01.08	2.0	Xx xx

FORM 10

FYP Part II – FINAL ORAL PRESENTATION SCORE SHEET

(To be completed by Supervisor/Examiner)

Student's Name :

Project Title : COMPILATION OF DESIGN GUIDELINE FOR PILED RAFT FOUNDATION

Programme : CIVIL ENGINEERING

Category	Criteria for Judging Quality	Please circle the appropriate grade for each category									(Marks Awarded)
		Excellent	Very, Very Good	Very Good	Good	Above Average	Just Average	Poor	Very Poor – Marginal Pass	Very Bad - Failure	
Introduction (10)	• Background of Study • Problem Statement - Problem Identification - Significant of the Project • Objective and Scope of Study • The Relevancy of the Project • Feasibility of the Project within the Scope and Time frame	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Literature Review and/or Theory (10)	• No. of references • Critical analysis of literature • Citation and cross referencing • Relevancy and recentness of the literature	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Methodology (10)	• Research Methodology • Project activities • Key milestone • Gantt Chart • Tools (eg. Equipment, hardware, etc.) required	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Result and Discussion (20)	• Findings • Data Gathering/ Data Analysis • Experimentation/Modelling/ Prototype/Project Deliverables	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	
Conclusions and Recommendations (10)	• Relevancy to the Objectives • Suggested Future Work for Expansion and Continuation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Clarity of presentation (10)	• Fluency and choice of words (using language clearly and accurately) Pronunciation, articulation • Use of aids (graphs, diagrams, objects etc) • Continuity of Presentation	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Non-verbal Communication (10)	• Appearance; Facial expression; Confidence • Gesture; Eye Contact, Pauses	A (10)	A- (8.5)	B+ (8)	B (7.5)	C+ (6.5)	C (5.5)	D+ (5)	D (4.5)	F (2)	
Questions and Answers (20)	• Technical and factual accuracy; Grasp of subject • Creativity – use of example • Convincing Answer, Showing creativity and Innovativeness	A (20)	A- (17)	B+ (16)	B (15)	C+ (13)	C (11)	D+ (10)	D (9)	F (4)	
										TOTAL SCORE	/100
										OVERALL GRADE (refer to UTP Grading Scheme below)	

Comments:

Fairly good presentation but need better understanding of geotechnical concepts.

76

Supervisor/Examiner's signature

Name :   Date : 4-6-08

APPENDIX O: Excerpt of Students' Presentation Critique session

1 Examiner M: #u# It’s multi-level. How to address in terms of that? Because 2explosion can happen, it's not spread like this but they can go like this (gesturing with 3hands). How do you address this in your study?

4Student: Ermm. This is actually just a very simplified escalation radius.

5Examiner M: It's not considered in your study?

6Student: No, because this is following the thesis of another author, (cited name)

7who actually discussed on escalation radius. So it does not affect on the height, it just 8tells you the radius of it. But I will assume that #u# a radius. It affects the height of the 9platform also. It's in a lower module.

10Examiner M: Because the implication will be different. If it is this height, the 11result 11will be this, if it is like this, the result will be like this and so on and so forth…

12Student: Yeah, I understand.

13Examiner L: #u# I think need much more analysis on height of the structure as 14this 14has repercussions, whenever something happens.

15Student: Yeah, the structure...

16Examiner L: Are there any #u# that is something is #u# to make you #u#

17Student: Ermm, can I #u# (interrupted)

18Examiner L: Yes, can you explain the preventive safety concept?

19Student: Preventive safety concept? Ehmm…

20Examiner L: That means you err in case of the #u#. One two small things 21happen 21then it create some more #u#. #u# and stop it.

22Student: Ah, yes, that’s the whole idea of this inherent safety, if we can eliminate 23this ermm #u# (interrupted)

24Examiner L: You identify the risk. #u#

Student: Yes, yes. That's the whole idea of the framework, to easily assess the problem, and maybe we can take out the problem, or to protect it or to remove it furthest from the ermm… platform. For example like the #u# example. If we can locate it not on the platform, on the sub-sea well-ahead. Then the effect will be less on the personnel. And that is why this framework would have been much more useful if you apply it during the beginning of the design stage.

Examiner L: And you say platform is important. But err #u#.

Student:Yeah. That's why #u# (laughing)

Examiner L: (laughing) #u# provide other place #u#. But should not let it happen.

Student: Ermm ermm, referring to the bulkhead case, if we have ermm located the bulkhead at a further area, then there'll be a less ermm radius of escalation will be less and hence, the equipment will also be safer.

Examiner L: Somewhat #u#

Student:Yes, somewhat be less likely to be damaged because of accident.

Any other questions?

Examiner L: I think no more questions.

Examiner R: Include the explanation in the discussion as this is important…

Student: OK. Thank you.

Examiner R:Err (name) please collect the written project for minor correction

Key: *#u#* shows inaudible

APPENDIX P: Mapping Research Items to Research Instrument

MAPPING RESEARCH INSTRUMENT TO QUESTIONNAIRE ITEMS	
Bradney (2000) – 4 items i.Stated a clear purpose for presentation ii.Stated clear objectives for presentation iii. Logically organised into bite-sized topics iv. maintained control of event at all times **PRCA-24 - 2 items** i. confidence in expressing ideas, ii. speaking up in conversations, **SPSS (Lowe & Cautela 1978) – 5 items** i. receptivity to other opinion ii. makes other people laugh with jokes, stories etc iii. when facing conflict knows what to say iv. admits to error(s) that he may have made v. tries to find solutions to problems **SRCC Scale (Weimann, 1977) – 2 items** i) I am relaxed and comfortable when speaking. ii) I let others know I understand them.	**Section B: Presentation Skills Construct (13 items)** : ▪ purpose of presentation ▪ scope of presentation ▪ organisation skills ▪ keeping within time frame ▪ analytical and interpretation skills ▪ memorization skills ▪ self-development skills, like anticipating possible questions ▪ clarification skills when technical terms are used ▪ audience receptivity to technical knowledge ▪ audience receptivity to non-technical knowledge ▪ project humor (where applicable) ▪ maintain composure when questioned by the audience ▪ willingness to accept criticisms posed by audience
PRCA-24 – 4 items i. confidence in expressing ideas, ii. shows interest in what others is saying iii. considers the opinion given by others iv. listens when spoken to **SRCC Scale – 2 items** i. i am flexible ii. i generally say the right thing at the right time **Bradney (2000) - 3 items** i. Give audience time to reflect ii. Audience invited to comment iii. Responded clearly, concisely and completely **Morreale _Competency** 8 :**Use physical behaviors**	**Section C: Behavioral Skills and Attribute Construct (9 items):** ▪ analytical skills in fielding questions posed by the audience ▪ *flexible* in meeting audience's viewpoint ▪ courteous while presenting ▪ audience sensitive - allow audience time to reflect ▪ *interactive skill* – invite audience participation ▪ listening skills ▪ incorporate audience feedback ▪ quick thinking when responding to questions ▪ defend skills when questioned

Bradney (2000) **Introduction: (7 items)** i. clear introduction, ii. subject of presentation iii. importance of subject established iv. state clear objectives v. adhered to agenda vi. transpariencies –content appropriate to topic vii. thoroughly familiar with topic **While Presentation: (10 items)** i. Clear content (body) of presentation ii. smooth transition from topic to topic iii. visual aids effectively used iv. used good verbal communication techniques v. organisation of transparencies vi. format of transparencies vii. numbering appropriate viii. length appropriate ix. content appropriate x. each section summarized to one or two points **Conclusion (5 items)** i. clear summary of presentation ii. purpose of presentation reiterated iii. importance to audience repeated iv. each section summarized v. several concise closing statements **Morreale Competency factor 1, 2, 3 and 4 (1991) – 3 items – 3 items** i) chooses topic ii) chooses thesis statement iii) chooses supporting materials	**Section D: Content Construct - Introduction stage (7 items):** ▪ introduction statement in a presentation ▪ title of project presentation ▪ identification of problem statement ▪ relevance of presentation ▪ statement to indicate research methodology used ▪ clarification of objective of presentation ▪ state the source of literature review (where necessary) **Content Construct - While presentation stage (10 items):** ▪ correct delivery style ▪ provide supporting materials ▪ ensure coherence in points delivered ▪ check the visual presentation of all materials ▪ visual presentation is appealing ▪ use of gannt charts for explanation ▪ right selection of color for wording ▪ right font size for wording ▪ limitation on the use of words in each slide ▪ simple analogy **Content Construct - Conclusion stage (8 items):** ▪ state key milestones (where necessary) ▪ apply creativity in presentation ▪ inclusion of cost factor analysis ▪ discussion of findings related to the topic of the project presentation ▪ restate the purpose in the conclusion ▪ provide concise closing statement ▪ restate the relevance of the presentation ▪ propose suggestions relevant for considerations

Morreale Competency 5 (1991) – 1 item -Language **Bradney (2000) – 7 items** i. presentation was clear, concise ii. language level appropriate to audience iii. used good verbal communication techniques iv. demonstrated enthusiasim for task v. responded clealry, concisely and completely vi. smooth transition from topic to topic vii. clear introduction, body and summary	**Section E: Language competency Construct (8 items):** ▪ use of correct grammar at all times ▪ use appropriate language throughout the delivery ▪ ensure language is easily understood ▪ avoid use of complex language ▪ articulation of words ▪ enunciation ▪ pronunciation ▪ appropriate choice of words or diction
SRCC Scale (Weimann) - 2 items i. use body and voice expressively ii. i let others know i understand them **SPSS (Lowe & Cautela 1978) – 7 items** i. eye contact ii. shows enthusiasm iii. smiles iv. listens when spoken to v. shows interest in what others is saying (facial movements, comments, questions) vi. Makes facial gestures or sounds vii. Considers the effects of his/her statements on others' feelings **Morreale Competency 6 (1991) – 1 item _Non-verbal**	**Section E: Non-verbal skills Construct (10 items):** ▪ speak at an appropriate rate ▪ use appropriate volume for the size of room ▪ use of vocal fillers in the presentation ▪ pause to ensure message is understood ▪ use vocal variety ▪ use appropriate non-verbal gestures for emphasis ▪ stance ▪ use of facial expressions to reinforce the message ▪ appear extemporaneous ▪ culturally observant in code of conduct

APPENDIX Q: Mapping Quantitative Construct And Qualitative Themes

<table>
<tr><th></th><th>QUANTITATIVE CONSTRUCTS</th><th></th><th colspan="2">QUALITATIVE THEMES</th></tr>
<tr><td></td><td>Items</td><td></td><td colspan="2">Items</td></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Presentation Skills:
▪ purpose of presentation
▪ scope of presentation
▪ organisation skills
▪ keeping within time frame
▪ analytical and interpretation skills
▪ memorization skills
▪ self-development skills, like anticipating possible questions
▪ clarification skills when technical terms are used
▪ audience receptivity to technical knowledge
▪ audience receptivity to non-technical knowledge
▪ project humor (where applicable)
▪ maintain composure when questioned by the audience
▪ willingness to accept criticisms posed by audience</td><td>1a</td><td>Linguistic demands (oral genre competence):</td><td>• use of visual, interactive and professional language,
• personal language,
• personal pronouns,
• personal experience,
• analogy,
• humor,
• contextual technical genre,
• technical clarification of specialized terminology in simple language,
• clarity,
• key points,
• layman terms,
• methodological structural coherence,
• accurate and factual information of content,
• use of linguistic markers, use of associated terms for global concepts,
• incorporate closely related concepts,
• clarification of technical ambiguities and keywords, verbal explanation of presentation slide,
• brevity in sentences,
• avoid circumlocution and verbosity,
• clear and precise sentences and
• use of observable action verbs</td></tr>
<tr><td>2</td><td>Interpersonal and interactive competence:</td><td>• turn-taking,
• clarification,
• clarity in explanation,
• use of interactive features, affirmative and negative statements,
• use of grammatical pronouns to indicate personal ownership and commitment,
• repetition,
• clarification,
• turn-taking during critique session,
• justification and defense of findings,
• realistic justification with moral and social conscience,
• provide personal experience, scientific evidence to support purported claim,
• detailed methodological explanation of research process,
• project ethos (credibility), pathos (emotion) and logos (logical reasoning),
• interactive language with minimal reference to slides,</td></tr>
</table>

				• counter-argue or provide different viewpoint, • clarify any abnormalities of findings
		3	**Meta-cognitive competence:**	• decision-making and in-depth critical thinking analysis, • argumentative language, • numerical evidence of value judgments, • interpretation of problem statement, • reasoning and critical thinking ability, • conceptualize the project, • literature review and relate to existing studies and real-world industry application, • fundamental knowledge of the project, • content response to questions posed in critique session, • methodological justification, • clarity in problem-solution approach, • justify or deduce correlation or relationship of parameters within a project, • justified argument with scientific evidence to support or refute an earlier claim
2	**Content requirement:** • state the introduction, • title, • problem statement, • relevance, • research methodology, • objective, • literature review, • appropriate delivery style, • use supporting materials, • incorporate visual charts, • use appealing materials, • use gannt chart, • font color, • font size, • word limit, • analogy, • coherence, • key milestones, • cost factor, • discuss finding, • restate purpose, • provide concise closure, • restate relevance • feasible suggestions	1	**Technical Competence:**	▪ technical jargon and non-technical terminology, ▪ technical and scientific evidence, ▪ methodological explanation of a technical problem ▪ functional and contextual application of a problem statement
		2	**Disciplinary competence:**	• use of contextual genre in area of specialisation, • terms of reference in area of specialisation, • simple and complex terminology in the field of specialisation, • contextualize discipline to workplace context, economic benefit of project, • critical analysis and rationale, • technical content matter and parametric of project, • technical clarification and justification of experimental results, • provide problem-solution approach • in-depth analytical explanation of relationships between parameters
		3	**Structural competence:**	• section referencing, • thematic consistency, • holistic language, • sequence connectors, • transition word or phrase, • holistic markers, • accuracy and clarity through structural methodology, repetition of keywords, • forecasting statements, • explicit signals, • verbal signposts, • structural markers,

				• clear sectional referencing, thematic referencing, • structural organisation of project from inception to completion, • sequential and methodological build up of data or experimental results, • coherent and methodological flow of ideas/findings
		4	**Rhetorical Style (IT competence)**	• lead in, • explicit signals eg. Flash; movie, • use pictures,visuals,figures, • brevity in sentences, • demonstrate use of realia
3	**Language competency:** • consistent choice of grammar, • appropriate language, • simple language, • avoidance of complex language, • articulation, • enunciation, • pronunciation • diction	1 a	**Linguistic demands (oral genre competence):**	• use of visual, interactive and professional language, • personal language, • personal pronouns, • personal experience, • analogy, • humor, • contextual technical genre, • technical clarification of specialized terminology in simple language, • clarity, • key points, • layman terms, • methodological structural coherence, • accurate and factual information of content, • use of linguistic markers, use of associated terms for global concepts, • incorporate closely related concepts, • clarification of technical ambiguities and keywords, verbal explanation of presentation slide, • brevity in sentences, • avoid circumlocution and verbosity, • clear and precise sentences and • use of observable action verbs
		1 b	**Linguistic demands (professional language):**	• academic language that uses artificially created workplace language, • pronouns, • self-mention, • personal engagement markers, • argumentative language such as ability to validate, generate, substantiate and justify knowledge claims, • emphasis on confident language, • ability to justify and validate personal decision-making claims, • incorporate critique within explanation and • defense ability in critique session
4	**Behavioral skill:** • analytical ability, • meeting audience's needs,	1	**Rhetorical competence (oral immediacy)**	• use of analogy, • demonstrate use of realia, • provide credible justification,

	• courteous, • audience receptivity, • participatory, • incorporate audience feedback, • listening skills, • response to sudden queries • defending skills			• rationalize, • validate and support a personal value judgment, • show personal and cultural motivation and engagement in a project, • real-world context and relate to engineering perspective, • decision making choices; • value judgments; • employ grammatical pronouns • fluent deliberation of the project
5	Non-verbal skills: • rate, volume, • vocal fillers, • pause, • vocal variety, • appropriate use non-verbal gestures, • stance, • facial expressions, • appear extemporaneous • exhibit cultural sensitivity			

APPENDIX R: Sample of Letter for Request to Conduct Research in the University

UNIVERSITY OF MALAYA
The Leader in Research & Innovation

To Whom It May Concern Date: ___________________

Dear Sir/Madam,

REF: TO REQUEST PERMISSION TO CONDUCT PHD RESEARCH STUDY ENTITLED "STAKEHOLDERS' PERCEPTIONS OF COMMUNICATIVE COMPETENCE IN TECHNICAL ORAL PRESENTATION"

I, Ena Bhattacharyya (Student Matric No:THA 050005), hereby request permission to conduct the above doctoral study titled, "Stakeholders' Perceptions Of Communicative Competence In Technical Oral Presentation" under the current supervison of my supervisor __________________________ to be conducted in the university.

I am conducting the above study in order to gain an insight of the stakeholders' (i.e. final year engineering students; lecturers, language lecturers and engineers from the professional engineering community) perceptions and understanding of the construct of communicative competence in technical oral presentations. The study also attempts to identify the similarities and differences of the stakeholders' perceptions and actual practice of linguistic and rhetorical competence in technical oral presentations. An understanding of the construct enables stakeholders to understand the construct from different Community of Practice (COP) perspective.

The study will employ a mixed method design where a survey questionnaire is distributed among fianl year engineering students and engineers involved in technical oral presentations in Phase 1. In Phase 2, a qualitative approach is employed. For this purpose, selected participants such as students, engineering lecturers, language lecturers and engineers will be interviewed and presentation sessions will be observed. Supporting documents where written comments by the panel of examiners (lecturers and engineers) will also be utilised. For some interviewees, follow-up interviews will be required if there are discrepancies in the findings. All the names of participants will be kept in strictest confidence and data will be used for educational research purposes only.

The University will benefit from the study in the following ways, i) a theoretical linguistic and rhetorical framework; ii) stakeholders' understanding of the construct of communicative competence in technical oral presentations; iii) stakeholders' understanding of communicative ability of engineering students in technical oral presentations in a Malaysian setting, and iv) a linguistic and rhetorical grading criteria in the technical oral presentation sessions.

Upon completion of the study, a copy of the thesis will be made available to the Research University and researcher's University electronic digital repository for thesis database.

Should you have any further clarification, my supervisor and I wiil be more than willing to clarify any concerns pertaining to the study.

Yours Sincerely,

(ENA BHATTACHARYYA)
PhD Student
Faculty of Language and Linguistics
University of Malaya

C.c Assoc Prof. Dr Rajeswary A Sargunan/Dr Evelyn Khor
Supervisor
Faculty of Language and Linguistics
University of Malaya

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