AN EVALUATION OF TECHNICAL ORAL PRESENTATION COMPONENTS IN ENGINEERING

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ABSTRACT

This case study evaluates implementation of Technical Oral Presentations (TOP) components in English for Specific Academic Purposes (ESAP) language course for engineering undergraduates at a technical university. The respondents were 310 engineering undergraduates who registered for English Technical Communication (ETC) course and 12 instructors from Universiti Malaysia Pahang. The case study employs Convergent Parallel design to collect data in all four evaluation components of Context, Input, Process and Product (CIPP) Evaluation Model. Two questionnaires were administered in this study. The Questionnaire Set A were distributed to English language instructors teaching English for Technical Communication course while the Questionnaire Set B were distributed among engineering undergraduates who enrolled during September to Dec 2016. Other instruments were semi-structured interviews with six instructors and eight engineering industry stakeholders as well as nine focus group interviews with engineering undergraduates. Eight video clips of engineering undergraduates' delivering product description presentations were also used as instrument in interview with engineering stakeholders. Findings show that elements of *context evaluation* such as the 'relevance' of ETC course, engineering undergraduates' level of interest towards TOP and asset and facilities are deemed relevant and conducive. Various difficulties and challenges faced by engineering undergraduates' in their TOP skills learning were identified and input from instructors teaching the course were also discussed. At least 1/3 of the respondents stated that high anxiety and lack of self-confidence affect their Technical oral Presentation (TOP) performance. Elements of *input evaluation* such as suitability of content and material for TOP are seen by instructors and engineering undergraduates to be suitable and appropriate for students' TOP learning. Profiles of instructors teaching TOP showed that they are highly experienced personnel with service duration between five to 21 years. The *process evaluation* findings illustrate various TOP learning activities occur in classroom and more marks are allocated for *content* rather than *language* and *delivery* skills. However, engineering undergraduates perceive that their instructors give equally high level of emphasis in *content, language* and *delivery* skills. Similarly, instructors also viewed that they give highly equal emphasis on these components while teaching TOP. Instructors also adopt various strategies in giving feedback towards engineering undergraduates' TOP learning. Engineering undergraduates' perception of instructors' practices of giving feedback were highly positive. Engineering undergraduates made several suggestions on ways to improve their TOP skills. *Product evaluation* findings revealed that engineering stakeholders viewed engineering undergraduates' TOP performance in the video clips as poor, acceptable and good. It is suggested that more training is needed in order to achieve higher competency level. The findings from the Self Perceive Communicative Competent (SPCC) questionnaire revealed that the majority of engineering undergraduates involved in the study perceived their TOP competency to be at moderate level (72.6%) and 22.6% perceived themselves to be in low self-perceived communication competence. Findings also showed that there is no significant difference of self-perceived communication competence among respondents across faculties and between genders. This study proposed a framework known as "PRO-ESATOP" for English specific Academic Purpose (ESAP) and Model of TOP Professionalism for training of Technical Oral Presentation (TOP) skills for engineering undergraduates.

SATU PENILAIAN KOMPONEN PEMBENTANGAN LISAN TEKNIKAL DI DALAM KEJURUTERAAN

ABSTRAK

Kajian kes ini menilai perlaksanaan komponen Pembentangan Lisan Teknikal *(Technical Oral Presentation - TOP)* didalam kelas Bahasa Inggeris untuk tujuan khusus akademik *(English For Specific Academic Purposes -ESAP)* di kalangan pelajar sarjana muda kejuruteraan di sebuah universiti teknikal. Responden adalah 310 pelajar sarjana muda kejuruteraan yang mendaftar untuk kursus *English for Technical Communication (ETC)* dan 12 pengajar dari Universiti Malaysia Pahang. Kajian kes ini menggunakan reka bentuk *Convergent Paralel design* untuk mengumpul data dalam semua empat komponen penilaian Model Penilaian, Input, Proses dan Produk (CIPP). Dua soal selidik telah digunakan di dalam kajian ini. Set A soal selidik telah diedarkan kepada pengajar Bahasa Inggeris yang mengajar *English for Technical Communication* manakala Set Soalan B telah diedarkan di kalangan pelajar sarjana muda kejuruteraan yang mendaftar didalam kursus yang sama dari bulan September hingga Disember 2016. Instrumen lain adalah wawancara separa berstruktur dengan enam pengajar dan lapan pihak pemegang taruh dari pihak industri kejuruteraan serta sembilan temuduga kumpulan fokus dengan pelajar sarjana muda kejuruteraan. Lapan klip video pelajar sarjana muda kejuruteraan menyampaikan pembentangan lisan teknikal berkaitan product description digunakan sebagai instrumen dalam temu bual dengan pemegang taruh dari industri kejuruteraan. Dapatan menunjukkan bahawa elemen *penilaian konteks* seperti 'kerelevanan' kursus ETC, tahap minat di kalangan responden terhadap TOP dan penilaian aset dan kemudahan pembelajaran adalah relevan dan membantu proses

pembelajaran. Pelbagai kesukaran dan cabaran yang dihadapi oleh pelajar sarjana muda kejuruteraan dalam mempelajari kemahiran TOP telah dikenalpasti dan input dari pengajar yang mengajar kursus juga dibincangkan. Sekurang kurangnya 1/3 responden menyatakan tahap kebimbangan yang tinggi dan kekurangan keyakinan diri merupakan masalah utama yang dihadapi oleh mereka dan memberi kesan didalam membuat Pembentangan Lisan Teknikal. Unsur-unsur *penilaian input* seperti kesesuaian kandungan dan bahan untuk TOP seperti yang dilihat oleh tenaga pengajar dan pelajar sarjana muda kejuruteraan berada pada tahap yang tinggi. Profil para pengajar yang mengajar TOP menunjukkan bahawa mereka adalah kakitangan yang berpengalaman dan telah berkhidmat antara lima hingga 21 tahun. Dapatan *penilaian proses* menggambarkan pelbagai aktiviti pembelajaran TOP yang berlaku di dalam bilik darjah dan lebih banyak markah diperuntukkan untuk aspek *content* berbanding *language* dan *delivery*. Respondens menyedari bahawa pengajar mereka memberikan tahap penekanan yang sama dalam aspek *content, language* dan *delivery* semasa mengajar TOP. Begitu juga, para pengajar juga melihat bahawa mereka memberikan penekanan yang sama terhadap komponen-komponen ini semasa mengajar TOP. Pengajar juga mengamalkan pelbagai strategi dalam memberikan maklum balas terhadap pembelajaran TOP pelajar sarjana muda kejuruteraan. Persepsi responden terhadap amalan pengajar didalam memberi maklum balas kepada para pelajar adalah sangat positif. Responden membuat beberapa cadangan mengenai cara untuk meningkatkan kemahiran TOP mereka. Hasil *penilaian produk* mendedahkan bahawa pihak pemegang taruh dari industri kejuruteraan melihat prestasi pembentangan lisan teknikal (TOP) pelajar sarjana muda kejuruteraan dalam klip video sebagai tahap keupayaan TOP yang lemah, boleh diterima dan baik. Adalah dicadangkan agar lebih banyak latihan diperlukan untuk mencapai tahap kompeten yang lebih tinggi. Dapatan dari *Self-Comprehensive Communicative Competitive (SPCC)* menunjukkan bahawa majoriti responden yang terlibat dalam kajian tersebut merasakan kecekapan pembentangan lisan teknikal (TOP) mereka berada pada tahap sederhana (72.6%) dan 22.6% berpendapat bahawa mereka berada dalam kompetensi komunikasi rendah. Dapatan juga menunjukkan bahawa tidak terdapat perbezaan yang signifikan di antara tahap kompetensi komunikasi diri setiap pelajar sarjana muda kejuruteraan dari setiap fakulti mahupun dari segi perbezaan jantina. Kajian ini mencadangkan satu rangka kerja yang dikenali sebagai

PRO-ESATOP dan *Model of TOP Professionalism* bagi pembelajaran kaedah kemahiran Pembentangan Lisan Teknikal untuk para pelajar yang mengikuti pengajian di peringkat sarjana muda didalam bidang kejuruteraan.

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I have achieved your dreams and fulfilled my promise

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May this humble experience contribute to the Ummah and be accepted by Allah.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABET	:Accreditation Board of Engineering and Technology
CMLHS	:Centre for Modern Languages and Human Sciences
COP	:Community of Practice
EAC	:Engineering Accreditation Council
ESL	:English as a Second Language
ESAP	:English for Specific Academic Purposes
ESP	:English for Specific Purposes
ETC	:English for Technical Communication
EPT	English Placement Test
L2	:Second Language
LPP	: Legitimate Peripheral Participation
MoHE	:Ministry of Higher Education
SPSS	:Statistical Package for Social Sciences
SPCC	:Self Perceived Communicative Competence
TOP	:Technical Oral Presentation
UMP	:Universiti Malaysia Pahang

LIST OF APPENDICES

CHAPTER I

INTRODUCTION

Introduction

The Malaysian government is aware of the need to equip students' with necessary English language skills as the second language. In the history of Malaysian education, English language education has received central attention and policies related to teaching and learning of English at primary, secondary and tertiary levels were formulated. One of the main purposes is to produce citizens who have certain level of English proficiency besides being proficient in the national language. For instance, with an aim to achieving this bilingual (English and Malay) proficiency, the national agenda as illustrated in the Malaysian Education Blue Print 2013-2025 has aspired that all students should possess bilingual proficiency as one of the six attributes "needed by students to be globally competitive" (Ministry of Education Malaysia, 2013; p. 10).

In order to achieve this, the Ministry of Education Malaysia has adopted *11 shifts* to transform education system. From the 11 educational system transformation shifts, the second *shift* deals mainly on efforts to equip students with bilingual proficiency in the national language and the English language. The second shift is [to] "Ensure every child is proficient in Bahasa Malaysia and English language" with the most immediate priority efforts geared towards "boosting all students' proficiency in Bahasa Malaysia and English language" (Ministry of Education Malaysia, 2013; p 22). Not long ago, with a similar aim to improve the overall

English proficiency among Malaysian students, the Ministry of Education implemented the teaching of Science and Mathematics in English policy known as the ETEMS program before it was reverted to *Bahasa Malaysia* six years after its implementation.

Despite the many efforts put forth by the government in enhancing English language skills of the Malaysian students, our students still lack the skills (Samuel & Abu Bakar, 2008) and to some extent are deteriorating in their proficiency (Kabilan, Ahmad & Zainol Abidin, 2010). Their poor skills are not only critical at school and tertiary levels but also prevalent among graduates who enter the workforce. Many employers admit that many new graduates who enter the workforce have the necessary technical skills but still lack English communication skills which hinder them from functioning well at workplaces (Darmi & Albion, 2013; Nair, Rahim, Setia, Husin, Sabapathy, Jalil & Seman 2012; Shakir, 2009). For professionals in engineering and technology industry, English communication skills are skills highly valued and needed (Yuzainee, Zaharim & Omar, 2011) in order to participate successfully in the communicative events in the workplace which include the ability to participate in small group discussion, meetings and deliver technical presentations (Matthews & Marion, 1990). Research shows that delivering oral presentations is considered the most stressful communicative event rated by Asian students (Woodrow, 2006) and second language learners (Kunioshi, Gonuchi, Hayashi & Tojo, 2014) and this is worrying.

Over the years, there has been growing concern that many new university graduates are unemployed in Malaysia due to the lack of English communication skills (Basri, Omar, Zainal, Abang Abdullah, Badrulhisham, Abdul Hamid, Nik

Abdullah, Azmi & Zaidi, 2006; Berhanuddin, Othman, Esa, Sulaiman & Othman, 2007; Bhattacharyya, Nordin, & Salleh, 2009; Chang, 2004; Darmi & Albion, 2013; Kassim & Ali, 2010; Morais, 1998; Norlida Md Shariff, 2014; Phang, 2006; Talif & Noor, 2009; Zaharim, Omar, Basri & Isa, 2007; Yuzainee, Zaharim, Omar, Mohamed, Muhammad, Mustapha & Rahmat, 2012; Wahiza Wahi, 2014; Pazil & Razak, 2019; Zainuddin, Pillai, Dumanig & Phillip, 2019).

Prior to graduating, it is compulsory for all Malaysian undergraduates to register for English language classes such as English for Academic Purposes (EAP) or English for Specific Purposes (ESP) for a number of semesters of their studies (Thang & Alias, 2007). In most Malaysian universities (e.g Universiti Teknikal Melaka (UTEM); Universiti Malaysia Sarawak (UNIMAS), the English language programs are taught by English language instructors from the university language centres. Centres, such as the Centre for Modern Languages and Human Sciences at the Universiti Malaysia Pahang, are responsible for organising, conducting, assessing and administering the university language programs including English for proficiency programs. The centre also deals with designing appropriate language curriculum and syllabi, assigning teaching instructors to teach English language courses and other matters related to maintaining the English language programs as required by the university.

The former Minister of Higher Education Dato' Sri Mohd Khaled Nordin, in the foreword of The National Graduate Employable Blueprint 2012-2017 stated that prospective employers complained that Malaysian graduates lack prerequisite attributes necessary for employment where "more than 50% (actual data 58.8%) of fresh graduates are deemed to be unsatisfactory in English communication skills"

(Ministry of Higher Education Malaysia; 2012, p.i). In the same document, the then Minister of Higher Education urged the management of Malaysian Higher learning institutions to increase the chances for their graduates to be employed after graduation by placing “greater emphasis on the proper preparation of their students, ensuring that they are equipped with the adequate exit attributes” (Ministry of Higher Education Malaysia; 2012, p.i). In order to enhance graduates’ English communication skills which are important for academic and future workplace needs, higher education institutions have taken the necessary efforts to improve undergraduates’ English language communication skills. One area of oral communication skills which is vital for graduates to ensure workplace success is in oral presentations (Bhattacharyya, Nordin, & Salleh, 2009; Darling, & Dannels, 2003; Kassim & Ali, 2010).

Profile of the Study Background

Universiti Malaysia Pahang (subsequently UMP), which is also the location of this study, is an engineering and technical university located on two campus sites; Gambang and Pekan in the state of Pahang, Malaysia. UMP offers diploma, bachelor and postgraduate programs in Chemical Engineering and Natural Resources, Mechanical Engineering, Electronic and Electrical Engineering, Civil Engineering and Earth Resources, Computer Science and Software Engineering, Technology Management and Science Industry. Back in 2002, UMP was formerly known as KUKTEM (University College of Engineering and Technology Malaysia) and consisted of five engineering faculties and four centres. In 2007, KUKTEM became the Universiti Malaysia Pahang (UMP).

To date, UMP has a total of nine faculties which offer various engineering and technology related programs and eight academic and non-academic centres which provide services and training to all UMP staff, engineering undergraduate and postgraduate students. Currently there are about 9000 engineering undergraduates enrolled in various courses and in different modes. Table 1.1 below illustrates the faculties and centres at UMP.

Table 1.1

Faculties and Centres in Universiti Malaysia Pahang

Faculties	Centres
• Faculty of Mechanical Engineering • Faculty of Civil Engineering and Earth Resources • Faculty of Electrical and Electronic Engineering • Faculty of Computer Systems and Software Engineering • Faculty of Industrial Sciences and Technology • Faculty of Manufacturing Engineering • Faculty of Engineering Technology • Faculty of Chemical and Natural Resources Engineering • Faculty of Industrial Management	• Centre for Modern Language and Human Sciences (CMLHS) • Centre For Environmental Research & Management • Automotive Excellence Centre • Centre for Academic Innovation and Competitiveness • Islamic Centre and Human Development • Centre for Corporate Development and Quality Management • Centre for Information and Technology communication • Sports Centre

At UMP, the administration of teaching-learning of English language for engineering undergraduates is entrusted to the Centre for Modern Language and Human Sciences (subsequently CMLHS). CMLHS is given the responsibility to develop engineering undergraduates' English proficiency. CMLHS offers English for Specific Purposes (ESP) courses which are specifically designed to fulfil English language needs of engineering undergraduates in order to function well in their academic studies as well as their future workplace needs in engineering industries.

Besides offering ESP courses, CMLHS also conducts English Placement Test (EPT) for newly enrolled local and international students. EPT tests students in three areas; writing, grammar and reading. Students' whose EPT cumulative scores are band 4.9 and below must register for level zero English known as the 'UHL 2400 Fundamental English'. The following UMP-EPT conversion table (Table 1.2) illustrates the calculation of EPT bands.

Table 1.2

UMP-EPT Conversion Table

BAND	READING MARKS	GRAMMAR MARKS
9.0	39 - 40	59 – 60
8.5	37 – 38	57 – 58
8.0	35 – 36	54 – 56
7.5	33 – 34	51 – 53
7.0	31 – 32	49 – 50
6.5	29 – 30	46 – 48
6.0	27 – 28	39 – 45
5.5	24 – 26	31 – 38
5.0	19 – 23	26 – 30
4.5	15 – 18	21 – 25
4.0	13 – 14	16 – 20
3.5	11 – 12	11 – 15
3.0	9 – 10	9 – 10
2.5	7 – 8	7 – 8
2.0	5 – 6	5 – 6
1.5	3 – 4	3 – 4
1.0	1 - 2	1 - 2

Source: CMLHS portal, Universiti Malaysia Pahang

Based on the results of the UMP-EPT placement test, engineering undergraduates will register for ESP courses offered by the Centre for Modern Language and Human Sciences. Table 1.3 illustrates the structure of ESP courses at CMLHS.

Table 1.3

The structure of ESP courses in CMLHS

Diploma	**Bachelor Degree**
• Level 1 UHL 1412 Foundation English	• Level 0 UHL 2400 Fundamentals of English Language
• Level 2 UHL 1422 English for academic skills	• Level 1 UHL 2412 English for Academic Communication
• Level 3 UHL 1432 English for Occupational Communication	• Level 2 UHL 2422 English for Technical Communication
	• Level 3 UHL 2432 English for professional Communication

The engineering undergraduates whose EPT band is below 4.9 will have to study fundamentals of English for level 0 (UHL 2400 Fundamentals of English Language). The *UHL 2400 Fundamentals of English Language* is designed to develop engineering undergraduates' skills in using English language effectively. The four language skills; listening, speaking, reading and writing are integrated to strengthen students' basic comprehension, besides vocabulary and grammar skills. This course also emphasizes on improving reading and writing by applying effective strategies which include elements of contextual grammar, active vocabulary building, sentence and paragraph writing. These are fundamentals in providing essential English language skills that are needed in an academic environment.

The *UHL 2412 English for Academic Communication* (level one) also aims to equip students with the four language skills (i.e. listening, reading, speaking and writing) and study skills for academic success. The course requires engineering undergraduates to read various texts of general topics by incorporating essential reading skills. Study skills such as note-taking, note-making techniques and active listening skills are also taught. They are also exposed to thesis-support essay writing styles and organization suitable for their level. Additionally, engineering undergraduates are also exposed to oral presentations as individual and group activities. E-learning activities which utilizes language software platform are also introduced as part of the course requirement.

Upon completing level one, engineering undergraduates will register for English level two – the *UHL 2422 English for Technical Communication (ETC)*. It is designed to expose students to technical communication context relevant to academic and professional purposes. Engineering undergraduates learn and apply language skills and strategies appropriate to written and spoken technical communication for both technical and non-technical audiences. In the course, engineering undergraduates are also required to listen to, evaluate, organize, present and write technical information. The ETC course consists of, but is not limited to, technical descriptions, processes and procedures, feasibility and recommendation reports. The ETC course also trains engineering undergraduates to deliver individual and group presentations using appropriate delivery strategies and content. Additionally, engineering undergraduates have the opportunity to collaborate in teams thus developing team working skills while performing activities assigned to them.

Finally, upon completing English level two, engineering undergraduates will take level three English – the *UHL 2432 English for professional communication*. The course is designed to develop students' spoken and written communication skills which are vital in helping them to enter the job market and preparing them for workplace. Students are taught language skills and communication strategies to enable them to receive and deliver spoken and written messages effectively. They will gain practical experiences through activities and assignments necessary for job search, presentations, business correspondence and meetings. Students will have opportunities to participate in class interaction, video analysis and small group discussions.

It is expected that after completing all three levels of English (depending on UMP-EPT result), engineering undergraduates should possess necessary English language skills including the ability to deliver oral presentation effectively in order to function well in their study and future workplace. However, this is not the case.

The head of the Modern Language Department stated in an interview that based on the UMP-EPT results for the 2013/14 academic session, about 50% of 1700 new engineering undergraduates obtained bands lower than band 4.9. As a result, it is compulsory for these students to register for *UHL 2400 Fundamentals of English Language* class (level 0). While in the UMP-EPT test for 2014/15 academic session, approximately 60% of 1700 new engineering undergraduates obtained bands lower than 4.9 and these students will have to register for level 0 as well. Generally, this shows that a large number of engineering undergraduates enrolled at UMP need more English language training and support in their English language skills.

In order to meet the market demand which requires graduates to possess high English language proficiency and effective communication skills, the UMP administration has set an 'English proficiency standard' for its graduates in the UMP Strategic Plan 2011-2015 (CMLHS, 2013). The UMP Strategic Plan 2011-2015 has set the minimum standard of MUET Band 3 or equivalent to IELTS 5.5 or TOEFL 550 for undergraduates and IELTS 6.0 or achieving TOEFL 570 for postgraduate students. However, it was found that only 52% of UMP students achieved Band 3 for their MUET (CMLHS, 2013). Again, this shows a huge gap between students' English language proficiency level and the target of UMP Strategic Plan 2011-2015 and that more exposure to English language training is needed.

Workplace English Needs for Graduate Engineers

According to Goh and Chan (1993), who conducted a study among university graduates (potential employees) and companies (potential employers) in a Malaysian context, companies perceive speaking and writing as the first and second most important language skills that undergraduates should possess and that English was important for promotion and recruitment. Moreover, almost two decades after Goh and Chan's (1993) study, Kassim and Ali (2010) reported that English is used on a daily basis by engineers to participate in communicative events such as meetings, internal and external networking, conflict resolution, formal presentations, teamwork interactions, following instructions and responding orally in their workplaces.

Both university graduates and employers agree that English language plays a vital role in employability (Zainuddin et al., 2019). However, employers report that many graduates lack sufficient English oral communication skills to function successfully in the workplace (Basri et al., 2012). This includes engineering graduates' poor command of spoken English which affects their ability to deliver oral presentations (Norlida Md Shariff, 2014). This is a concern because, apart from having technical expertise, engineers' daily workplace activities require them to successfully participate in small group discussion, meetings and deliver oral presentations (Matthews & Marino, 1990; Yuzainee Md Yusoff, Azami Zaharim & Mohd Zaidi Omar, 2011). Small group discussion and meetings involve engineers' interactions with their fellow engineers to complete certain technical task, while oral presentations are required when an engineer presents his ideas to a group or audience within the same company or to external audiences. Oral presentation is defined as a talk or speech given by a presenter to an audience or two or more people (Levin & Topping, 2006). According to Irvine (2009), oral presentation is a "planned and rehearsed talk or speech that is not committed to memory or read directly from script" (p.11).

Oral presentation is very important for engineers because sometimes the purpose is to present their company's bid for contracts from other entities or to promote products from their companies to potential buyers. This shows that having oral presentation skills is very crucial for future engineers. Relating to that point, in a study by Darling and Dannels (2003) who traced former university students who are now engineers to study the importance of communication skills in their jobs, half of their respondents stated that public speaking (presentations, public speaking, public seminars and technical presentations) is important for practicing engineers'. The respondents explained that engineers need oral presentations skills when they have to make presentations about new products. The engineers also explained that presentation skills are one of the important criteria for career advancement in their organisation (Darling and Dannels, 2003).

Since language proficiency programs are important for such graduates (Thang & Wong, 2008), there is a need to conduct a curriculum evaluation of these English proficiency programs. Thang and Wong (2008) considered English language courses taught at Malaysian universities as ESP courses. This could be due to the specialisation of the course contents and materials, and specific programs created to cater for specific types of students (e.g "English for law students" or "English for engineering students"). The English proficiency program referred to in this study is also an ESP program designed for engineering undergraduates at the Universiti Malaysia Pahang (UMP). Additionally, Kassim and Ali (2010) proposed for module design and development to incorporate workplaces scenarios as the basis for activities.

With this aim, the researcher intends to conduct an evaluation of English for Specific Purposes (ESP) course for engineering undergraduates at the Universiti Malaysia Pahang focusing on the evaluation of teaching and learning of technical oral presentations skills to engineering undergraduates in *English for Technical Communication* course (UHL 2422) at UMP.

Background of the Study

Issues of graduate unemployment are not new and it has been reported for many years. In 2006, the Malaysian government announced that there were some 45,000 unemployed college graduates and one of the main reasons given was poor command of the English language (Phang, 2006). In 2011, the Ministry of Higher Education in its "Graduate Tracer Study Executive Report 2010", published on Feb 11, 2011 reported that of 174,464 graduates participated in the survey, 24.6 percent of the total number of graduates were not employed within six months of graduating. A more recent report suggests that situation is not much different in recent years. According to the News Straits Times report which was published in February 2016 quoting a data source from PEMANDU (a department under the Malaysia's Prime Minister's Office), there were about 400,000 graduates who were still looking for employment opportunities (Hussaini Abdul Karim, 2016).

While many graduates were successful in their job applications, many more are struggling and one of the reasons associated with this is lack of English communication skills. Studies of the English language needs in the workplace conducted in Malaysia suggest that graduate workers require English language skills in order to communicate effectively in the workplace as the main language for communication among them is English (Bhattacharyya, Nordin, & Salleh, 2009, 2005; Kassim & Ali, 2010; Morais, 1998; Talif & Noor, 2009; Zaharim, Omar, Basri & Isa, 2007; Haron, Hussain, Zulkifli, Nashir & Ma'arof, 2019). Although there are many factors that lead to a high number of unemployment among Malaysian graduates, the lack of English oral communication skills is identified as the main factor (Berhanuddin et al., 2007; Ministry of Higher Education Malaysia, 2012; Phang, 2006; Pillai, Khan, Ibrahim & Raphael, 2012; Tay, 2008).

Over the last two decades, employers' expectation towards graduates' language skills has remained consistent. For instance, the Malaysian Employers Federation (MEF) (2004) specifically states that employers look for "English language proficiency - oral and written communication skills" (p.16) in graduates. Furthermore, the Malaysian Employers Federation (2004) also points out that "local graduates are highly qualified but poor in English language" (p. 5). Thus, employers are not willing to send the newly employed graduates for further training including English language training as the process is costly and adds "liabilities to the corporations" (Quek, 2005, p. 233). Similarly, employment and impact surveys carried out by Malaysian companies such as the Multimedia Development Corporation, as reported by Ungku Harun (2004) and Chang (2004), and the Malaysian Employers Federation (2004) reported that employers look for oral communication, especially the ability to deliver powerful and effective presentations from graduates. Even after decades, employers' expectation of employees' delivery of effective presentations continue to be prevalent trend (Wahiza Wahi, 2014; Haron et al., 2019).

However, many employers felt that many graduates lack these skills (Seetha, 2014) and this can be seen from the findings of studies on graduate engineers' performance against the expectation of the engineering employers (Bhattacharyya, Nordin & Salleh, 2009; Talif & Noor, 2009; Zaharim, Omar, Basri & Isa, 2007). The problem became more complex as can be seen in Talif and Noor's (2009) study which highlights that the English language teaching at tertiary level in Malaysia does not provide adequate language skills needed at work.

The board of Engineers Malaysia (BEM), a body which monitors engineering curriculum in Malaysia, also emphasises students' communication ability. The ability to communicate effectively is one of the most important attributes required from engineering graduates in Malaysian Higher Learning institutions (Engineering Accreditation Council Malaysia, 2003; Megat Johari, Abdullah, Osman, Sapuan, Mariun, Jaafar, Ghazali & Rosnah, 2002). This is in line with the emphasis in the literature of workplace language needs that having good English communication skills is a required competency among other skills for employment (Bhattacharyya, 2011; Bhattacharyya & Sargunan, 2009; Kassim & Ali, 2010 among others). However, workplace oral communication covers a wide area ranging from formal presentation to informal participation in meetings and discussions among members of organization as well as with clients (Crossling & Wards, 2001).

The emphasis on employable graduates who possess skills and competencies in oral communication especially in giving effective oral presentation is also evident in a study conducted by a group of researchers who developed Malaysian Engineering Employability Skills (MEES) framework (Yuzainee et al., 2012). They reported that oral communication skills, particularly presenting ideas confidently and effectively, were ranked high by the engineering employers. Similarly, Darling and Dannels (2003) also reported that engineering workplace surveys showed that oral presentation skills are essential to success in daily engineering practice and for career advancement. This highlights the importance of developing engineering students' self-confidence and performance in oral presentations.

English for Specific Purposes (ESP) curriculum development at UMP

It is therefore imperative that university graduates be equipped with relevant English communication skills especially oral presentation skills, in order to be employed upon graduation. Realising the need for English for successful workplace communication, university English Specific Purposes (ESP) curriculum is designed towards meeting these needs (Kassim & Ali, 2010). The university English for Specific Purposes (ESP) curriculum is thus very important in preparing these students with the most needed English oral skills prior to graduating. At UMP, it is compulsory for the undergraduate engineering students to take three levels of English courses equivalent to 6 credit hours prior to graduation. Hence an evaluation of such English language curriculum is very crucial and this study is proposed with that objective in mind.

According to DiSanza & Legge, (2003) the types of presentations that fit under technical communication include laboratory presentations, feasibility reports, progress/status reports, survey presentations, training lectures and business reports. In this study, in line with the definition given by Disanza and Legge (2003), engineering undergraduates' oral presentations learning and teaching activities in the UHL 2422 English Technical Communication (ETC) course is a form of technical oral presentation (TOP).

Technical oral presentation (TOP) refers to "a prepared formal presentation on scientific, engineering, technological, business types, regulatory, legal, managerial, or social scientific information topics to non-expert audience" (DiSanza & Legge, 2003). According to Bhattacharyya & Sargunan (2009), a technical communication course such as the UHL 2422 English for Technical Communication, where the technical oral presentation is common tasks for students, is an offshoot of ESP pedagogy. In the context of UMP, Technical Oral Presentation (TOP) being a common task for engineering undergraduates is a set of skills taught in the UHL 2422 English for Technical Communication (ETC) course as can be seen in the course pro forma in Table 1.4. The following Table 1.4 delineates the course pro forma and the weekly planner of the UHL 2422 English for Technical Communication for semester 1 2016/2017 in which this study was conducted.

Table 1.4

The Course outline and the weekly planner of the UHL 2422 English for Technical Communication course for semester 1 2016/2017

Course Code	UHL 2422
Course Name	ENGLISH FOR TECHNICAL COMMUNICATION
Rationale	University Course
Program Level	Bachelor
Credit Hour(s)	2
Prerequisite Course	UHL 2412 ENGLISH FOR ACADEMIC COMMUNICATION
Course Synopsis	The course is designed for technical communication relevant to academic and professional purposes. It provides opportunities for students to learn and employ language skills and strategies appropriate to written and spoken technical communication for professional audiences. In the course, students are required to listen to, evaluate, organize, present and write technical information. The contents of the course consist of, but not limited to, technical descriptions, processes and procedures, feasibility and recommendation reports. Additionally, students have the advantage to collaborate in teams while performing activities assigned to them. Students are encouraged to benefit in language learning when they engage in self-access activities.
Course Outcomes (CO)	By the end of the semester, students should be able to: CO1. determine salient information from listening tasks related to technical information using accurate language CO2. demonstrate presentation skills using relevant content, accurate language and appropriate delivery strategies individually and in groups

Table 1.4 (Continuation)

Course Code	UHL 2422
	CO3. apply reading strategies and grammar components for technical reading materials and documents CO4. write technical documents using specific technical language, correct format and relevant content

W	TOPIC	FIRST MEETING	SECOND MEETING
1	Technical Description (5 – 9 September 2016)	Introduction to the course Ice-breaking session **1.1 Introduction to technical communication** 1.1.1 Defining technical communication 1.1.2 Types of technical writing	**1.2 Analyse and evaluate samples of description** 1.2.1 What is a description? 1.2.2 Sources of description (i.e. shape, appearance, properties of materials & functions) used in describing an object or product. 1.2.3 Audience analysis
2	Technical Description (12 – 16 September 2016)	**1.3 Writing a description** 1.3.1 Technical Description Outline - Introduction - Body (Description of Main Parts) - Conclusion	1.3.2 Language used in describing an object or product. - Parts of speech - Simple present - Active voice
3	Process Explanation (19 – 23 September 2016)	**2.1 Introduction to process explanation** 2.1.1 What is a process? 2.1.2 Types of process explanation - Informational - Directional ***Briefing on Assessment 1**	**2.2 Directional** 2.2.1 Imperatives 2.2.2 The passive voice
4	Process Explanation Presentation skills (26 – 30 September 2016)	**2.3 Informational** 2.3.1 The passive construction 2.3.2 Transition words and phrases 2.3.3 Sequence connectors	**3.1 Review of presentation skills** 3.1.1 Basic framework of presentation (Intro, body & conclusion) 3.1.2 Types of presentation - Standard presentation (informative) - Corporate presentation (persuasive) - Guidelines for Effective

Table 1.4 (Continuation)

Course Code		UHL 2422	
			Presentation **3.2 Persuasive Presentation Signpost Expressions**
5	Presentation Skills (3 – 7 October 2016)	**3.3 Describing Processes Using Infographic Format** **3.4 Speaking practice** 3.4.1 Present an effective And persuasive 'product pitch'.	**3.4 Continue Speaking practice** 3.4.1 Present an effective and persuasive 'product pitch'.
6	Presentation Skills (10 – 14 October 2016)	**Assessment 1 – Speaking (25%) and Writing (10%)**	
7	Standard Operating Procedure (SOP) (17 – 21 October 2016)	**4.1 Introduction to SOP** 4.1.1 Definition 4.1.2 Types of SOP 4.1.3 Format of Technical SOP	Format Practice (SOP)
	(24 – 28 October 2016)	**Mid Sem Break**	
8	Standard Operating Procedure (SOP) (31 October – 4 November 2016)	**4.2 Graphic** 4.2.1 Language used in SOP – Imperatives 4.2.2 Sentence structure – simple, compound, complex	Writing practice (SOP)
9	Standard Operating Procedure (SOP) (7 – 11 November 2016)	**4.3 Flowchart** 4.3.1 Language used in SOP – Yes/ No questions **4.4 Hierarchical**	Writing practice (SOP)
10	Standard Operating Procedure (SOP) (14 – 18 November 2016)	**4.5 Listening Strategies** 4.5.1 Before listening 4.5.2 While listening 4.5.3 After listening Listening practice (SOP)	**Assessment 3A – Reading (SOP) 15%** **Assessment 3B – Listening (10%)**
11	Reports (21 – 25 November 2016)	**5.1 Comparison: Feasibility & Recommendation Reports**	5.1.3 Feasibility & Recommendation Report: Writing Format

Table 1.4 (Continuation)

Course Code		UHL 2422	
		5.1.1 Approaches to comparison (point-by-point and whole-to-whole approach) 5.1.2 Comparison between recommendation and feasibility reports	-The memorandum format
12	Reports (28 November – 2 December 2016)	5.1.4 Writing a report 5.1.5 Language use in reports (discourse markers, comparison of adjectives & adverbs)	5.1.6 Report proposal/Outline
13	Reports (5 – 9 December 2016)	Drafting a report Group consultation	Group consultation
14	Reports (12 - 16 December 2016)	**Assessment 4 – Report– Technical Oral presentation (15 %) (Individual)** **Submission of Assessment 4: Report– Written (25 %)(Group)**	
16		**SUMMARY OF ASSESSMENTS** • Assessment 1 – Oral Presentation, Writing (35%) - *Week 6* • Assessment 2 – Reading (SOP) (15%) & Listening (10%) - *Week 10* • Assessment 3 – Technical Oral Presentation (15 %) (Individual) & Written (25 %) (Group)-*Week 14*	

At UMP, Outcomes Based Education (OBE) methods is officially a top-down imperative order from the University Senate committee and it should be fully adopted and implemented in educational program curriculum development. In line with the Outcomes Based Education (OBE) methods of teaching and learning which are adopted as the philosophy behind the curriculum and educational program development, the UHL 2422 English for Technical Communication course is also developed towards students attaining learning goals at the end of the course.

As can be seen in the pro forma, engineering undergraduates taking this course will be taught Technical Oral Presentation skills and they are required to deliver two Technical oral presentation tasks to achieve the following course outcome no 2;

> CO2. demonstrate presentation skills using relevant content, accurate language and appropriate delivery strategies individually and in groups

The first TOP task is on product description and the second is a recommendation report presentation. The data for this study only focus on the first TOP task which is called "Technical Oral Presentation: Product Description" and this task covers topics in technical description and process explanations.

Therefore, in essence, this study will only evaluate one section of *English for Technical Communication (UHL 2422).* The focus of this evaluation is on the teaching and learning of technical oral presentation skills. This is because, unlike English level 1 (*UHL 2412 English for academic communication*) and Level 3 (*UHL 2432 English for professional communication*), UHL 2422 English for Technical Communication is the only course that formally covers a section on Technical Oral Presentation (TOP) skills in the syllabus. TOP is the set of skills needed by graduates and are the focus of this study.

Research Gap

There is an extensive amount of literature that highlights the importance of oral communication in the workplace (Bhattacharyya, Nordin, & Salleh, 2009; Crossling & Ward, 2002; Hart-Rawung & Lynne, 2008; Kaewpet, 2009; Kassim & Ali, 2010, Lehtonen & Karjalainen, 2008; Myles, 2009; Smythe & Nikolai, 2002 among others). Oral communication skill is given more emphasis than written communication in industries and Malaysian employers expect employees to possess and demonstrate this skill as early as the recruitment interview stage (Kassim & Ali, 2010). In the Malaysian workplace context also, Bhattacharyya, Nordin and Salleh (2009) discovered that oral communication is important in meetings, participation in team communication and in non technical discussions.

Since one of the important sub-skills for oral communication needs of professional engineers is the ability to give effective oral presentation (Yusoff, 2010; Radzuan & Kaur, 2011), developing effective oral presentation skill is crucial for engineering undergraduates (Berjano, Sales-Nebot, & Lozano-Nieto, 2012). Oral presentations forms an integral part of oral assessment and evaluation practices in engineering education; and in engineering workplaces, oral presentations form engineers' daily activities and will continue to be an essential part of their oral communications (Bhattacharyya, Nordin & Salleh, 2009; Idrus, Salleh & Abdullah, 2011; Kassim & Ali, 2009; Radzuan & Kaur, 2011; Yusoff, (2010).

From the above description of English communication skills needed in workplace, it can be said that the university ESP programs taught to engineering undergraduates are very important and could serve as the final 'formal' English language training before being employed upon graduation. Workplace surveys showed that communication skills are essential to success in engineering practice, however much of the instruction provided in university is not clearly related to these practice needs (Reave, 2004). In particular, Reave discovered a large gap between workplace needs and engineering graduates' communication skills. One possible explanation for the above scenario is there is a missing link between university and industry resulting in a possible mismatch of supply and demand - what university supplies 'does not fit' the needs of the industry. Hazlan Zakaria (2013) points out that the disconnect between university and industry resulted in the teaching syllabus which does not conform the industry needs and subsequently resulted in unemployable graduates. Similarly, Sarudin, Mohd Noor, Zubairi, Tunku Ahmad and Nordin (2013) assert that there is a gap between English language proficiency of Malaysian graduates and the English language requirement of industry. Poedjiastutie and Rifah (2019) reported that their students who attended internship program in industry expressed dissatisfaction on ESP courses offered at their university as not fulfilling their English communication needs for workplace. This confirmed the notion that it is vital to understand the needs of industry and equip undergraduates with necessary skills needed by industry including that of English for workplace communication needs. This scenario suggests that there is a paucity of research that has examined the extent and nature of employers' demands from ESL education for engineering undergraduate students at least in the context of ESP learning at University Malaysia Pahang. The input from engineering industry stakeholders is crucial for UMP undergraduate engineering students as it will be very influential for their future workplace communication competencies. Without adequate input from engineering industry, it may be argued that the course designers will design their language curriculum based on their beliefs and assumptions.

Without clear understanding of workplace language needs and communication practices, it is likely that the university English language preparation program will not be able to provide undergraduate students with the linguistic competence required for communication in the workplace. Talif and Noor (2009) suggest that the English language teaching at tertiary level in Malaysia does not provide adequate language skills needed at work. To expose students to the language skills needed at work, the teaching of English to tertiary students may consider employing authentic workplace communication situations relevant to the future workplace of the students. Students may need different language skills depending on their disciplines of study and the types of workplace they intend to work. This notion has been stressed by Lehtonen and Karjailainen (2008) who highlight that literature on Language for Specific Purposes (LSP) and English for Specific Purposes (ESP) has shown that an individual who works in different contexts needs different types of language use.

This shows there that is a necessity to conduct an evaluation of ESP curriculum implementation which focuses specifically on teaching and learning of oral presentation skills at universities with the view to fulfilling the needs of industry. In line with this, this study explored one important component of oral communication skills much needed from graduates to be successful in engineering workplace - the oral presentation skills (Yuzainee et al., 2012) and its teaching-learning process within English for Specific Purposes courses taught to engineering undergraduates at UMP.

In an attempt to understand the English communication needs of engineers in the workplace, Kassim and Ali (2009), who are also language instructors at the Centre for Modern Language and Human Sciences (CMLHS) UMP, studied communicative events in which engineers use their English communication skills and other language skills needed at the engineering workplace. They discovered that the communicative events which are important for engineers are teleconferencing, networking for contacts and advice, and presenting new ideas and alternative strategies. According to them, possessing a desired level of fluency in the English language is an important criterion for career advancement in the engineering field. They concluded that although the findings on the communication activities from the industry are crucial, it is necessary to get the feedback from education communities and curriculum developers so that "any ESP courses offered at the university level will significantly provide students with the necessary communication skills" (p. 180). Following that, an evaluation of the ESP program for undergraduate engineering students at UMP focusing on the implementation of teaching and learning of oral presentation skills is necessary.

Considering the relevant literature to date, there is a lack of study that focuses on the evaluation of curriculum implementation for teaching and learning of oral presentation skills among engineering undergraduates in Malaysia. Previous research on oral presentation skills focus on oral presentation anxiety among engineering students (Radzuan & Kaur, 2011); the experience of engineering undergraduates giving English oral presentations to supervisors during their 20-

week industrial internship program (Yusoff, 2010); presenter skills and attributes as perceived important by stakeholders from engineering industry (Bhattacharrya & Sargunam, 2009; Bhattacharyya, 2011) and genre of engineering oral presentations (Seliman, 1996). This study is proposed with the idea to fill the gap in the literature that one specific evaluation study which documents the implementation of teaching and learning of technical oral presentation skills components for engineering undergraduates at tertiary level is needed.

For that purpose, this study aims to evaluate the components of oral presentation skills in English Technical Communication (ETC) course for engineering undergraduates at the Universiti Malaysia Pahang and to gain perspectives from industry over the performance of engineering undergraduates in delivering technical oral presentation.

The need to conduct a curriculum evaluation such as the one proposed here is also an effort to fill the gap in the literature of curriculum evaluation. According to Erozan (2006), although many studies have been conducted on second language program evaluation, there is still a paucity of research published in this area. Erozan (2006) further points out that "there are not many published studies which can inform evaluators, teachers, or researchers about language program evaluation case studies conducted in different contexts" (p. 6).

Problem Statement

An individual who possesses effective communication skills is proven to have an advantage in both academic and professional settings (Crossling & Ward, 2002). In the engineering field for example, all engineering graduates are expected to be highly competent in written and spoken communication. The engineering accreditation bodies such as the Washington Accord, Accreditation Board of Engineering and Technology (ABET) and Malaysian Engineering Accreditation Council (EAC) have highlighted one of the significant learning outcome of engineering education curriculum is to produce engineers who possess effective communication skills.

This corresponds with engineering professional work demands where most of their time is spent on written and oral communication (Darling & Dannels, 2003; Dannels, Anson, Bullard & Peretti, 2003; Kassim & Ali, 2009; Kaewpet, 2009). For instance, in their everyday tasks, practising engineers are required to communicate ideas and concepts to a group of people through formal and informal oral presentations (Crosling & Ward, 2002; Darling & Dannel, 2003). As outlined by Crossling and Wards (2001) oral communication covers a wide area of communicative activities ranging from formal presentation to participation in meetings and discussion among workers or clients. This is challenging as research shows that delivering oral presentations is considered the most stressful communicative event rated by Asian students (Woodrow, 2006) and second language learners (Kunioshi et al., 2014). Therefore, teaching and learning of oral presentation skills to these learners for their workplace communication needs must be emphasised in English for Specific Purposes curriculum.

The workplace communication needs literature shows that employees' involvement in formal presentation is one of the most important communication activities in the workplace and very often become very influential criteria for job promotion (Crossling & Ward, 2001; Dannels & Darling, 2010; Kassim & Ali, 2010). Formal oral presentation skill is among the most needed communication skills for Malaysian students to be successful in workplace (Lynch, 1999). In an effort to prepare students for workplace communication, university language specific curriculum like English for Specific Purposes (ESP) curriculum for engineering undergraduates also include formal oral presentation as an important skill for students in classroom teaching and learning.

However, Dannels and Darling (2001) stated that there are inadequacies of communication skills development in an engineering curriculum despite evidence which suggests that communication skills are critical to engineering practices. A similar notion was put forward by Bhattacharyya and Sargunan (2009) who suggest enhancement in teaching and learning as well as in ESP material developments so that undergraduate "students will develop necessary communicative skills required for effective communication in the workplace" (p.1035).

Based upon this notion of inadequacy of oral communication skills among engineering graduates, although they have gone through university ESP courses, there is a need to conduct an ESP curriculum evaluation which focuses on its implementation. According to Lynch (1999), oral presentation is the most difficult skill and the most needed skill for Malaysian students entering the job market. A study by Kassim and Ali (2010), a decade after Lynch's report (1999), shows that oral presentation skills continue to be the most needed skills in the workplace. In 2014, Wahiza Wahi reported that oral presentation skills continue to be highly valued by employers in the workplace.

Since its introduction in 2002, ESP curriculum implementation at UMP has not been evaluated. An evaluation of curriculum implementation is important to ensure it achieves specified objectives which include producing students who are highly competent English language speaker ready for workplace communication demands. Rea-Dickins and Germaine (1998) argue that systematic evaluation should be placed at the very heart of a program as it could contribute towards program improvement. Looking at the demand of English oral skills in the workplace, a comprehensive evaluation of the implementation of teaching and learning of technical oral presentation skills in the English for Specific Purposes (ESP) curriculum at UMP is inevitable.

Findings will guide program administrators to make decisions regarding efforts to improve certain aspects of the course under study. The information will help the program administrators to make decisions regarding aspects of the teaching and learning of oral presentation skills in the UHL 2422 English Technical Communication course. In order to achieve that purpose, this study adopts the CIPP (Context- Input- Process- Product) Model for program evaluation which is suitable for guiding administrators' decision making purpose (Stufflebeam & Shinkfield, 2007). The CIPP Model provides a systematic and comprehensive evaluation of the teaching and learning of oral presentation skills component by providing data in the aspects of *context, input, process* and *product evaluation*. The application of the CIPP Model may provide a complete description of the implementation of T&L of oral presentations skills within the ESP curriculum at UMP.

Problem in Engineering Undergraduates' Poor Technical Oral Presentation Skills

This study emanates from the feedback of poor communication and presentation skills of UMP internship students' as reported by their industry internship supervisors. The feedback was collected based on internship supervisors' formal performance evaluation report after industrial training at private industries in 2014. Based on the feedback, data showed that employers rated that the industry internship engineering undergraduates' communication skills which include skills to deliver effective technical oral presentation to be at less satisfactory level.

This points out engineering undergraduates' lack of communication and technical oral presentation skills as perceived by employers in engineering workplaces although they have had exposure of these skills in English language courses designed for them. These illustrates the severity of English command of engineering undergraduates as seen by the employers thus postulating the necessity to conduct an evaluation of the components of technical oral presentations taught to engineering undergraduate students.

Also, this study emanates from the researcher's own experience of teaching technical oral presentation for engineering undergraduates. Despite specific allocation of time for the learning of technical oral presentation, engineering undergraduates still face problems in delivering effective presentations. Faculty lecturers who teach engineering subjects also voice their dissatisfaction with students' technical presentation skills. Besides, the English language instructors also observed that generally students' performance in technical oral presentations are still less satisfactory and need improvement.

In the UHL 2422 English for Technical Communication course, engineering undergraduates are exposed to technical oral presentation skills for about four hours a week. Four out of 14 weeks are allocated for the teaching and learning of technical oral presentation skills. Throughout the four weeks, students are taught 16 hours of skills to deliver technical oral presentations. The fourth week is normally allocated for an assessment of students' technical oral presentations. One classroom can accommodate approximately 30 students and one instructor will teach all language courses for 14 weeks. Class are conducted for two hours weekly in language labs which are equipped with desktop computers for 30 students and another two hours in normal classrooms with only one desktop computer for instructors' use.

A preliminary interview was conducted among the ESP instructors. From a preliminary interview with five instructors teaching ETC UHL 2422, they expressed their concern that engineering undergraduates were unable to effectively deliver their technical oral presentation. While delivering the technical oral presentations as part of course assessments, engineering undergraduates displayed lack of presentation skills and were detected to have difficulties in their English language. The instructors highlighted that engineering undergraduates lack non-verbal skills, vocal characteristics and appropriate facial expressions including eye contact, posture and gestures. During presentations, engineering undergraduates displayed difficulties in transition signals, range of vocabulary and grammar knowledge such as inappropriate use of tenses, signs of inconsistencies of use of subject verb agreement (SVA) and poor pronunciation of words.

Although there are specific time allocations for the teaching and learning of technical oral presentation skills, the instructors suggested that generally students' performance in technical oral presentations needs improvement. According to them, engineering undergraduates show inhibiting factors such as anxiety, mother tongue influence and lack of sensitivity to format and the content of oral presentations taught in lectures. All instructors also highlighted that the time allocation for oral presentation skills should be increased and that students need more time for classroom practices.

Similar responses were also reported in a study conducted by Radzuan (2013) at UMP where UMP engineering undergraduates were found to have difficulties in the forms of a high anxiety level which caused them to read from slide to slide, have limited ranges of vocabulary, inadequate knowledge on presentation topics and contents, lack of confidence to speak and inability to establish rapport with audiences when delivering technical oral presentations. The engineering undergraduates' lack of oral presentation skills despite allocation of teaching and learning time for oral presentation skills in the English for Technical Communication a cause of concern among instructors.

In the context of English for Specific Purposes (ESP) teaching to engineering undergraduates, an evaluation of technical oral presentation skills in teaching and learning represent a specific focus area of scholarship which are still underdeveloped and could provide useful information for curricular development and design. The existing problems in engineering undergraduates' technical oral presentations as expressed in the interview with the language instructors shows the necessity to conduct an evaluation study of the teaching-learning of TOP skills within the UMP ESP curriculum.

The conflicts highlighted above depict issues with the engineering undergraduates' technical oral presentation skills and this warrants an evaluation of the implementations of the course UHL 2422 English for Technical Communication (ETC).

Conceptual Framework

This section provides a brief explanation of how the CIPP Model (Stufflebeam & Shinkfield, 2007) will be used in the context of the proposed study. The CIPP Model stands for the evaluation of an entity's context, input, process and products. The CIPP Model is used as a conceptual framework of the study because it is suitable to address the problems mentioned earlier.

According to Stufflebeam and Shinkfield (2007), "A fundamental tenet of the CIPP model is that the most important purpose of evaluation is not to prove but to improve" (p.331). The CIPP model is a comprehensive framework for guiding evaluations of programs, projects, personnel, products, institutions, and systems (Stufflebeam & Shinkfield, 2007). Since its early development, the model has been further developed, adapted and applied in the evaluation in schools, universities, private colleges, government agencies, housing projects communities, economic development programs and as systems to evaluate teachers, administrators and military personnel (Stufflebeam & Shinkfield 2007). According to Stufflebeam and Shinkfield (ibid), evaluation is "a process of delineating, obtaining, reporting, and applying descriptive and judgmental information about an object's merit, worth, significance and probity in order to guide decision making, support accountability, disseminate effective practices and increase understanding of the involved phenomena" (p.326). The CIPP Model considers evaluation as a continuing process and information is provided to management for the purpose of making decisions

(Stufflebeam & Shinkfield, 2007). In CIPP model, information is provided to the management for the purpose of decision making involving a three step process; delineating the information necessary for collection; obtaining the information and providing the information to relevant parties (Ornstein & Hunkins, 1988).

Figure 1.1 shows an adapted CIPP Model (Stufflebeam & Shinkfield, 2007) where the acronym CIPP stands for evaluation of an entity's *context, inputs, processes and products.* Brief statements on the sources of evaluation information under each acronym CIPP are given.

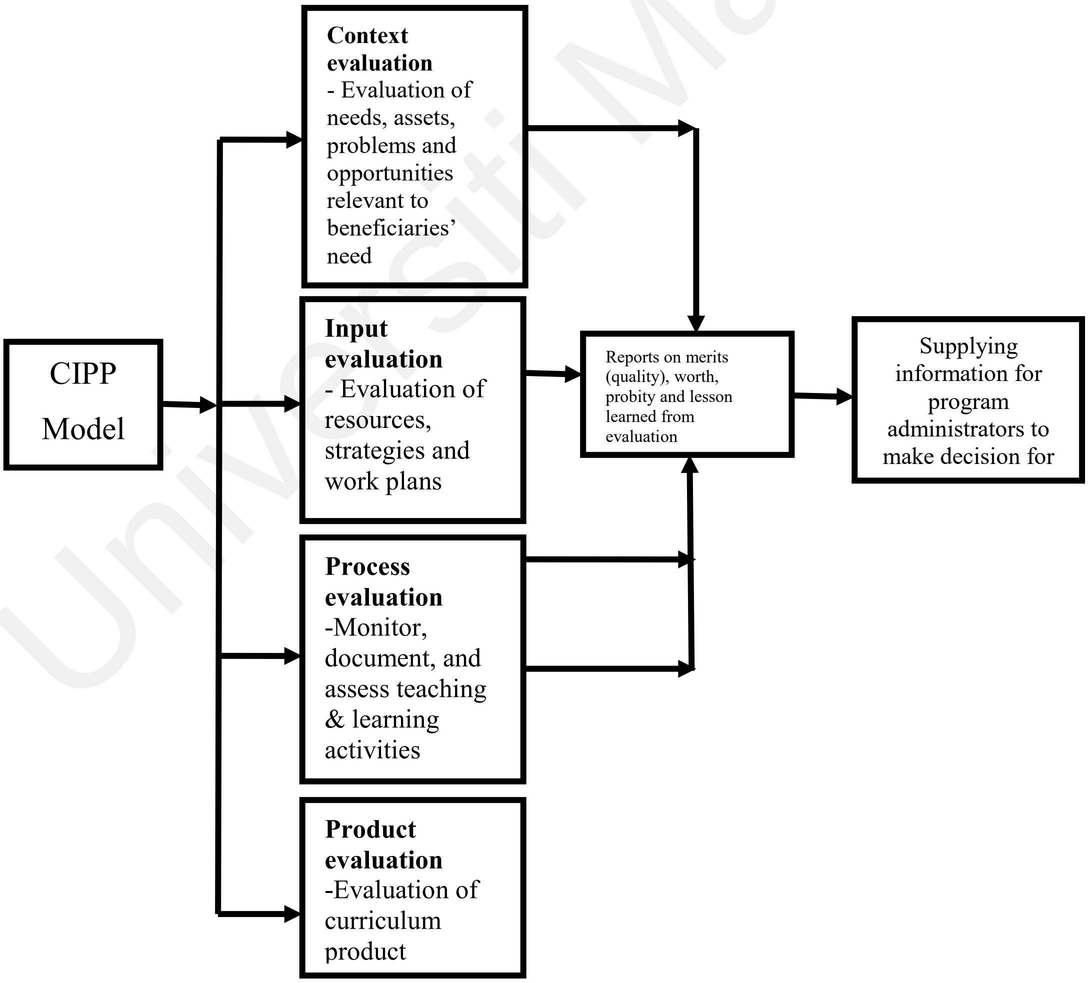


Figure 1.1: The CIPP Model adapted from Stufflebeam & Shinkfield (2007)

Context Evaluation

Context evaluation is often referred to as needs assessment (Zhang, Zeller, Griffith, Metcalf, Willaims, Shea & Misulis (2011). It asks, "What needs to be done?" and "helps assess needs, problems, assets, and opportunities within a defined community and environmental context" (Stufflebeam & Shinkfield, 2007, p. 325). According to Stufflebeam & Shinkfield (2007), the objective of context evaluation is to define the relevant context, identify the target population and assess its needs, identify opportunities for addressing the needs, diagnose problems underlying the needs, and making judgement whether program goals are sufficiently responsive to the assessed needs. *Context evaluation* assesses needs, problems, assets and opportunities and the information will help decision makers to redefine and make judgment about goals, priorities and outcomes of programs (Stufflebeam & Shinkfield, 2007). *Needs* include 'those things that are necessary or useful' in fulfilling a defensible purpose (ibid p.326). A defensible purpose defines what is to be achieved related to the mission of the institutions. *Problems* are obstacles that hinder meeting and continuing to meet targeted needs while *assets* include expertise and services that could be used to help fulfil the targeted purpose. *Opportunities* include funding program that could be tapped to support efforts to meet needs and solve arising problems. In this study, *opportunities* is not evaluated because UMP is a public university where funding is received from the Malaysian Ministry of Higher Education.

Context evaluation involves studying the environment of the program by defining the relevant environment, analysing desired and actual conditions pertaining to that environment, focusing on unmet needs and missed opportunities and diagnosing the reasons for not meeting the needs of the beneficiaries (Ornstein & Hunkins, 1988). Among the context evaluations' main objectives are to identify intended beneficiaries and to identify problems or barriers to meeting the assessed needs. In this study, context evaluation focuses on identifying the needs of the beneficiaries which are the students' communicative language needs in terms of developing Technical Oral Presentation (TOP) skills.

In this study, as stated in Figure 1.1, the *context evaluation* assessed *needs, assets* and *problems.* Assessment of *needs* includes collecting information on (a) the 'relevance' of the UHL 2422 English Technical Communication curriculum to fulfil students' needs of English oral communications skills development especially in giving TOP in line with English language communicative needs for employment in Malaysia; (b) assessment of *assets* in terms of facilities and services to help support engineering undergraduates' learning; and (c) assessment of problems faced by students in developing their technical oral presentation (TOP) skills.

Input Evaluation

Input evaluation assesses feasibility of approaches, action plans, staffing plans and budget to meet targeted needs and achieve program goals (Stufflebeam & Shinkfield, 2007). In educational settings, the *input evaluation* is related to the evaluation of resources, strategies and work plans to achieve the underlying curriculum objectives (Stufflebeam & Shinkfield, 2007). It assesses the current system capabilities and critically examine to what extent resources are used and whether they are used appropriately (Zhang et al., 2011). Methods used to conduct an input evaluation include inventorying and analysing available human and material resources, proposed budgets and schedules, and recommended solution strategies and procedural designs (Zhang et al., ibid).

In the context of the proposed study as stated in Figure 1.2, *input evaluation* evaluates the resources in the following; (a) the instructors' perception on the suitability of contents related to TOP skills in the UHL 2422 English for Technical Communication teaching module, (b) students' perception on the suitability of contents related to TOP skills in the module as well as (c) profiling information on the background and experiences of instructors. Similar to this study, other researchers like Abdul Rahman (2012) and Ismail (2008) also evaluated teaching modules, teaching aids and compiled information about qualifications and experiences of teaching staff under the input evaluation.

Process Evaluation

The main purpose of process evaluation is to examine the development and the implementation of programs (Christie & Fierrro, 2010). *Process evaluation* monitor, document, and assess program activities (Stufflebeam & Skhinkfield, 2007) by observing the processes that occur during the implementation of programs. The *process evaluation* is related to the evaluation of the implementation of program plans and documentation of the process (Stufflebeam & Shinkfield, 2007). *Process evaluation* also serves as a guideline and will determine if the implementation plan needs to be realigned. According to Stufflebeam and Shinkfield (2007), *process evaluation* enables evaluators to redefine the strategies, work plan and understand the background of program which is under evaluation. Information collected under *process evaluation* is useful for monitoring program implementation and helps to explain what program components worked and why (Christie & Fierrro, 2010). (Stufflebeam (1971) suggests three strategies for process evaluation - to detect or predict defects in the procedural design or its implementation stage; to provide information for decisions and maintain a record or procedures as they occur during implementation.

To deal with program defects or the first strategy, Ornstein & Hunkins (1988) assert that it is vital for educators to identify and observe the potential source of program failures and effort should be made to maintain communication channels among all affected parties. Ornstein & Hunkins (1988) also suggest evaluators maintain a record of procedures of main features of the project designs for example "the particular content selected, new instructional strategies or innovative students – teacher planning sessions" (p.331). In the words of Christie and Ferro (2010), process evaluation focus on "what services were provided to whom and how, and describes how the program was implemented, who was involved and what problems were experienced" (p.706). In this study, the process evaluation assesses the implementation process and this study evaluates -the TOP assessment rubric, instructors' feedback and TOP T&L activities.

Product Evaluation

Product evaluation examines the achievement of learning outcomes as a result of curriculum implementation. The purpose of *product evaluation* is to measure, interpret and judge a project's outcome by assessing their merit, worth, significance and probity. According to Stufflebeam and Shinkfield (2007), its main objective is to ascertain the extent to which the needs of all the rightful beneficiaries were met. In doing that, product evaluation identifies and assesses project outcomes. Product evaluation asks, “Did the project succeed?” and it collects description and judgment of project’s outcomes and relate them to *context, input and process* information (Stufflebeam & Shinkfield, 2007). Product evaluation is done by defining and measuring outcome criteria, collecting judgments of outcomes from stakeholders, performing both qualitative and quantitative analyses, and comparing outcomes with assessed needs (ibid).

Product evaluation is divided into *impact, effectiveness, sustainability* and *transportability* evaluation (Stufflebeam & Shinkfield, 2007). Impact evaluation assesses program’s reach to the target audience. Effectiveness evaluates documents and assesses the quality and the significance of outcomes from a project being evaluated. Sustainability evaluation assesses the extent to which a program’s contributions are institutionalized successfully and continued over time. Transportability evaluation assessed the extent to which a program has a potential to be adapted in different settings.

This study adopted only *effectiveness* evaluation. In conducting *effectiveness* evaluation, Stufflebeam (2007) suggests the evaluators to interview key stakeholders such as community leaders, beneficiaries, program leaders and staff and other interested parties to determine their assessment of the program’s positive and negative outcomes. For *sustainability* evaluation, Stufflebeam (ibid) suggests the program evaluator to interview program leaders, staff and beneficiaries to identify their judgments about what program success should and could be sustained. Stufflebeam and Shinkfield (2007) used the term ‘evaluands’ to refer to subjects or objects of evaluation study.

In this study, the evaluands are the engineering undergraduates and their English technical oral presentation skills teaching and learning experience in the UHL 2422 English for Technical Communication course. According to Stufflebeam and Shinkfield (2007) "... a product evaluation should gather and analyse stakeholders' judgments of the enterprise" (p. 345). They also stated that feedback about achievements is important both during the implementation of the program and at the end of the program.

In this study, only the aspect of 'effectiveness' is studied because as suggested by Stufflebeam & Shinkfield (2007), it involves relevant stakeholders' assessments on program's positive and negative outcomes. As stated in Figure 1.2, *product effectiveness* evaluation involves collecting information and judgement from selected stakeholders from engineering industry regarding UMP engineering undergraduates' skills in giving technical oral presentations. The key stakeholders are selected experts from engineering industry whose positions are influential and often involves recruitment and staff management.

In short, this study proposes an adaptation of the CIPP model by Stufflebeam and Shinkfield (2007) as the research framework as shown in the diagram (Figure 1.2). The elements under each of the CIPP model are developed based on the definitions given by Stufflebeam & Shinkfield (2007) which led the researcher's decision to include the elements under each CIPP acronym in Figure 1.2. Similar elements were also prevalent in Abdul Rahman (2012) and Ismail (2006). According to Alkin and Mc Neil (2001), the CIPP Model with its four attributes – *Context-Input-Process–Product* offers a systematic procedure designed to provide information for decision-making, usually by program administrators.

Figure 1.2 illustrates the CIPP evaluation Model and its subcomponents, proposed to be 'items' of evaluation under each context, input, process and product component, which are adopted as the research framework in this study.

Finally, this study is intended to make contributions to the field of evaluation through an application and expansion of the CIPP Evaluation Model (Stufflebeam & Shinkfield, 2007) applied to guide the evaluation study of technical oral presentations (TOP) components for engineering undergraduates. As put forth by Stavropoulou and Stroubouki (2014), "The efforts of some evaluation researchers to facilitate the application of evaluation in practice led .... to the emergence of innovative thinking in the area of evaluation"(p.202). It is intended that this study contributes to the literature of course evaluation in the teaching of English for Specific purposes for engineering undergraduates' context.

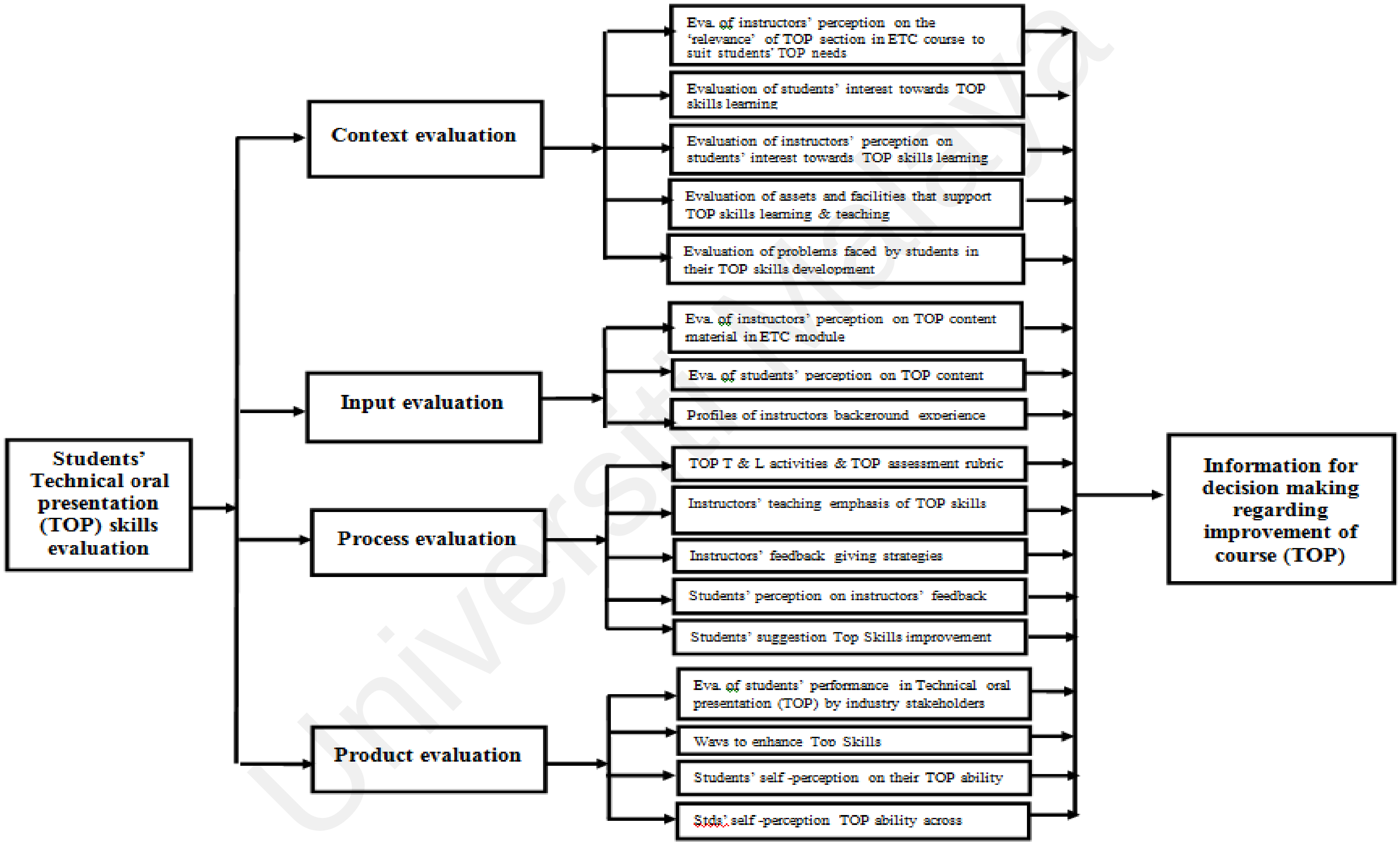


Figure 1.2: A conceptual framework adapted from the CIPP Evaluation Model (Stufflebeam & Shinkfield, 2007)

Objectives of the Study

The main purpose of the study is to evaluate the TOP components within the UHL 2422 English Technical Communication (ETC) course for engineering undergraduates at the Universiti Malaysia Pahang. The study will be conducted to achieve the following objectives which are derived from the evaluation components in the CIPP Model (Stufflebeam & Shinkfield, 2007).

i. Context Evaluation.

To conduct Context evaluation which assesses engineering undergraduates and instructors' perspectives on the 'relevance' of TOP skills within the ETC course to students' English oral communication and TOP skills development for their future workplace needs.

To conduct Context evaluation which assesses students' level of interest, facilities that support learning and problems faced by students in relation to their TOP skills development.

ii. Input Evaluation.

To conduct Input evaluation which assesses instructors and engineering undergraduates' perspectives on the resources provided for the teaching and learning of TOP skills within the English Technical Communication course.

iii. Process Evaluation.

To conduct Process evaluation which assesses the implementation of TOP teaching and learning in the aspects of assessment rubric, TOP skills emphasis in teaching and learning, instructors' feedback, TOP skills teaching activities in classroom and instructors' approaches in dealing with students' anxiety and fear of delivering TOP.

iv. Product Evaluation.

To conduct Product evaluation which assesses the effectiveness of engineering undergraduates' technical oral presentation (TOP) skills and ways to enhance these skills based on the perspectives of stakeholders from engineering industry.

To conduct product evaluation which gauge students' own perceptions on their TOP skills competencies across faculties.

Specific objectives and sub objectives are further detailed in Chapter 3.

Research Questions

The study seeks the answers to the four major research questions outlined based on the four research objectives derived from the CIPP Model (Stufflebeam & Shinkfield, 2007).

i. Context Evaluation.

How do instructors and engineering undergraduates regard the 'relevance' of TOP skills course outcomes within the English for Technical Communication (ETC) course for students' English communication needs and their TOP skills development? To what extent do context evaluation of needs, assets and problems within the ETC course contribute towards students' TOP skills development?

ii. Input Evaluation.

How do instructors and engineering undergraduates evaluate the resources provided for the teaching and learning of TOP skills component within the English Technical Communication course?

iii. Process Evaluation.

How do instructors implement the teaching and learning of TOP skills in classroom? How do engineering undergraduates describe classroom activities and instructors' feedback on their TOP skills learning? What suggestions for improvement efforts can be drawn from these?

iv. Product Evaluation.

How do stakeholders from engineering industry perceive engineering undergraduates' TOP skills? In what ways could students' TOP skills be enhanced as seen by engineering industry stakeholders? How do students perceive their competency in delivering TOP across faculties?

Theoretical Framework

This study adopts Situated Learning Theory (Lave & Wenger, 1990) as a baseline theory. Situated Learning Theory (Figure 1.3) posits that learning is unintentional and situated within authentic activity, context, and culture. In contrast to most classroom learning activities that involve abstract knowledge which is out of context, Lave and Wenger (1990) argue that learning is situated; that is, as it normally occurs, learning is embedded within activity, context and culture. Learning processes also usually occur unintentionally rather than deliberately and knowledge needs to be presented in authentic contexts and settings. Social interaction and collaboration are essential components of situated learning where learners become involved in a "community of practice" which embodies certain beliefs and behaviors to be acquired. As the beginner or novice moves from the periphery of a community to its centre, he or she becomes more active and engaged within the culture and eventually assumes the role of an expert (Lave & Wenger, 1990. These notions become especially important for educators who prepare their students to meet the demand, conditions and challenges of their future workplace.

According to Lave and Wenger (1990), three components are required in order to be a community of practice (COP): (1) the domain, (2) the community, and (3) the practice. In the classroom activities related to the teaching and learning of technical oral presentations, learning to be a good presenter is embedded within activity and occurs as a result of social interaction and collaboration among the peers. In the process of learning to be a good oral presenter, the engineering undergraduates 'assume' the role of an engineer giving technical oral presentations in engineering workplace. By doing this, learners are involved in the 'community of practices' (COP) and they 'assume' certain roles, beliefs and behaviours of professional engineers giving technical oral presentation. As the theory suggests, the students move from novices or beginners to eventually assume the role of an expert. According to Lave and Wenger (1991), Situated Learning theory focuses on the relationship between learning and the social situations in which learning occurs; learning is seen as distributed socially among co-participants and it is described in a concept known as Legitimate Peripheral Participation (LPP).

Essentially in this social process, learning occurs through observation followed by a step by step process of co-participation. In situated learning theory, learning is fundamentally a social process and learning occurs to people being placed in a community in which they aspire to be. The oral presentation classroom activities acknowledge the importance of these notions by providing a setting where learners become engaged in collaborative learning, with students and their instructor co-participating in the production of the oral presentation. The structure of the collaboration involves continuous peer review as well as feedback from the instructor. In situated learning, collaboration and expert modelling play important role since learning is fundamentally a social process.

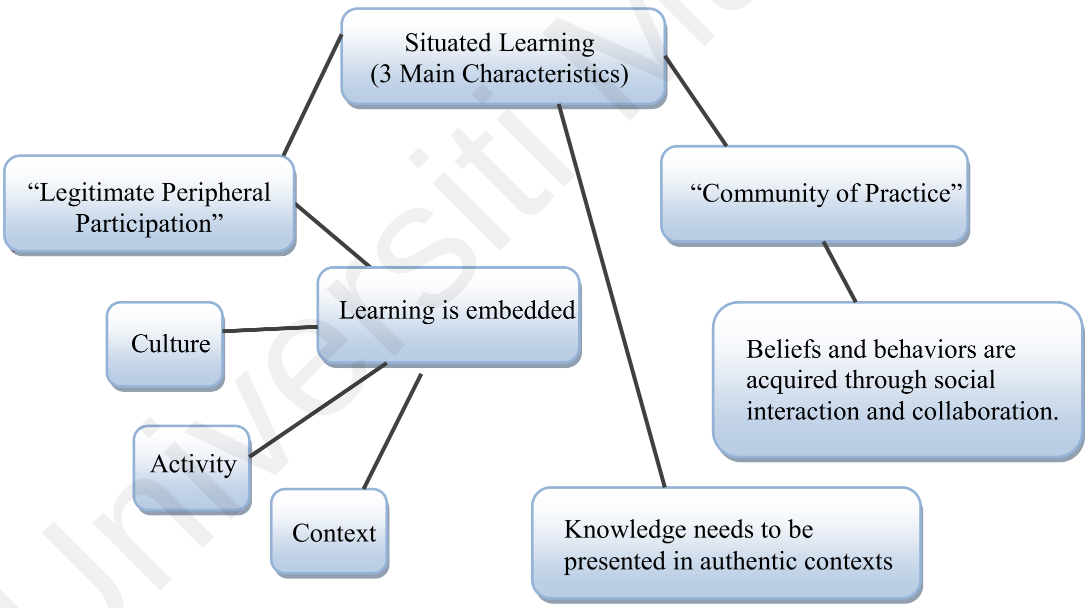


Figure 1.3: Situated learning Theory (Lave and Wenger, 1991)

In this study, the LPP will address Research Question 3 - evaluation of process where the activities of learning of TOP skills in classroom occur, which involve interactions between teachers and students. According to Lave and Wenger

(1990), learning occurs as a result of social interaction among participants; in which learners move from periphery to the centre, from mere novice to assuming roles of expert. In light of this theory, the study seeks to evaluate the social activities that occur in the classroom which contribute towards students TOP skills development. As learning occurs as a result of interaction with instructors and peers, students improve their TOP skills from novice to expert. The situated learning theory also addresses Research Question 4 – product evaluation. For teachers to know what to be taught to students, feedback from industry (professional expectation and beliefs of acceptable attributes of TOP skills) which will be collected from interview with industry experts will be important input for teachers. In light of this, as illustrated by the notion of Legitimate Peripheral Participation (LPP), product evaluation (RQ4) will be a guide for the teachers who will train students who are novice TOP presenters to achieve acceptable level and be able to deliver effective presentation skills.

Significance of the Study

The study aims to evaluate the curriculum implementation of UHL 2422 English for Technical Communication (ETC) curriculum, with central focus on the T&L of technical oral presentation (TOP) skills for engineering undergraduates at the Universiti Malaysia Pahang. To further improve the program, a comprehensive evaluation study which looks into details of elements of *context, input, process and product* is deemed necessary.

The study aims to make contribution to the field of oral communication in English as a second language. It aims to provide insights, especially for ESL educators, who are involved in the implementation of ESP curriculum relating to teaching-learning of technical oral presentation (TOP) skills to engineering undergraduates at tertiary level.

This study also contributes to the field of ESP. In 1987, Hutchinson and Waters (1987) published ‘ELT tree’ (Figure 1.4) drawing depicting the many branches of English Language Teaching (ELT). In 1993, Blue (1993) revised the ELT tree (Hutchinson & Waters, 1987) and proposed a new diagram (see Figure 1.5). The diagram was later revisited by Clapham (2000) who expanded English for Specific Purposes (ESAP) ‘branch’ under English for Academic Purposes (EAP) as illustrated in Figure 1.5.

This study contributes to the development of knowledge in terms of expanding understanding of technical oral presentation (TOP) skills teaching and learning within the English for Specific Academic purposes (ESAP) domain, under a bigger umbrella of ESP. A framework of Professional English for Specific Academic Purposes Technical Oral Presentation (PRO-ESA-TOP), which is the gist of this study, is proposed (see Figure 1.6).

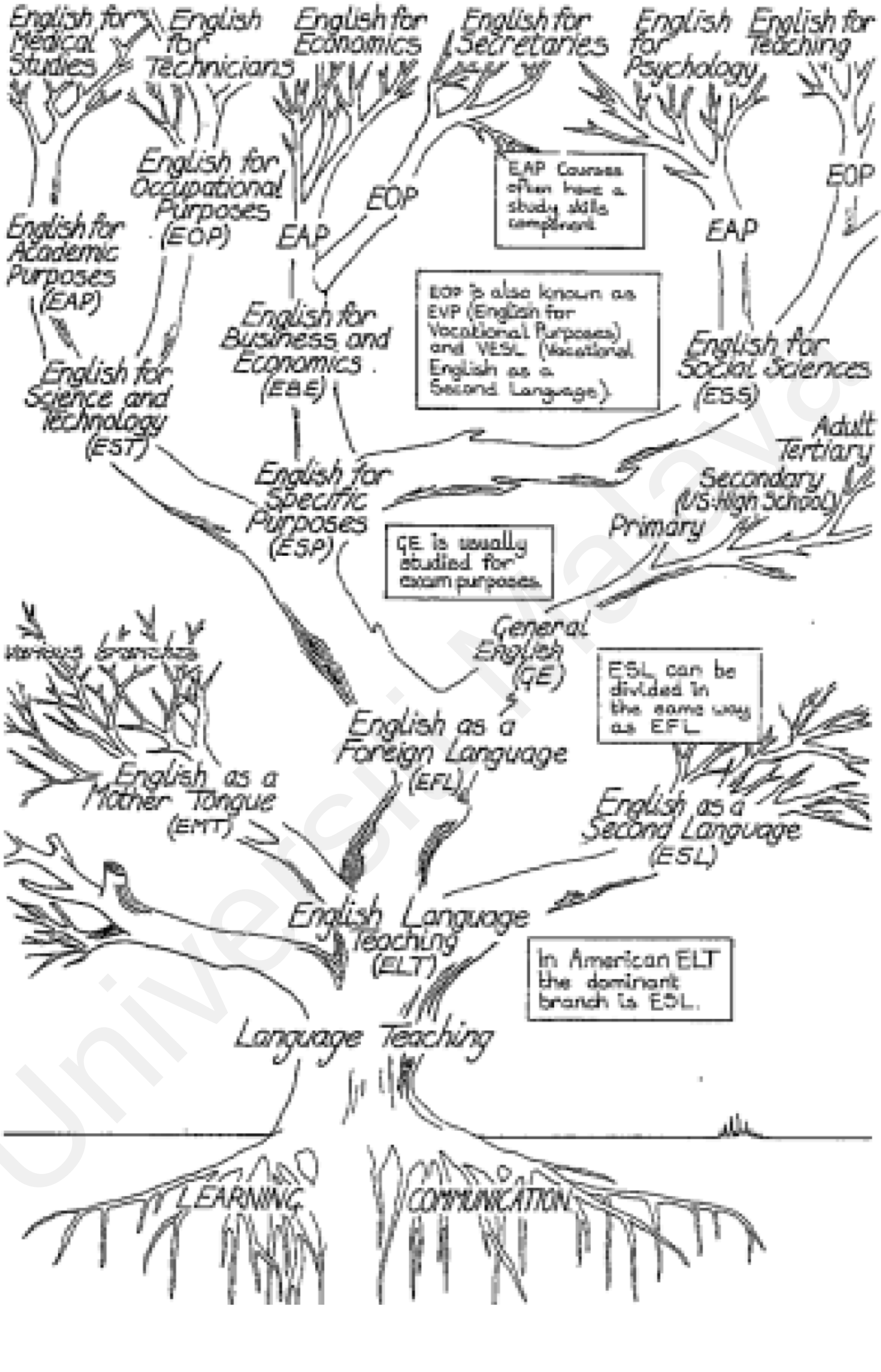


Figure 1.4: ELT tree (Hutchinson & Waters, 1987)

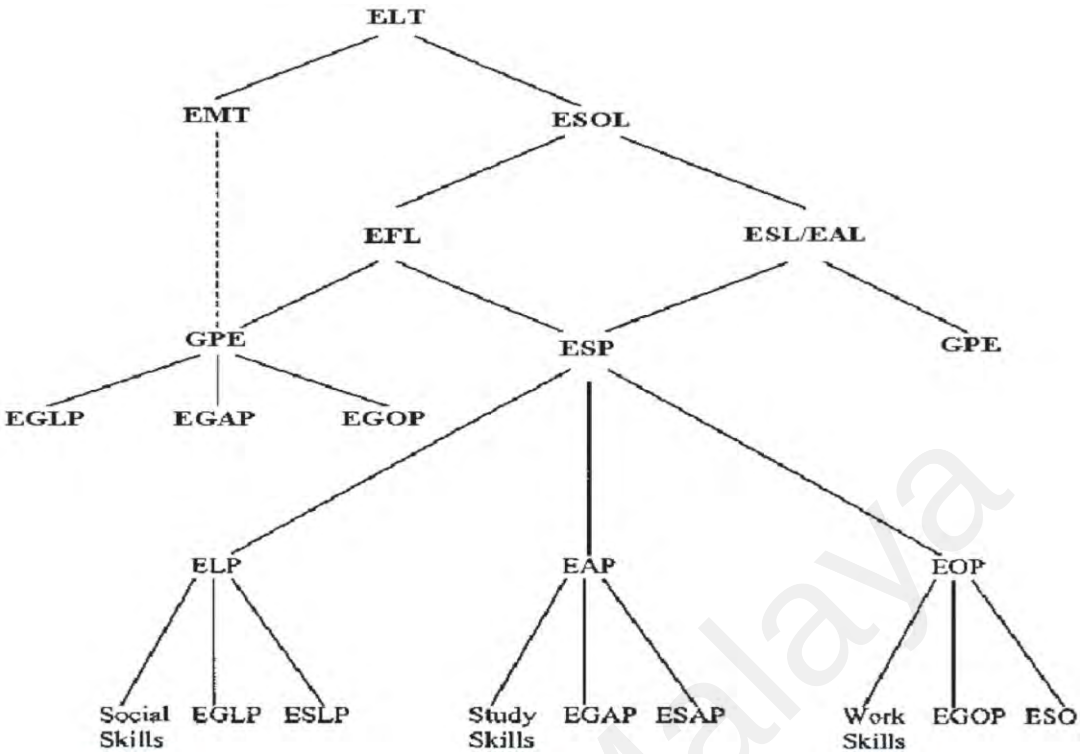
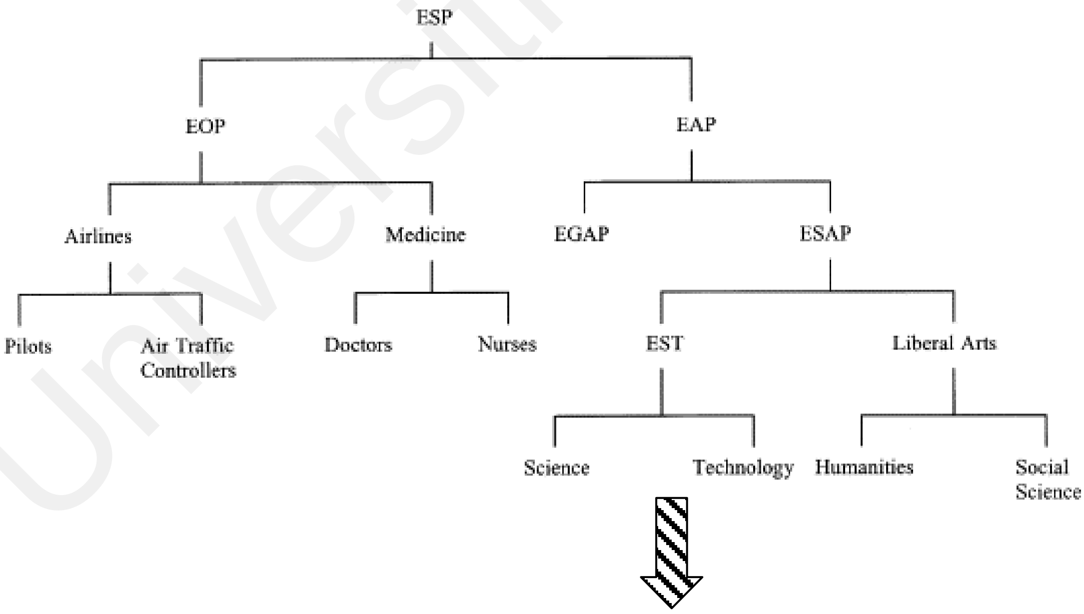


Figure 1.5: ELT tree with the inclusion of ESAP under EAP (Blue, 1993)



PRO- ESA-TOP ***(Contribution from this study)***

Figure 1.6: Clapham (2000) revisited the work of Blue (1993) and refined the categorization of ESAP to be divided into EST and liberal arts.

The study also intends to enhance awareness of the importance of oral presentation in English for engineering undergraduates' future work-related task in the field of engineering. As future engineers, engineering undergraduates must be exposed to effective teaching-learning of oral communication in English, particularly in delivering effective technical oral presentations (TOP). This is important because in engineers' daily tasks, their job requires them to communicate ideas and concepts to a group of people through formal and informal oral presentations (Kassim & Ali, 2009; Crossling & Ward, 2002; Darling & Dannels, 2003; Sageev & Romanoswki, 2001). In short, this evaluation study is conducted with the view to

a) evaluate the process of teaching-learning of TOP components which occur in the classroom and to gather data on relevant contextual information related to beneficiary needs;

b) obtain feedback from industry over undergraduates' technical oral presentation skills;

c) offer suggestions and recommendations to improve the implementation of TOP teaching-learning based on the input from practicing engineers.

This study has direct implication to the Universiti Malaysia Pahang in terms of an evaluation of the implementation of English technical communication course (ETC) with specific focus on the teaching and learning of the components of TOP skills. The findings from this study could help program administrators to make decision on efforts to improve the implementation process of teaching and learning of technical oral presentation skills in the *English for Technical Communication (UHL 2422*) course, thus preparing engineering undergraduates for their future English workplace communication needs. In addition, the findings will be useful to other program administrators administrating similar course, English language instructors as well as other relevant stakeholders in similar setting. Also, findings from this study may be applicable to other higher learning institutions in similar contexts and has the potential to help improve the implementation of curriculum in the aspects of the teaching and learning of English technical oral presentation skills.

Limitations of the Study

The limitation of this study is that it is a case study conducted in a bounded system, at the Universiti Malaysia Pahang. According to Stufflebeam and Shinkfield (2007), the aim of a case study "is always to give as complete a picture as possible of the object being studied so that stakeholders may develop or enrich their understanding of the program, and perhaps grasp the report's significance for decision making" (p.315). Stufflebeam and Shinkfield (2007) assert that the case study approach is appropriate in program evaluation particularly since it requires no control treatments, subjects, and programs in their naturalistic state. In this study, the data were gathered from one study site – involving teachers, language instructors, teaching module, the engineering undergraduates at this university as well as from the relevant stakeholders from the engineering industry. The case study methodology has become increasingly useful to the evaluator as an investigator and to program administrators and other stakeholders seeking accurate information and depiction of a program. Whereas the CIPP Model and data collection instruments presented in this study will be of use in other institutional settings, given that this study is a case study, the results of this evaluation model implemented in this program evaluation study may not unilaterally be transferrable to other tertiary institutions.

Definitions of Terms

Evaluation

Evaluation is a systematic investigation of an object's value (Stufflebeam & Shinkfield), 2007). According to Stufflebeam and Shinkfield (2007), evaluation is the process of 'delineating, obtaining, reporting and applying descriptive and judgemental information about some object's merit, worth, significance, probity in order to guide decision making, support accountability, disseminate effective practices and increase understanding of the involved phenomena" (p. 326). The curriculum evaluation in this study refers to the evaluation of aspects of context, input, process and product evaluation which are related to the technical oral presentation skills components within the UHL 2422 English for Technical Communication (ETC) course at UMP.

Technical Oral Communication (TOP) Skills

Technical oral presentation (TOP) skills refer to skills which are used when giving technical oral presentations in English. Presentations given by professionals in certain areas like engineering, medicine, business and science are considered 'technical presentation' because the nature of the contents of the presentations (DiSanza & Legge, 2003). TOP skills are referred to in this study, but not limited to, as the ability and skills needed in order to deliver a successful technical oral presentation in English which includes appropriate use of language expressions, delivery styles and relevant knowledge of the presentation contents.

English for Specific Purposes (ESP) Curriculum at UMP

ESP curriculum is designed and developed by the Centre For Modern Languages and Human Sciences (CMLHS), for engineering undergraduates enrolled at UMP. Three ESP courses are offered every semester, UHL 2412 English for Academic Communication, UHL 2422 English for Technical Communication and UHL 2432 English for Professional Communication. This study evaluates the implementation of teaching and learning of technical oral presentation skills components in the UHL 2422 English for Technical Communication course taught to engineering undergraduates.

Teaching and Learning of Technical Oral Presentation Skills

Teaching and learning of technical oral presentation skills refer to, but are not limited to, the engineering undergraduates' experience in their learning of TOP skills that occur both in class and outside class, while they are taught the technical presentation skills in classroom as well as their efforts outside the classroom when they prepare for an individual presentation task. To some extent, teachers' roles while teaching TOP skills to students that occur throughout the first four weeks of the 14 weeks are also referred to under the term 'teaching and learning of technical oral presentation skills' as used in this study. In this study, the term engineering undergraduate and students are used interchangeably.

Conclusion

The main objective of the ESP curriculum for engineering undergraduates is to develop students' ability in English oral communication skills. This is in line with the aspiration of UMP to produce graduates who are well equipped with communicative ability thus fulfilling the demand of workplace. Looking at the demand of engineering graduates' workplace communication needs, there is a crucial need to evaluate the implementation of the ESP curriculum with the view to reconciling the needs of industry. According to Bennet (2002), an implication of these findings is that higher education institutions which are serious about wanting their graduates to be more employable should "study carefully current trends in employers' demands for particular personal skills (as evidenced by, for example, the contents of job advertisements) and then develop these skills in undergraduate programmes" (p.471).

This chapter has outlined the background of the workplace communication demands and the problem statement of the study that shows the necessity to conduct an evaluation of the ESP curriculum implementation with a central focus on the teaching and learning of technical oral presentation skills for engineering undergraduates at UMP. The researcher also outlines the conceptual framework, objectives, research questions, significance, limitations as well as the definitions of terms used in the study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

This chapter outlines a review of literature on evaluation of curriculum implementation, teaching and learning of technical oral presentation skills, CIPP evaluation Model and a review of relevant studies using the CIPP Model.

Evaluation of Language Curriculum Implementation

The term curriculum has been defined and conceptualized in many ways. Ornstein and Hunkins (1998) offer the following five views which help in the understanding of the definitions of curriculum. First, curriculum is a *plan* for action or a written document that includes strategies to achieve desired goals or ends. Second, a curriculum can be broadly defined as dealing with the *experiences* of the learners; this view considers almost everything inside and outside a school as long as it is planned to be part of the curriculum. Third, curriculum is considered as a system for dealing with people and the processes or the organization of personnel and procedures for implementing that system. Fourth, the view that treats the curriculum as a *field of study* which involves scholarly activities comprising its own foundations and domains of knowledge, research, theory and principles. The discussions of experts and specialists who fall within this view are usually scholarly, theoretical, unpractical and often dealing with broad historical, philosophical or social issues. Finally, a view from a group of proponents who perceive curriculum as *a subject* *matter* like mathematics, science, English, history and other subjects. This view places great emphasis on facts, concepts and generalizations of a particular subject or group of subjects rather than on generic concept and principles of curriculum that cut across the field of curriculum. In this study, the term 'curriculum' is associated with the program of studies, while a course refers to one specific subject. This section divulges on the differences of program of study and courses to set clear demarcation on the many facets of program evaluation.

Evaluation of Program

Evaluation of program is conducted with the aim to offer systematic information about a program for decision makers such as people who are responsible to administer a program of study. This would then help program administrators to take some actions such as to make a decision whether a program should be continued (Christie & Ferro, 2010; Stufflebeam & Shinkfield, 2007). The purpose of program evaluation is to "investigate the outcomes of particular a program, with particular teachers and materials in specific settings" (Alderson & Bereta, 2001, p. 276).

In general terms, the content of any evaluation must relate to its purpose, and also to the objective of the particular program. Indeed, it used to be a common place to assert that an evaluator must "assess the extent to which a program's objectives have been achieved" (Alderson & Bereta, 2001, p 281). Nation and Macalister (2010) put forth the notion that the broadest kind of evaluation looks at all aspects of curriculum design to see if the course is successful and where it needs to be improved by looking at the results of the course and as well as the planning and running of the course.

Evaluation of Language Courses

In educational institutions, studies of program evaluation mostly deal with curriculum, programs and policies governing the program (Christie & Ferro, 2010). There are two types of evaluation namely formative and summative evaluation. A type of evaluation is determined by its purpose. The formative evaluation has the purpose of “forming or shaping the course to improve it” (Nation & Macalister, 2010 p.129) while the purpose of summative evaluation is to make a summary or judgment about the quality or adequacy of the course and a comparison is made with other courses or with previous summative evaluations.

According to Nation and Macalister (2010), the distinction between formative and summative evaluation is important because it involves different types of information collection and purpose of collecting the information.

Researchers of English language curriculum implementation may choose several evaluation focus areas while conducting an evaluation. Nation and Macalister (2010) proposed the following (Table 2.1) checklist of focuses and tools for evaluation of teaching and learning of language curriculum.

According to them, evaluation studies may assess learners’ amount of learning, qualities of teaching and learning process, quality of course book material and curriculum design as well as involving stakeholders (employers of students taking the course under evaluation) and students’ funding bodies. Some components of evaluation tools and focus based from Nation and Macalister (2010) suggestion in Table 2.1 were adopted in this study.

Table 2.1

Focus and tools for evaluation of teaching and learning (Nation & Macalister, 2010)

Focus	Tools
Amount of learning	Achievement and proficiency tests Learner self-report scales Analysis of course book content Interviewing learners
Quality of learning	Achievement and proficiency assessment Lesson observation Interviewing learners Teacher diaries Study of research reports
Quality of teaching	Systematic lesson observation Interviewing teachers – retrospectives accounts Learner self-reports scales Teacher self-reports scales Study of research reports Achievement tests Listing of staff qualifications
Quality of course book	Systematic course book evaluation checklist Teacher and learner questionnaire
Quality of curriculum design	Systematic course evaluation checklist Analysis of the syllabus Evaluation of the course materials
Degree of later success of graduates of the course	Interviewing employers or using questionnaires Interviewing graduates or using questionnaires Later achievement records such GPA
Teacher, learner or sponsor satisfaction	Self-report scales Questionnaires Interviews Learners re-enrolment statistics

From the Table 2.1 above, there are ranges of evaluation focuses and several data-gathering tools useful for evaluation of teaching and learning in a language classroom. They are useful in the sense it provides a delineation of the many facets of the teaching and learning in a language program. Such process is pivotal in determining the success of a language program, in effective dissemination of the purpose and achievement of objectives of such a program. In this study, the areas of focus and tools of evaluation studies of teaching and learning as proposed by Nation and Macalister (2010) above were 'adopted' and delineated in the CIPP evaluation model used in this study. Within that notion, the following section reviews approaches in the evaluation of curriculum.

Curriculum Evaluation Models

The field of curriculum evaluation has evolved gradually since its inception. Approaches in evaluation have gone through various stages of development from the past to the present time. Evaluation of curriculum involves drafting of procedures on how to collect information and to determine the sources of such information. Curriculum evaluators should begin an evaluation study by determining for whom is the evaluation intended and what does the audience want to find out. The prospective audience who are interested in the outcomes of the curriculum evaluation may include a group of instructors teaching the program, administrators, ministry officials, parents and community groups as well potential future employers of students enrol in the program. In addition, the types of information will also vary and may include students and instructors' perspectives towards the curriculum, student performance, curriculum performance, strategy selection in curriculum implementation process as well as community and stakeholders perception. The decision on the perspectives of evaluation (what to evaluate), who to include as well as the types of questions which need to be asked and the process involved need to be comprehensively documented. The following approaches provide overviews of the process involved in curriculum evaluation.

Stake "Countenance Model" (1967) describes a procedure which groups need to follow when conducting a team approach to evaluation. Stake believes that the starting off point is to determine the "intents" of a particular curriculum which he described to be in three facets known as antecedents, transactions and outcomes. Before collecting evaluation data, those involved in the evaluation must meet to establish a common framework of reference with respect to the there set of "intents". According to Stake (1967), individual's ability and willingness to learn before training occurs are conditions referred to as "antecedents". It relates to any condition prior to the commencement of a curriculum and might include both students 'and instructors' background and interest. "Transaction" refers to teaching methods examination or test and other processes in the training. Transaction intents are the procedures and events which are expected will transpire as the curriculum is implemented and occur in classroom teaching and learning environment. "Outcomes" refers to product of "antecedents" and "transactions"; they are related to intended students' outcomes in terms of achievements, it is concerned with factors such as learners' ability and achievement. Stake (1967) suggested evaluators to make judgement and descriptions of the information from the 'antecedent', 'transactions' and 'outcomes' stage and to relate to "contingency" and "congruence". By this, while evaluators analysing data from antecedents, transactions and outcomes, they would find contingencies among antecedents and outcomes, while at the same time revealing congruence between intents and observations (Stavropoulou & Stroubouki, 2014). The strength of Stake's countenance Model is the manner in which intents and actions are defined and observed together. While Stake's countenance model focus on 'íntents' and condition prior to the commencement of the curriculum, the CIPP model (Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman & Provus, 1971) requires the evaluation of context, input, process and product (CIPP).

The CIPP Model (Context, input, process and product) by Stufflebeam et al. (1971) allows educators to consider the processes involved in the program or to understand why the program's products or outcomes are what they are. It is designed to systematically guide both evaluators and stakeholders to pose relevant questions when conducting assessments at the beginning of a project, while it is on progress and at its end. It incorporates the necessary focus on program products or outcomes, informed by what was learned in the preceding studies of the program but focuses on improvement rather than proving something about the program. It can provide multiple stakeholders with information about the program's improvement areas, interpretation of program outcomes, and continuous information for accountability. While CIPP model evaluates all information related to the program from the beginning, middle and at the end of it, Scriven's goal free evaluation model (Scriven, 1972) proposed that the evaluators should disregard the goals of the programs in order not to be influenced by them.

In Scriven's (1972) proposal of goal-free evaluation model, he argued that evaluators must not be blinded by examining only the stated goals of a project as other program outcomes may be equally important. In order to be natural, Scriven even advised evaluators to avoid reading program brochures, proposals or descriptions and to focus only on the actual outcomes. Scriven also coined the term “formative” and “summative” evaluation as a way of distinguishing the two kinds of roles evaluators play: they can assess the merits of a programme while it is still under development (formative), or they can assess the outcomes of an already completed program (summative). Furthermore, in Scriven’s goal free model, evaluators are totally independent and free to look at processes and procedures as well as completed program outcomes. While Scriven (1972) advocates goal free evaluation for evaluators, Eisner’s Connoisseurship Model (1977) focused on the details of what is actually happening inside classroom thus emphasising qualitative appreciation built on two closely related constructs known as “connoisseurship’ and ‘criticism’. Eisner’s (1977) “connoisseurship” model is rooted in field of art and criticism. In this model, Eisner put forth the concept of educational connoisseurship and educational criticism possibly influenced by his prior experience as a curriculum expert and as an artist (Stavropoulou & Stroubouki, 2014). Similarly, Illuminative evaluation model (Parlet & Hamilton, 1978) also described description and interpretation of evaluation data, with emphasis on illumination of problems, issues and significant program features when an education program is implemented. This model aims to illuminate the audience’s understanding of a curriculum or a program.

Illuminative evaluation model is developed by Parlet and Hamilton (1978). In this model, special features of the program can be illuminated through observation, interviews, questionnaires, document analysis and by gathering background information from those involved in curriculum. Most of the data produced in this model are qualitative in nature. The proponents of this model argue that evaluators should aim to produce data which are understandable to the intended beneficiaries. In this evaluation model, it is emphasized that the evaluators should clarify their ‘value positions’ so that any bias in the interpretation of evaluation findings is apparent. While illuminative evaluation model give valuable emphasis on interpretation of findings understandable to intended beneficiaries, utilisation focused evaluation model emphasis on actual utilisation of evaluation findings by the intended users.

Patton (1978) proposed utilisation-focused evaluation model in which he is concerned that often evaluation findings are ignored by people who are involved in making decisions. Patton maintains that in order to ensure evaluation findings are taken into consideration by the decision makers, evaluators themselves must identify relevant parties who are the primary intended real users of such evaluation and they must be involved in the evaluation process. While utilisation-focused model emphasises on the use of evaluation findings by decision makers, Kirkpatrick's four level evaluation model emphasises on learners’ learning outcomes.

Kirkpatrick's four level evaluation model (Kirkpatrick, 1996) focuses on evaluation learning outcomes for learners through a close scrutiny of program outcomes. Kirkpatrick recommended gathering data to assess four hierarchical ‘‘levels’’ of program outcomes: (1) learner satisfaction or reaction to the program; (2) measures of learning attributed to the program (e.g. knowledge gained, skills improved, attitudes changed); (3) changes in learner behaviour in the context for which they are being trained; and (4) the program’s final results in its larger context (Frye and Hemmer, 2012). According to Holton (1996), this model was criticised for not taking into consideration intervening variables that affects students’ learning such as motivation and their different background skills and prior knowledge, as well as ignoring the relationship between program components and its context, and inefficient use of resources.

According to Stroubouki and Stavropoulou (2014), many of the emergent models have been complex and difficult to apply in a real life setting. For instance, Stake's model proved too complex to put into practice, while Scriven's goal-free evaluation model seemed not to address the issue of needs assessment of the target population, and the "Illuminative Evaluation" model of Parlett and Hamilton (1978) was criticised for the validity of its results, subjectivity and researcher bias. Beretta (2001) provided a brief summary (p.14) of the development and expansion of evaluation models which began in 1960s (see Table 2.2).

Table 2.2

Development of Evaluation Models

Model/ Founder	Year	Description of evaluation elements / purpose
Stake Countenance Model	1967, 1975	• Involves descriptive and judgment data • Descriptive examines the congruence between intended and observed antecedents, transactions and outcomes. • Judgment data refers to collections of others' judgment (not that of evaluator) which include parents, teachers, students, subject matter experts)
CIPP Model (Context, Input, Process, Product) By Stufflebeam et al.,	1971 /2007	• The purpose of evaluation to provide information for decision-makers. • Context refers to analysis of the situation (actual and desired conditions). • Input focus on program design • Process focuses on implementation • Product reports whether or not objectives were achieved

Table 2.2 (Continuation)

Model/ Founder	Year	Description of evaluation elements / purpose
Provus ’discrepancy evaluation	1971	• Evaluations taking into gaps between time-tied objectives and actual performance
Table 2.2 (Continue) Scriven ‘goal free evaluation’	1972	• Evaluators pay no attention to stated goal but examine what is actually happening in the classroom • Value of the program resides in the extent to which program’s *effects* are congruent with the students’ needs.
Adversary approach By Owens & Wolf	Owens (1973); Wolf (1975)	• Based on advocacy; teams of evaluators argue opposing points of views and present a powerful case for the ‘side’ • Problems I disparity of competence between adversary groups
Eisner’s educational connoisseurship	1977	• No collection of quantitative data • Evaluators observe the program in operation and write a detailed narrative report • Also known as ‘art criticism model’ • Rooted in arts rather than sciences • Aim to re-educate perceptions of stakeholders
Illuminative evaluation by Parlet & Hamilton	1978	• Focus on process (similar to CIPP model) • Gaining multi-perspectives description and triangulation • Involve three stages- i) observation, ii) further inquiry, iii) explanation

To illustrate the many perspectives of functions and purpose of evaluation, Alkin (2012) draws an evaluation tree depicting evaluation theorists and their works. Alkin divided them into three branches which are ‘use’, ‘methods’ and ‘valuing’ (Figure 2.1). The CIPP Model by Daniel Stufflebeam (2007), which is adopted as conceptual of this study, is placed on ‘use’ branch. This is due to Stufflebeam’s

(2007) call for the use of evaluation findings for decision making purposes by stakeholders in program evaluation studies.

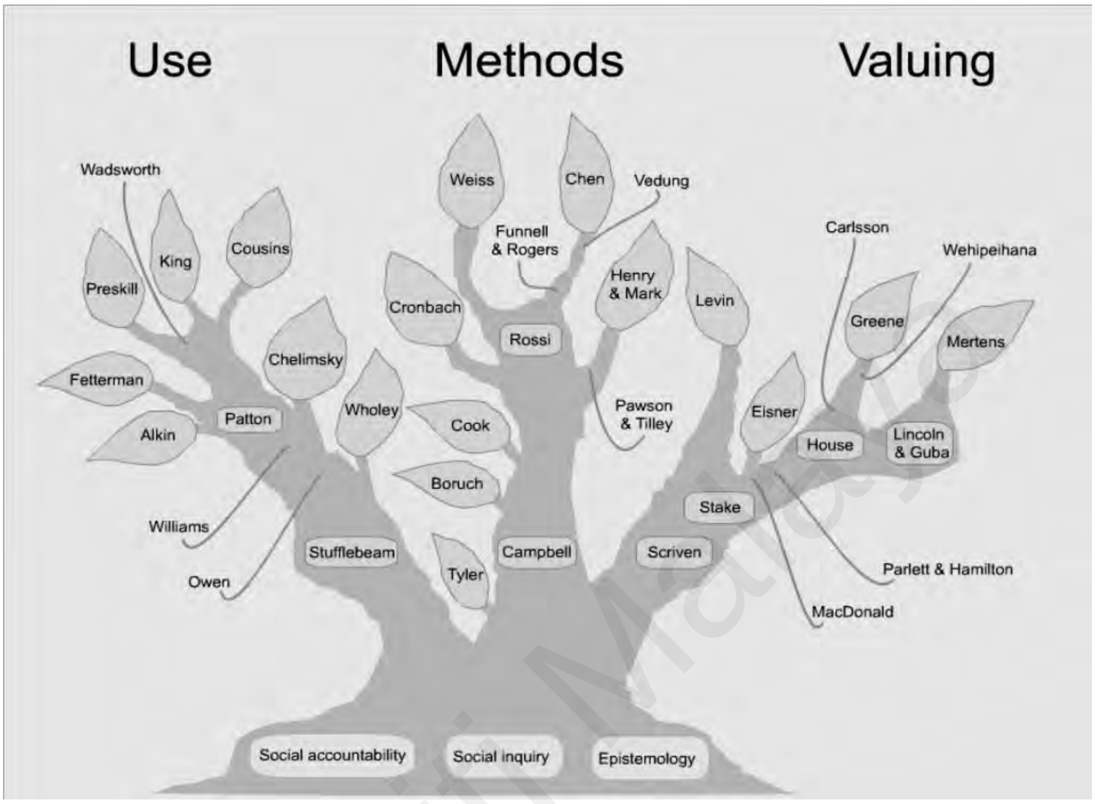


Figure 2.1: Evaluation Theory Tree

All these points to the central argument that evaluations by itself is an ever expanding body of knowledge that plays an important role in the assessment of curriculum and programs to ensure the quality of program and curriculum. It is also points to the fact that the evaluation acts as the monitoring element in ensuring the goals and objectives of the program are met in the operational sense. Hence, this study will be evaluating the technical oral presentation (TOP) components in the English for Technical Communication course using the CIPP evaluation model.

CIPP Evaluation Model

The CIPP model, which is adopted as a conceptual framework of this study, stands for context, input, process and product (Stufflebeam & Shinkfield, 2007). The CIPP Model defines evaluation as the process of delineating, obtaining, and providing useful information for judging decision alternatives (Stufflebeam & Shinkfield, 2007). Stufflebeam (2003) suggested that evaluation be redefined as 'the process of providing useful information for decision making' (p 120), since such information would be very useful to help guide program administrators with information they could use to decide on improvement efforts and to bring about changes in the programmes.

The CIPP Model expressed the need to evaluate goals, look at inputs, examine implementation and delivery of services, as well as measure intended and unintended outcomes of the program. It also emphasized the need to make judgements about the merit and worth of the object being evaluated.

According to Beretta (2001), the main emphasis of the CIPP Model is to provide information for decision-makers. The acronym CIPP refers to Context-Input-Process-Product. The Context evaluation refers to the analysis of the situation (actual and desired conditions) while the Input evaluation deals with the program design. The Process evaluation focuses on the implementation using a variety of methodologies which include participant observation to interviews and rating scales. The Product evaluation provides a report on the degree to which objectives the programs were or were not achieved. The four CIPP components were investigated and evaluated in this study with central focus on the implementation of TOP.

Figure 2.2 illustrates key components of the CIPP Evaluation Model and its association with the program. In this study, the program refers to the English for Technical Communication (ETC) course. In the following Figure 2.1, the CIPP Model's four elements are illustrated in three concentric circles and portray the central importance of defined values. The inner circle denotes the core values that should be identified and used to ground a given evaluation. The wheel surrounding the values is divided into four evaluative foci associated with program: goals, plans, actions, and outcomes. The outer wheel indicates the type of evaluation that serves each of the four evaluative focus which are context, input, process, and product evaluation. Each two-directional arrow represents a reciprocal relationship between a particular evaluative focus and a type of evaluation. In this study, the baseline 'core value' refers to the efforts made in helping students to become competent technical oral presenters.

Frye and Hemmer (2012) reiterate "The CIPP model incorporates attention to multiple "inputs": Learners' characteristics, variability, and preparation for learning; faculty's preparation in terms of content expertise and relevant teaching skills, the number of faculty available at the right time for the program; learning opportunities.... The CIPP model allows educators to consider the processes involved in the program or to understand why the program's products or outcomes are what they are. It incorporates the necessary focus on program products or outcomes, informed by what was learned in the preceding studies of the program but focuses on improvement rather than proving something about the program" (298).

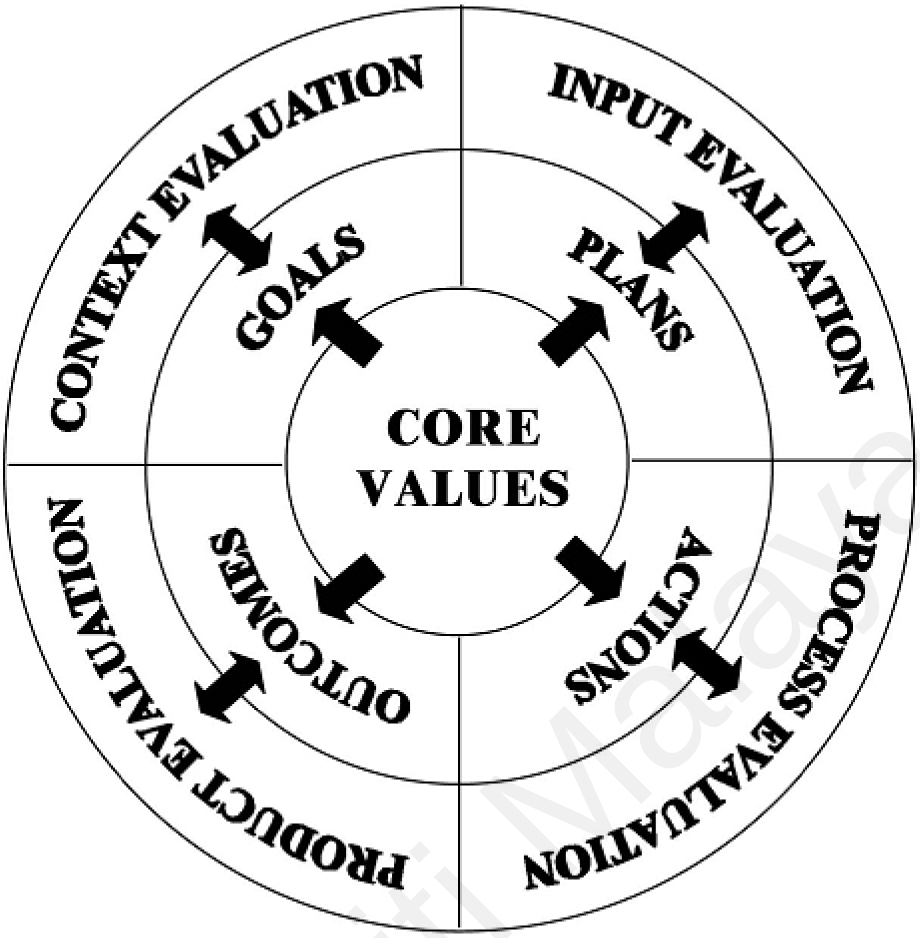


Figure 2.2: CIPP Model core values (Stufflebeam & Shinkfield, 2007).

To date, there are many studies that adopt the CIPP Model as their evaluation framework. Among others, Allahvirdiyani, (2011); Abdul Rahman (2012); Birjandi and Nosratinia (2009); Chen (2009); Ismail (2008); Mohebbi, Akhlaghi, Yarmohammadian & Khoshgam (2011); Nicholson (1989); Tan, Lee, Hall, Andrews, Dixon, Tout & Du Toit (2010); Tay (2007); Tseng, Diez, Lou, Tsai & Tsai (2010); Tunc (2010); Yildiz (2004); Zhang et al. (2011).

This study adopts the CIPP Model based on the following premises. First, CIPP Model is suitable for decision making purposes. Stufflebeam and Shinkfield (2007, p.325) define evaluation as the process of "delineating, obtaining, and providing useful information for judging decision alternatives". Evaluation information collected in this study will be supplied to program administrators in order to help guide them to make decisions on improvement efforts in the teaching and learning of technical oral presentation skills within the English for Technical communication course.

Second, the CIPP model emphasizes the concept of understanding program component's relationship while conducting an educational evaluation (Frye & Hemmer, 2012). Each component of a program under study is evaluated with consideration of relationship among program components. For instance, the *context* evaluation and the *process* evaluation in the CIPP Model are separate but of equal importance (Stufflebeam & Shinkfield, 2007). The need to understand program components' relationship prompts educators to include a variety of stakeholder views when conducting an evaluation of programs. Frye and Hemmer (2012) contend that the CIPP Model, with its emphasis on program components relationship is in line with the perspective of Complexity theory. Frye and Hemmer (2012) further assert that, as complexity theory suggests, education programs are best characterized as a complex systems, given that they are made up of diverse components with interactions and relationship 'occur' among those components.

The CIPP Model 'considers' complexity of relationships of separate components in an evaluation study while other models assume relationship among components to occur in linear form (Frye & Hemmer, 2012). Mennin (2010) also echoes similar notion that the overall system cannot be explained by separately examining each program's individual component in total isolation with other program components. In this study, evaluating TOP skills within the English for Technical Communication course involves assessing several components. Hence, evaluation of TOP skills teaching and learning in this study takes into consideration planning, implementation and assessing students' ability while delivering a technical oral presentation.

All these components of TOP skills teaching and learning occur in complex, dynamic and non-linear relationships and they are represented well with the CIPP Model thorough its evaluation of context, input, process and product components. This study considers the complexity of relationship of separate components i.e. TOP skills in context evaluation, input evaluation, process evaluation and product evaluation. Thus, the CIPP is deemed the most suitable model for this study.

Third, this study intends to collect information of the technical oral presentation components from multiple stakeholders: engineering undergraduates, English language instructors (who are also module developers) and stakeholders who are engineering experts from industry. The CIPP model is an evaluation model that engages multiple stakeholders' perspectives as its evaluation focus. For that reason, the CIPP model is deemed the most suitable model to be adopted as the framework of this study.

However, CIPP is not free from criticism (Stroubouki, & Stavropoulou, 2014). One area that is criticised is difficulty in measuring and recording the context and the input components. In this, the researcher has carefully delineated items to be evaluated under each context and input. This is considered a contribution of this study to the CIPP Model.

Engaging Stakeholders in Educational Program Evaluation

Stakeholders refer to relevant parties who have vested interests in the evaluation findings. Christie and Ferro (2010) categorize stakeholders based on their relationship to the program; primary stakeholders are the parties (e.g. program designer or program staff) who will use the findings of an evaluation to make adjustments to a program's course; secondary stakeholders are people (e.g. teachers, parents and students) whose positions are likely to be affected by changes in a program; and tertiary stakeholders are people who may be interested in the evaluation findings but whose positions are not directly impacted by the result of an evaluation (e.g. other institution leaders who are interested to adopt the program).

According to Kiely and Rea-Dickens (2005; 2009), the issue of stakeholders involvement in evaluation is an important one. Along a similar line, Nation and Macalister (2010) argue that there is a wide range of stakeholders who have different kinds of connections to the program and they could contribute towards a more informed evaluation as well as a protective sharing of responsibility of its report. In the quest to prepare students with desirable graduate attributes to be employees of knowledge economy and to fulfil stakeholder expectations, there is considerable confusion among higher education academics and learning specialists on how graduate skills, attributes and capabilities should be defined and implemented (Green, Hammer & Star, 2009).

In this study, the researcher decided to get feedback from stakeholders in engineering industry regarding engineering undergraduates' oral presentation skills. The feedbacks from stakeholders in engineering industry, derived from data collection under product evaluation, are crucial as they unveil expectations from potential employers regarding students' oral presentation skills ability. This can be used to inform the current practices.

English Oral Communication Skills for Undergraduates

Over the years, growing interest and attention has been given to undergraduates' mastery of oral communication skills across disciplines of studies. The emphasis on graduates possessing an effective ability in oral communication is also prevalent in medical education. The Brown Medical School has placed effective communication as the first competency ability; the first out of nine competency abilities to be achieved by students upon graduation from its medical program (Smith, Dollase & Boss, 2003).

Oral communication skills for engineers are often described in terms of engineer's oral presentation skills, meeting skills, discussion skills, conversation skill and project participation skills (Kakepoto et. al, 2012). Accreditation authorities and practitioners in engineering education also identify oral communication skills as being important soft skills for engineering graduates (Patil & Codner, 2007). In order to prepare engineering undergraduates with this soft skill, international engineering accreditation bodies, such the Accreditation Board of Engineering and Technology (ABET), give credence to the importance of the soft skill to be incorporated as part of engineering education curriculum (Felder & Brent, 2003). In Malaysia, the Engineering Accreditation Council (2007) requires that all Malaysian engineering undergraduates must be competent in soft skills such as communication skills, besides other hard skills.

Despite the emphasis on the soft skills among undergraduates, literature on undergraduates' employability skills in Malaysia shows that lacking soft skills is one of the main reasons for unemployment and this includes lack of English oral communication skills (Ministry of Higher Education Malaysia, 2012; Pillai et. al, 2012; Singh & Choo, 2012). With regards to this, language educators make necessary adjustment to their English language programs for engineering undergraduates in order to suit the demands of market place.

Presentation skills are taught as a part of efforts to fulfil the students' communication needs. To suit this purpose, materials for teaching oral presentation in the textbooks are also developed (Crossling & Ward, 2002; Palmer & Slavin, 2003). However, Miles (2009) suggested that analysis of some textbooks that provide materials for presentation skills often focus more on other skills such as skills to organize thoughts, visuals and body language. Miles (2008) also suggests that instructors should be selective in choosing appropriate textbooks and specific attention should be given to students' English language skills development.

Oral Presentation in Engineering Workplace

The requirement of the engineering accreditation body such as the Engineering Accreditation Council (Malaysia) that the engineering undergraduates must be equipped with effective communication skills is in line with the nature of engineers' work in the industry. Based on the engineering program accreditation requirements above, it is understandable that communication skill has been receiving a stronger emphasis in engineering education (Patil & Codner, 2007). From their study on oral communication needs of mechanical engineering undergraduates in Universiti

Teknologi Malaysia (UTM), Yasmin Hanafi Zaid and Hanim Kamarudin (2011) reported that mastery of classroom presentation was considered the most crucial skills by the students prior to graduating.

In line with that, Kunioshi et al. (2014) reports that genre communication especially oral presentation has been given substantial emphasis by engineering education practitioners. Pillai et al. (2012) point out that is inevitable for Higher Education Providers (HEPs) to address the need to enhance English language competencies which include delivering presentations and other soft skills for undergraduates throughout their degree programme. It is therefore imperative that engineers needs to equip themselves with oral presentation skills as this skill has become the key characteristic of a modern engineer (Martin, Maytham, Case & Fraser, 2005; Riemer, 2007). The curriculum of any engineering program should be developed with one important aim: to produce students who have good verbal communication skills (Magin & Helmore, 2001; Marín-García & Miralles, 2008).

Oral Presentation in Engineering Education

Levin and Topping (2006) define oral presentation as "a planned and rehearsed talk or speech that is not committed to memory or read directly from script, given by a presenter (or sometimes more than one) to an audience or two or more people" (p.4). The presence of oral presentation as a part of formal assessment at tertiary level is part of efforts in preparing students to become competent and thus becoming successful engineers in their future workplaces (Berjano, Sales-Nebot & Lozano-Nieto, 2012).

However, delivering an effective oral presentation requires skills and knowledge among undergraduates at tertiary level. Mahani Stapa, Asniza Murad and Norasnita Ahmad (2014) conducted a survey to determine problematic areas in delivering technical oral presentations involving 235 respondents from six engineering faculties in Universiti Teknologi Malaysia (UTM). They discovered that generally students faced difficulties in language, content and delivery specifically due to limited knowledge in presentation skills, low self-confidence and low English language proficiency. According to them, students' problem in the delivery of presentations occur in the forms of reading from notes or slides, intonation problems, problems in responding to questions from audience and lack of skills and knowledge in the delivery pace. From this study, students feel stressful, worried and anxious when they are asked to deliver a technical oral presentation – and these are factors that contribute towards students' low self confidence in delivering technical presentations.

Furthermore, students' problems in language occur in the forms of incorrect pronunciation and limited vocabulary or word choices. From this study, it is clear that instructors face an uphill task in developing students' skills in the three aspects. Instructors must equip students to have a mastery of knowledge and skills to present, possess high self confidence level as well as a mastery of English language proficiency to deliver an effective presentation.

Crawley, Malmqvist, Östlund and Brodeur (2007) put forth the notion that for engineering education reform to occur, the voices from four key stakeholder groups, which are students, industry, university faculty and society, must be considered.

Therefore, it is imperative for language educators dealing with curriculum development for engineering undergraduates to consider the views of these entities.

Technical Oral Presentation Instructions

Globalisation has stimulated engineer mobility around the world and more and more attention is given to engineers' technical and non-technical competencies. According to Joughin (1998), the main objective of oral assessment in professional field is "to measure candidates' knowledge and understanding of facts, concepts, principles and procedures that underlie professional practice" (p. 369). Martin, Maytham and Fraser (2005) found that there is a positive relationship between being a successful engineer in the workplace and communication skills. This highlights the importance of instruction of technical oral communication in engineering education, particularly oral presentation competencies.

However, teaching technical oral presentation skills is not an easy task, but rather challenging as students perceived delivering techncial oral presentations as the most anxiety-provoking situations (Woodrow, 2006; King, 2002). King (2002) emphasises that speech anxiety, group boredom and limited presentation skills are the major problems that lead to students′ oral presentation failures. Kavaliauskienė (2006) offers very useful tips to improve students' public speaking skills. To him, instructors should pay attention to three key aspects of instructions of presentation skills; namely managing students' anxiety and fear, dealing with delivery of presentations and giving feedback.

TOP Skills and Attributes

According to Bhattacharryya and Sargunan (2009), there are three effective major presenter skills and attributes of technical oral presentations as viewed by the stakeholders in their study. The stakeholders are members of academic community (students and instructors) and professional community. The list of technical presentation skills and attributes viewed as important:

- Presenter skills and attributes which emphasize technical competency, methodology, organisation, layout, visual presentation, audience analysis, interaction with audience, presentation skills, delivery, clarity, creativity, confidence, fielding questions and humor.
- Language skills which focus on usage of complex terms, grammar, pronunciation, technical jargon and diction.
- Non-verbal attributes which include eye contact, stance, vocal variety, vocal fillers and attention to certain cultural norms

(Bhattacharryya & Sargunan, 2009, p. 1031)

Similarly, Otoshi and Heffernan (2008) observed that students have their own conception of what constitutes a good presentation. Students rated clarity of speech, correct language and presentation that is appealing to audience as criteria that make up a good presentation. Hence instructional designers could take into account all these presenter skills and attributes in the teaching of oral presentation skills for engineering undergraduates.

Instructors' Feedback

Delivering oral presentation is one of the most challenging tasks for many students. The issue of giving feedback to students is significant and of particular importance because it could provide students with continuous improvement effort. Feedback can come from teachers, peers, oneself or relevant professionals outside the teaching-learning relationship. Active learning requires not only prompt but also specific and challenging feedback. Without feedback the learner is most likely prone to committing similar errors rather than create new insights, abilities and competences in delivering technical oral presentations.

The guidelines for giving feedback are generalized by McNamara (2005). He draws six aspects of effective feedback: 1) Clarity, 2) Emphasis on positive features, 3) Specific, 4) Focus on behaviour rather than the person, 5) Descriptive rather than evaluative, and 6) Careful with advice. Adding to that, Nicol and Macfarlane-Dick (2007) summarize seven principles of good feedback practice from literature of formative assessment. According to them, good feedback practice "is broadly defined as anything that might strengthen the students' capacity to self-regulate their own performance" while learning (p 205). The following are Nicol and Macfarlane-Dick's (2007) summary of the seven principles. For them, good feedback practices involve:

i. Clarifying what good performance is (goals, criteria, expected standards);

ii. Facilitating the development of self-assessment (reflection) in learning;

iii. Delivering high quality information to students about their learning;

iv. Encouraging teacher and peer dialogue around learning;

v. Encouraging positive motivational beliefs and self-esteem;

vi. Providing opportunities to close the gap between current and desired performance;

vii. Providing information to teachers that can be used to help shape their teaching.

In this study, the questionnaires on feedback were adopted and adapted from Nicole and Macfarlane-Dick's (2007) summary above. These principles were adopted and adapted in this study because they are applicable and appropriate for eliciting data on the instructors' practices of giving feedback in the teaching and learning of Technical Oral Presentations (TOP).

Restatement of Research Gap

In essence, the presence of oral presentations teaching and learning activities in classroom in engineering curriculum is part and parcel of preparing the students to be competent and successful engineers in their future workplace. However, there is still a paucity of research which takes into consideration views from relevant stakeholders who are students, language instructors and professionals from industry to provide a clear picture of the way technical oral presentation teaching and learning is conducted in classroom. Such are the reasons described by Hazlan Zakaria (2013) who has pointed out that there is a clear disconnect between university and industry in terms of practices and expectations. If there have been a dearth of research, the disconnect would not exist. As such, this study attempts to fill this important gap so that a clear picture of the process could be delineated and improvement efforts could be taken effectively.

Furthermore, the lack of research that focused on the evaluation of curriculum implementation for teaching and learning of oral presentation skills among engineering undergraduates in Malaysia also necessitates the investigation of the implementation of teaching and learning of technical oral presentation skills components for engineering undergraduates at tertiary level is needed. To address this issue, this study believes that the evaluation of the components of oral presentation skills in English Technical Communication (ETC) course for engineering undergraduates at the Universiti Malaysia Pahang based on stakeholders' perspectives would enable the development of a more practical syllabus for TOPs that meets the expectations of the industry.

Lastly, the findings of this study will also fill the gap in the literature of curriculum evaluation to inform evaluators, teachers, or researchers about language program evaluation case studies conducted in different contexts.

CHAPTER III

METHODOLOGY

Introduction

This study evaluates the implementation of teaching and learning (T&L) of Technical oral presentations in the English technical communication course taught to engineering undergraduates (Engineering undergraduates) at UMP. This chapter discusses the methodology employed in this study which includes the context of the study, research design, instrument, location, sampling techniques, data collection procedure as well as data analysis procedures. Finally, the issue of validity, reliability and ethical issues of the study are also addressed.

Research Designs

This study employs a case study methodology and it evaluates the implementation of ESP curriculum with a specific focus on the implementation of teaching and learning of technical oral presentation skills within a course - the English for Technical Communication (UHL2422) offered by the Centre for Modern Languages and Human Sciences (CMLHS), Unversiti Malaysia Pahang. According to Yin (2009), “case studies are the preferred strategies when ‘how’ or ‘why’ questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context” (p.1). Gerring (2006) posits that a case study is defined as an investigation of a contemporary social phenomenon within its real-life context, using multiple data sources. Yin (2009) further asserts that the "case" can be referred to an event or an entity and research using case study designs "have been done about decisions, programs, the implementation process, and organizational change" (p. 23). According to Stufflebeam (2000), a case study approach is a "focused, in-depth description, analysis and synthesis of a particular program or other object" (p. 53).

The study is designed as a case study which employs qualitative and quantitative methods to collect data in all four evaluation components of Context, Input, Process and Product as outlined in the CIPP Model (Stufflebeam & Shinkfield, 2007). Subsequently, the findings from this study will be reported in accordance to the four aspects of the CIPP evaluation model proposed as the framework of the study.

The mixed method approach - qualitative and quantitative - is employed in this study because it suits the purpose of this study. As suggested by Yin (2009), a case study is not just a form of qualitative research but it can be a combination of quantitative and qualitative studies. As a mixed method study, data that will be collected and analyzed from both strands will be very significant in providing a better understanding of the problems investigated.

In evaluating the implementation of curriculum relating to teaching and learning of technical oral presentation skills among engineering undergraduates, this study adopts Convergent Parallel Design (Creswell, 2012). Convergent Parallel Design approach occurs when two strands - qualitative and quantitative - take place separately but occur at the same time. Figure 3.1 depicts the Convergent Parallel Design derived from Creswell (2012).

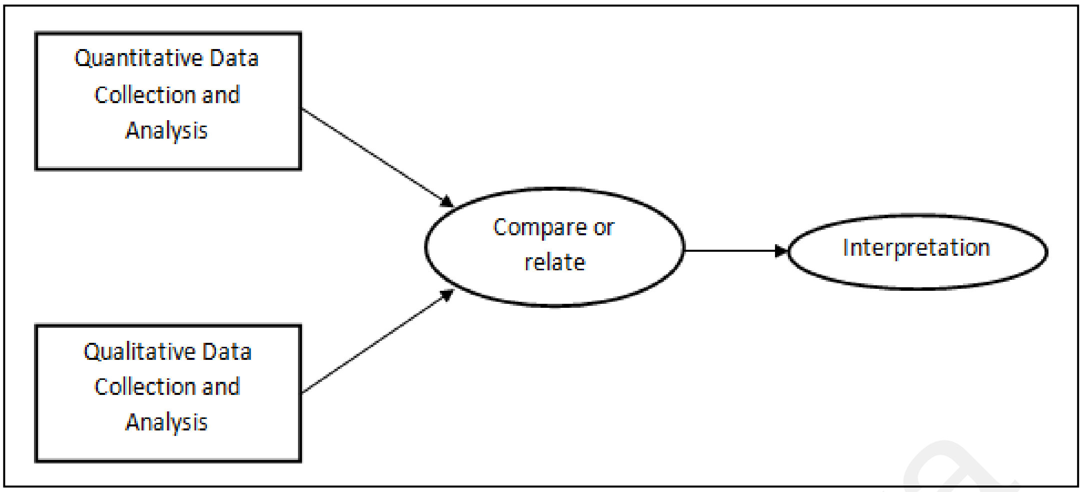


Figure 3.1: Convergent parallel Design (taken from Creswell, 2012)

In Convergent Parallel Design, quantitative data and qualitative data were collected at the same time. Subsequently, both strands are subjected to analysis and interpretation. Quantitative data collected from questionnaires distributed to respondents were analyzed in order to yield descriptive data which include the frequencies, percentages and mean scores. Together with this, qualitative data were analyzed and compared followed by interpretation of both data strands. The final stage involves an interpretation of the entire analysis. The mixed method approach used in this study is proposed with the view to enabling triangulation techniques in data collection.

Miles, Hubberman and Saldaña (2014) suggest 13 tactics to assess trustworthiness of qualitative data. They include 1) checking for representativeness, 2) checking for researcher effects, 3) triangulating, 4) weighting the evidence, 5) checking the meaning of outliers, 6) using extreme cases, 7) following up surprises, 8) looking for negative evidence, 9) making if-then test, 10) ruling out spurious relations, 11) replicating a finding, 12) checking out rival explanations and 13) getting feedback from participants.

Context and Respondents of the Study

This study was carried out throughout 14 weeks of academic semester 1 2016/17 session (Sept-Dec 2016) at the Universiti Malaysia Pahang. As a public engineering and technology-based university, the curriculum for engineering undergraduates is designed based on the requirements from engineering accreditation and professional bodies such as the Accreditation Board of Engineering and Technology (ABET) and the Malaysian Engineering Accreditation Council (EAC). These bodies require that engineering undergraduates must be equipped with technical competencies and soft skills, including effective communication skills, upon graduation.

As a result of the requirement posed by engineering regulating body which gives accreditation to engineering programs, English language curriculum are designed to equip students with effective communication skills (Noor Raha Mohd Radzuan, 2012). Prior to graduating, engineering undergraduates must enroll for six credit hours of language and communication courses offered by the Centre for Modern Languages and Human Sciences (CMLHS) at UMP. Table 1.3 provides information on English language courses offered by CMLHS.

Locations

The study involved engineering undergraduates who registered for English for Technical Communication (UHL 2422) course during Semester 1 2016/2017 (September to December 2016) and they were from engineering faculties located in two UMP campuses, which are Gambang and Pekan campus, both located in the state of Pahang, Malaysia. The study also involved instructors teaching this course during this time.

Participants and Key Informants

The study involved respondents who were English language instructors, engineering undergraduates and experts from engineering industry.

Instructors

The English language instructors involved in this study were instructors teaching the English for Technical Communication (UHL 2422) course at the two campuses for the semester 1 2016/17 session (Sept-Dec 2016) academic session.

Engineering Undergraduates

Using convenience sampling technique (Dörnyei, 2007), the study involved engineering undergraduates registered for English for Technical Communication (UHL 2422) course in semester 1 2016/17 session (Sept-Dec 2016) at the two UMP campus; Pekan and Gambang. The engineering undergraduates are from nine faculties in UMP;

- Faculty of Mechanical Engineering
- Faculty of Civil Engineering and Earth Resources
- Faculty of Electrical and Electronic Engineering
- Faculty of Computer Systems and Software Engineering
- Faculty of Industrial Sciences and Technology
- Faculty of Manufacturing Engineering
- Faculty of Engineering Technology
- Faculty of Chemical and Natural Resources Engineering
- Faculty of Industrial Management

Since UMP adopts ‘open registration system’ where students themselves decide when and which class of the English for Technical Communication to register, data on the number of students in each section is only available after the last day of registration date. This process is normally complete by the third week of each semester.

Experts from Engineering Industry

Besides language instructors and engineering undergraduates, this study involved individuals from industry who have knowledge about English oral presentations skill needed in engineering industry. Among them were engineers or people who were responsible for newly employed engineers and who had understanding of the English oral presentation needs of engineers in engineering workplaces.

The respondents from the industry were recruited through snowball sampling (Dörnyei, 2007). Through snowball sampling, the experts were asked to give names of their colleagues and contacts who they think might be willing to participate in the study. The respondents from industry were interviewed individually. As UMP’s niche area of focus are in automotive and chemical engineering, the respondents from industry were selected from the practicing engineers, but not limited to, or other relevant stakeholders who have this background of work experience.

Research Instruments

This study employs several data collection instruments namely questionnaire for language instructors and engineering undergraduates, a semi-structured interview questions with language instructors, focus group interviews with engineering undergraduates and stakeholders from engineering industry. Table 3.1 illustrates the research questions and the instruments used to elicit data from respondents involved in the study.The study seeks answers to the four major research questions and their sub-questions based on the four research objectives derived from the CIPP Model (Stufflebeam & Shinkfield, 2007). The following items provide detailed descriptions of research objectives and sub-objectives as well as specific research questions and sub-questions in this study.

Specific Research Objectives and Sub Objectives

The following are the objectives and their sub-questions.

Context Evaluation

Specifically, the context evaluation evaluates the elements of TOP within ETC course based on the following sub-objectives;

a) To evaluate the instructors' perception on the 'relevance' of the ETC course outcomes to students' English oral communication and TOP skills development for their future workplace needs.
b) To evaluate students' level of interest in Technical Oral Presentation (TOP).
c) To gauge instructors' perception on the students' level of interest to TOP.
d) To determine the extent of assets and facilities which support the development of engineering undergraduates' TOP skills.
e) To assess problems faced by engineering undergraduates in developing their TOP skills.

Input Evaluation

Specifically, input evaluation has the following sub-objectives;

a) To gauge instructors' perceptions of the contents of TOP skills T & L in the teaching module.
b) To gauge engineering undergraduates' perceptions on the suitability of content for TOP skills T & L in the teaching module.

c) To profile qualification and background experience of English language instructors teaching TOP.

Process Evaluation

Specifically, the process evaluation assesses the elements of TOP within ETC course based on the following sub-objectives;

a) To evaluate TOP teaching and learning activities that occur in classroom.
b) To evaluate the TOP assessment rubrics.
c) To evaluate instructors' teaching emphasis based on TOP assessment rubrics.
d) To evaluate instructors' strategies in giving feedback to students.
e) To evaluate students' perceptions of instructors' feedback on their TOP performance.
f) To propose ways to improve students' TOP from their perspectives.

Product Evaluation

Specifically, the product evaluation has the following specific sub-objectives;

a) To gauge perception of stakeholders from engineering industry on students' Technical Oral Presentation skills.
b) To suggest ways to enhance students' TOP skills as seen by industry stakeholders
c) To gauge students' own perception on their ability in TOP
d) To analyse students' self-perception of their TOP competencies across the faculties at UMP
e) To analyse students' self-perception of their TOP competencies across the faculties at UMP by controlling gender variable.

Specific Research Questions and Sub-Questions

The following are the research questions and their sub-questions.

Context Evaluation

RQ 1: Research question for context evaluation has the following sub-questions.

a) What are the instructors' perceptions on the 'relevance' of the English for Technical Communication (ETC) course outcomes to engineering undergraduates' English oral communication and Technical Oral Presentation (TOP) skills development for their future workplace needs?
b) How do engineering undergraduates perceive their interest in TOP?
c) How do instructors perceive engineering undergraduates' interest in TOP?
d) To what extent do assets and facilities help support engineering undergraduates' TOP skills development?
e) What are the problems faced by engineering undergraduates in developing their TOP skills?

Input Evaluation

RQ 2: Research question for input evaluation has the following sub-questions.

a) What are the instructors' perceptions on the suitability of contents and material for TOP skills T & L in the ETC module?
b) What are the engineering undergraduates' perceptions on the contents of TOP skills T & L in the teaching module?
c) What are the qualification profiles and background experience of English language instructors teaching ETC curriculum?

Process Evaluation

RQ 3: Research question for process evaluation has the following sub-questions.

a) What are the TOP teaching and learning activities that occur in classroom?
b) What are the TOP assessment rubrics?
c) How are these rubrics emphasised by instructors while teaching in class?
d) How do instructors give feedback to engineering undergraduates' TOP? What are their beliefs when giving feedback?
e) What are the engineering undergraduates' perceptions of instructors' feedback on their TOP performance?
f) What are students' suggestions on ways to improve their TOP skills?

Product Evaluation

RQ 4: Research question for product evaluation has the following sub-questions.

a) How do stakeholders from engineering industry perceive engineering undergraduates' technical oral presentation skills?
b) In what ways could students' TOP skills be enhanced?
c) How do engineering undergraduates perceive their competency in delivering Technical Oral Presentation (TOP)?
d) Is there any significant difference in students' competencies across the faculties?
e) Is there any significant difference in engineering undergraduates' perception on their TOP competencies across faculties by controlling gender?

Table 3.1 provides the sub-questions, instruments and respondents involved in the study.

Table 3.1

Research questions, instrument and respondents involved in the study

Evaluation aspects/ Research questions	**Respondents/object**				**Instrument**		
	Instructors	**Engineering undergraduates**	**Assessment rubric**	**Engineering Stakeholder**	**Questionnaires A**	**Questionnaires B**	**Interview**
RQ1: Context Evaluation							
a) What are the instructors' perceptions on the 'relevance' of the English for Technical Communication (ETC) course outcomes to engineering undergraduates' English oral communication and Technical Oral Presentation (TOP) skills development for their future workplace needs?	✓				✓		
b) How do engineering undergraduates perceive their interest in TOP?		✓					
c) How do instructors perceive engineering undergraduates' interest in TOP?	✓				✓		
d) To what extent do assets and facilities help support engineering undergraduates' TOP skills development?		✓				✓	
e) What are problems faced by engineering undergraduates in developing their TOP skills?		✓					✓

Table 3.1 (Continuation)

Evaluation aspects/ Research questions	Respondents/object				Instrument		
	Instructors	Engineering undergraduates	Assessment rubric	Engineering Stakeholder	Questionnaires A	B	Interview
RQ2: Input Evaluation							
a) What are the instructors' perceptions on the suitability of contents and material for TOP skills T & L in the ETC module?	✓				✓		
b) What are the engineering undergraduates' perceptions on the contents of TOP skills T & L in the ETC module?		✓				✓	
c) What are the qualification profiles and background experience of English language instructors teaching English for Technical Communication (ETC) course?	✓				✓		
RQ3: Process Evaluation							
a) What are the TOP teaching and learning activities that occur in classroom?	✓	✓					✓
Table 3.1 (Continuation) brics?	✓		✓				✓
c) How are these rubrics emphasised by instructors while teaching in class?	✓				✓		✓
d) How do instructors give feedback to engineering graduates' TOP? What are their beliefs when giving feedback?	✓				✓		✓

Table 3.1 (Continuation)

Evaluation aspects/ Research questions	Respondents/object				Instrument		
	Instructors	Engineering undergraduates	Assessment rubric	Engineering Stakeholder	Questionnaires A	Questionnaires B	Interview
	✓	✓				✓	
e) What are the engineering undergraduates' perceptions of instructors' feedback on their TOP performance?							
f) What are students' suggestions on ways to improve their TOP skills?		✓					✓
RQ4: Product Evaluation							
a) How do stakeholders from engineering industry perceive engineering undergraduates' technical oral presentation skills?				✓			✓
b) In what ways could students' TOP skills be enhanced?							✓
c) How do students perceive their competency in delivering Technical Oral Presentation (TOP)? (Questionnaire adopted from the Self-Perceived Communicative Competence questionnaire, McCroskey & McCroskey 1988)		✓				✓	
d) Is there any significant difference in students' competencies across the faculties?		✓				✓	

Table 3.1 (Continuation)

Evaluation aspects/ Research questions	**Respondents/object**				**Instrument**		
	Instructors	**Engineering undergraduates**	**Assessment rubric**	**Engineering Stakeholder**	**Questionnaires A**	**Questionnaires B**	**Interview**
Research Question 4(e):							
Is there any significant difference in engineering undergraduates' perception on their TOP competencies across faculties by controlling gender?		✓				✓	

Questionnaire Design

This study employed two sets of questionnaires; Sets of Questionnaire A (See appendix 1) were distributed to language instructors teaching the English for Technical Communication course (UHL 2422) while sets of Questionnaire B were distributed to engineering undergraduates taking the same course (See appendix 2).

A. Questionnaire for English Language Instructors

The questionnaires were given to all instructors teaching ETC at both Pekan and Gambang Campus. *Questionnaire A* for language instructors contains two sections, 1 and 2.

i. Items in Section 1

Section 1 contains demographic questions for instructors who teach ETC course. It covers gender, age category, educational background and experience of teaching.

ii. Items in Section 2

This section has three components of the CIPP evaluation Model, which are context evaluation, input evaluation and process evaluation. The researcher adapts and adopts items for the context evaluation, input evaluation and process evaluation. According to Stufflebeam & Shinkfield (2007), context evaluation assesses needs, problems, assets and opportunities related to beneficiaries. Stufflebeam and Shinkfield (2007) suggest that the evaluators might construct a survey instrument to investigate beneficiaries' needs. The evaluators might administer specific diagnostic tests to members of the target population by closely observed and identify needs, problems, assets and opportunities in the targeted environment. The evaluators might conduct focus a group meeting to review the gathered information.

According to Alderson (2001), process evaluation deals with questions like "what was the process of the programme?". Alderson further explains a simple way to understand process evaluation is by asking "what actually happens in classrooms?". However, Alderson (2001) also warns that a complete list of items which an evaluator would want to evaluate is likely to be long. Thus the evaluator should decide which areas are more or less central to the purpose of evaluation and whether the items are more or less observable at the point of evaluation.

In the questionnaire for instructors, context evaluation contains 20 items which evaluate the *relevance* of the ETC curriculum to students' TOP skills development for their future workplace needs, instructors' perception of engineering undergraduates' interest in TOP and instructors' evaluation of assets and facilities that support teaching and learning of TOP skills for engineering undergraduates.

The second component is Input evaluation. It contains six items to evaluate the extent to which the instructors believe that content and material in the ETC course module are helpful to support engineering undergraduates TOP skills development.

The third component is Process evaluation. This section has 17 items and items are designed to elicit instructors' emphasis on skills while teaching TOP to Engineering undergraduates with reference to TOP assessment rubrics. The questionnaires are also designed to elicit instructors' practices while giving feedback to their students and to elicit instructors' belief about their practices of providing feedback to students' TOP. Table 3.2 shows the number of items used in the evaluations of Context, Input and Process.

Table 3.2

The CIPP components, elements and number of items in the Questionnaire set A

Evaluation components	**Element**	**No of Items**	**Total**
Context	*The Relevance* of the ETC curriculum	9	
	Instructors' perception of Engineering undergraduates' interest in TOP	5	20
	Instructors' perception of assets and facilities to support TOP teaching & learning	7	
Input	Content and material for the TOP T&L in the ETC course module	6	6
Process	Instructors' emphasis on skills while teaching TOP	7	
	Instructors' feedback giving practices in engineering undergraduates' TOP assessment	4	17
	Instructors' general feedback giving practices while teaching TOP	3	
	Instructors' beliefs about their feedback giving practices	3	
		Total	43

B. Questionnaire for Engineering Undergraduates

The questionnaire has four sections namely *(A) context evaluation, (B) input evaluation, (C) process evaluation and (D) product evaluation.* The researcher develops items for the context evaluation, input evaluation and process evaluation while items in the product evaluation are adopted from the Self-Perceived Communication Competence (SPCC) questionnaires by McCroskey & McCroskey

(1988). In the set B questionnaire for engineering undergraduates, Context evaluation contains 11 items which evaluate the Engineering undergraduates' level of interest towards technical oral presentations and engineering undergraduates' evaluation of assets and facilities and to what extent they support teaching and learning of TOP skills in the classroom.

The second component is Input evaluation. It contains six items to evaluate the engineering undergraduates' perception on whether content and materials in the ETC course module are helpful to support their TOP skills development.

The third component is Process evaluation. This section has 12 items and they are designed to elicit engineering undergraduates' perception of their instructors' emphasis on skills while teaching TOP.

The questionnaire is also designed to elicit engineering undergraduates' perceptions on instructors' practices while giving feedback to their students. All the three evaluation components above use the five points Likert scales;

1 refers to Strongly Disagree (SD)

2 refers to Disagree (D)

3 refers to Fairly Agree (FA)

4 refers to Agree (A)

5 refers to Strongly Agree (SA)

Table 3.3 shows the number of items used in the evaluations of Context, Input, Process and Product.

Table 3.3

The CIPP components, elements and number of items in the Questionnaire set B (Engineering undergraduates)

Evaluation components	**Element**	**No of Items**	**Total**
Context	Engineering undergraduates' interest towards TOP	4	11
	The extent assets and facilities support TOP learning	7	
Input	Suitability of content and material in the ETC course module for the TOP T&L	6	6
Process	Engineering undergraduates' perception on instructors' emphasis of skills while teaching TOP	7	12
	Engineering undergraduates' perception on instructors' feedback giving practices on TOP assessment	5	
Product	Engineering undergraduates' perception on their competency in TOP *(adaptation from the SPCC questionnaire)*	12	12
		Total	41

Finally, the fourth component is the Product evaluation. This component contains 12 self-evaluation items adopted from the Self-perceived communication competence scale (SPCC) derived from McCroskey and McCroskey (1988).

The Self-Perceived Communicative Competence scale measures an individual's communicative competence in four settings – public speaking, meetings, group discussions and interpersonal conversations with communication partners or receivers - strangers, acquaintances and friends (McCroskey & McCroskey, 1988).

The SPCC consists of 12 self-evaluation items which measure an individual's communicative competence in the four basic communication settings on a scale of 0 to 100. An overall SPCC score is obtained ranging from 0 (completely incompetent) to 100 (completely competent). A total score of SPCC reflects an individual's self-perceived communicative competence.

A higher score of SPCC indicates an individual's higher self-perceived communication competence with basic communication contexts *(public, meeting, group, dyad*) and receivers (*strangers, acquaintance, friend).* For instance, a total score of 87 and above indicates higher self-perceived communicative competence while a total score of 59 and below indicates lower self-perceived communicative competence.

In this study, the researcher is interested to know how engineering undergraduates perceive their own self competence in public speaking as this context is in the vein of delivering technical oral presentations (TOP). The researcher also aims to evaluate engineering undergraduates' self-perceived communication competence across faculties of different major in engineering and against gender.

This is in line with Daly, Ayres and McCroskey (1997), who suggest that the best measure of self-perceived communication competence is the SPCC scale. The following Table 3.4 shows the interpretation of the SPCC scores (McCroskey & McCroskey, 1988). Table 3.4 below shows the calculation to compute the 12 SPCC items sub scores**.** Table 3.5 provides the SPCC score and its interpretation as adopted in this study.

Table 3.4

Calculation of the 12 SPCC items sub-scores

Communication context	**Calculation (add on each item scores)**
Public	1 + 8 + 12; divide by 3.
Meeting	3 + 6 + 10; divide by 3.
Group	4 + 9 + 11; divide by 3.
Dyad	2 + 5 + 7; divide by 3.
Stanger	1 + 4 + 7 + 10; divide by 4.
Acquaintance	2 + 6 + 9 + 12; divide by 4.
Friend	3 + 5 + 8 + 11; divide by 4.

Table 3.5

The SPCC score and interpretation

Communication context	SPCC Score	
Public	>86 High SPCC	<51 Low SPCC
Meeting	>85 High SPCC	<51 Low SPCC
Group	>90 High SPCC	<61 Low SPCC
Dyad	>93 High SPCC	<68 Low SPCC
Stranger	>79 High SPCC	<31 Low SPCC
Acquaintance	>92 High SPCC	<62 Low SPCC
Friend	>99 High SPCC	<76 Low SPCC
Total	>87 High SPCC	<59 Low SPCC

Source: (McCroskey & McCroskey, 1988).

In this study, the researcher interprets data of each communication context to be low, moderate and high. For instance, for public, the value ranging from 0 to 51 is considered as low, 51 to 86 as moderate and 86 to 100 as high. This scale is then used to interpret the self-perceived communicative competence of the engineering undergraduates across faculties and between genders.

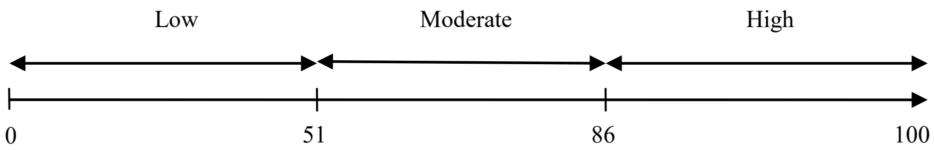


Figure 3.2: Interpretation scale for the SPCC for *public* communication context scores based on McCroskey & McCroskey (1988).

Interview

In this study, semi structured interviews were conducted with language instructors and engineering industry stakeholders. Six instructors and eight engineering industry stakeholders were involved in the semi structured interviews conducted between December 2016 until January 2017 (See appendix 5 Consent form for instructors to participate in interview). Although the semi structured interviews were conducted with only between six to eight respondents, Guest, Bunce and Johnson (2006) suggest that interview themes saturation begins to occur within the first twelve interviews and "basic elements of metathemes were present as early as six interviews" (p.1). This suggests that six and eight semi structured interview respondents are adequate for the purpose of this study.

Individual Interview with the Instructors

Semi-structured interviews were conducted with all the language instructors teaching the English for Technical Communication course for Semester 1 2016/2017 academic session. The main aim of conducting interviews with the language instructors is to generate data for answering research questions for context evaluation, input evaluation and process evaluation (See appendix 6 interview questions for instructors).

First, an interview will generate data to answer the following context evaluation research question (RQ 1a) “What are the problems faced by students in developing their TOP skills?”.

The language instructors who were interviewed served as key informants who have adequate experience and useful information regarding engineering undergraduates’ problems in developing their technical oral presentation skills. The semi-structured interviews were conducted individually and the interviews were taped-recorded with interviewees’ permission.

In order to probe further into the matter, several interview questions were developed and constructed based on Kavaliauskienė’s (2006) suggestion that instructors should deal with learners’ anxiety and fear while improving students’ public speaking.

According to Elis (1997), very often teachers make their own evaluation of teaching materials. Evaluation of teaching material occurs in two ways; a predictive evaluation and a retrospective evaluation. In the former, an evaluation is related to teachers’ decision on what materials to use; in the latter, an evaluation is to examine materials that have been used for teaching. This study adopts a retrospective perspective to evaluate the content of TOP teaching material in the course module. Retrospective evaluation can be conducted by teachers by relying on their impression or by a more systematic manner such as to conduct empirical evaluation (Elis, 1997). However, Elis (2007) opined that empirical evaluation is less common because it is time consuming.

This study intends to elicit teacher's judgement of the effectiveness of materials to engineering undergraduates' TOP skills development as provided in the ETC course module. Following that, a questionnaire is distributed to instructors and engineering undergraduates to gauge their perception on the effectiveness of materials related to TOP for teaching and learning available in the module (input evaluation).

Language instructors were also interviewed regarding process evaluation. Interview for process evaluation were also triangulated with set A questionnaire to yield data in order to answer the following process evaluation research questions;

a) What are the TOP teaching and learning activities that occur in classroom?

b) What are the TOP assessment rubrics?

c) How are these rubrics emphasised by instructors while teaching in class?

d) How do instructors give feedback to engineering graduates' TOP?

Appendix 6 lists the questions for semi-structured interview with language instructors.

Focus Group Interview with Engineering Undergraduates

According to Mackey and Gass (2005), focus group interview consists of several members who are often led by a facilitator or a mediator who is in charge of directing the discussion and keeping it focused on the issue discussed. Ideally, the number of members for each focus group should be between six to ten people (Dornyei, 2007). According to Stufflebeam and Shinkfield (2007), focus groups are extension of interviewing involving groups of individuals who are closely connected with the subject program. They are engaged to give their views on the case being studied and this may generate a great deal of useful information about the program. Focus group interviews, if properly constituted and conducted, certainly add very useful dimensions to a case study evaluation (Stufflebeam & Coryn, 2014). The semi-structured focus group interviews with engineering undergraduates aim to evaluate problems faced by students while delivering their technical oral presentations (See appendix 3 Student consent form to participate in focus group interview & appendix 4 focus group interview questions). It seeks to answer the following research questions

- What are the problems faced by engineering undergraduates in developing their TOP skills?
- What are students' suggestions on ways to improve their TOP skills?

The engineering undergraduates who participated in the focus group interviews formed homogeneous focus groups as they came from similar engineering background. According to Dornyei (2007), homogeneity in a focus group could promote the dynamics of the group and the homogeneous samples could "provide varied and rich data that covers all angles" (p.144).

Questions in the focus group interview include engineering undergraduates' personal experiences while learning TOP skills: for instances challenges while preparing and delivering their TOP as well as anxiety and fear management. Also, they were asked to suggest ways to improve their TOP skills.

Appendix 4 lists the questions asked during focus group interviews with engineering undergraduates.

Individual Interview with Industry Experts / Stakeholders

Individual semi-structured interviews were conducted with eight engineering industry stakeholders or experts from the engineering industry. The individual interviews with these key informants from industry seek to answer the following research questions for product evaluation

Research Question 4

a) How do stakeholders from engineering industry perceive engineering undergraduates' technical oral presentation skills?

b) In what way can the students' TOP skills be enhanced?

The semi-structured individual interviews involved key informants who are practicing engineers or stakeholders who are familiar with the delivery of technical oral presentation in industry. During the interview with the stakeholders from engineering industry, video clips containing several technical presentations from engineering undergraduates were shown to these stakeholders.

The product evaluation, which seeks to take into account perspectives of engineering workplace stakeholders, is proposed with the following rationale;

- To get the experts' perception on the effectiveness of students' technical oral presentation skills in the video clips;
- To seek the perspectives of engineering industry stakeholders on the ways the engineering undergraduate featured in the video clips could further improve their oral presentation skills as expected in engineering industry

The use of video is a part of an effort to collect data for Product Evaluation under the CIPP Model. According to Stufflebeam and Shinkfield (2007), the purpose of a product evaluation is to measure, interpret and judge program achievements. One of the main objectives is to determine the extent to which the needs of all the beneficiaries (engineering undergraduates) are met.

In order to probe for more in-depth responses from the key informant, the video containing technical oral presentations delivered by engineering undergraduates were used as a ‘cued response scenario’ (Basturkmen, Loewen and Elis, 2004). The use of video as prompts in interviews with stakeholders is adapted from the ‘cued response scenarios’- a technique developed by Basturkmen, Loewen and Elis (2004). In their study, Basturkmen, Loewen and Elis (2004) use the ‘cued response scenarios’ as one introspective technique to elicit data during interview with key informants. In this technique, participants are shown a set of scenarios in order to prompt for their initial reactions. Roth (2009) suggests that video elicitation techniques can be used alongside interviews with respondents to prompt discussion, stimulated recall or provide basis for reflection.

Video Clips as Interview Prompts: Selection of Video Clip Presenters

First, engineering undergraduates’ presentations for TOP assessment in the English Technical Communication course were recorded. Then, upon obtaining the overall scores of students’ TOP, the researcher analysed the total scores to get the scores of ‘the majority of students’ average marks in that group. Next, the researcher approached the students whose marks fall within this ‘majority of students’ and asked for their consent to use the video recordings of their presentations. Upon getting the consent, the video clips were used as prompts in the interviews with the stakeholders from engineering industry.

The video clips featured nine engineering undergraduates delivering technical oral presentation who had given consent for the researcher to use their technical presentation recordings for this study. Once the engineering industry stakeholders give their consent to participate in the interviews (See appendix 7), they were given opportunity to 'play, rewind, fast forward' the video clips as they wish . This was to ensure ample time for previewing of video clips was given prior to interviews.

In this study, video recordings of nine engineering undergraduates delivering technical oral presentations were shown to participants in order to prompt interview respondents to give their perspectives on technical oral presentation competencies as needed by professional engineers in Malaysian engineering communication workplace context. The rationale for the use of students' presentations as an introspective prompt technique is due to suggestion in the literature that the key skills looked for by employers is oral communication especially "the ability to deliver powerful and effective presentations" (Kassim & Ali, 2010, p 172).

The feedback from interviews with the respondents/ stakeholders from engineering industry will be reported with the view to informing the current practices and improving the existing practices in the T&L of technical oral presentations components to engineering undergraduates in the ETC course.

The respondents were also asked to give comment on methods the video clip presenters can use in order to be able to function in a communicatively competent level as required by industry (refer to Appendix 8 for the interview questions with the stakeholders from engineering industry).

The stakeholders then gave their comments on the 'effectiveness' of engineering undergraduates' presentations guided by questions posed by the researcher like "*Did the performance meet your standards?*". The comments made by the stakeholders after the preview of the video clips were analysed and considered as recommendations for UHL 2422 ETC course improvement. Stufflebeam and Shinkfield (2007) further stated that the product evaluation includes determining and examining the general and specific outcomes of the program and it is very helpful in making evaluation decisions.

It is expected that the interview with the stakeholders will result in

- a profile of a professional judgment / impression of the outcomes from the program given by important people from industry who are involved in the recruitment of graduate engineers
- impression of efforts which could inform and improve existing practices
- ideas on the worth and merit (Stufflebeam & Shinkfield, 2007) of the program under evaluation (based on the stakeholders' impression on students' performance)

The rationale for obtaining perspectives of respondents from the engineering industry on engineering undergraduates' competencies in delivering a TOP for product evaluation is based on Stufflebeam & Shinkfield's (2007) notion that "A product evaluation should gather and analyse stakeholders' judgments of the enterprise" (p. 345). In meeting the targeted needs of the ETC course where engineering undergraduates should be equipped with competencies in delivering TOP for their future workplace communication needs, recommendation from evaluation of product outcomes by stakeholders from engineering industry will help to keep instructors informed of any necessary changes and to stay focused on achieving outcomes.

Validity and Reliability of Research Instruments

This section describes the validation process and reliability test of the questionnaires.

Validity of Instruments

According to Frankel, Wallen and Hyun (2012), in quantitative study, "validity refers to the appropriateness, meaningfulness, correctness and usefulness of any inferences a researcher draws based on data obtained through the use of an instrument" (p.162). Generally, validity is the extent to which the instrument measures what it is intended to measure (Wiersma & Jurs, 2009). This study adopts questionnaires as the data collection instruments. According to Dörnyei (2007), questionnaires are the most common data collection instruments used in applied linguistics and social sciences research. The researcher uses two sets of self-developed questionnaires, Set A for language instructors and Set B for engineering undergraduates for this study. While all items on both questionnaires are self-developed, items in the Product evaluation section from questionnaire Set B is adopted from the SPCC questionnaire (McCroskey & McCroskey, 1988).

First, the items in the questionnaires for both set A for language instructors and Set B for engineering undergraduates were validated for face validity (See Appendix 10) by three language lecturers. Lecturer A has had 14 years English language teaching experience while Lecturer B has had 23 years of teaching. Changes in terms of language expression for items in the questionnaires have been made according to recommendations from the face validation experts, while for content validity, the questionnaires were sent to the content experts (See Appendix 9). Six experts were consulted and they were one associate professor and five senior lectures, all possessing doctoral qualifications. The six experts have been involved in designing curriculum and teaching of English for Specific Purposes for engineering undergraduates. They were selected because of their vast background experience and knowledge in English language requirement in engineering education. Feedback from the experts suggested the questionnaire need to be reviewed to avoid double barrel and need to avoid negative statement (See Appendix 11).

Reliability of Instruments

The items in the questionnaires were assessed by experts. In addition, the questionnaire was tested empirically to find the reliability index in order to measure the internal consistencies among the items. Reliability is defined as consistency of measurement (Anderson & Sohal, 1999; Hair, Black, Babin & Anderson, 2010; Sidek, 2002; Sidek & Wan Marzuki, 2007). Sekaran (2006) defines reliability as a measure of error, which guarantees consistent measurement over time in a particular study. In other words, Sekaran (2006) asserts that reliability serves as a measure of the stability of the measurement tool. Reliability coefficients commonly used in most of the research is the Cronbach alpha coefficient (Hair et al., 2010; Sekaran, 2006). A pilot study was conducted in order to collect data for reliability test of the questionnaire. In the same questionnaire, 12 items for the product evaluation are adopted from the Self-Perceived Communicative Competence questionnaire (McCroskey & McCroskey, 1988). It was found that the SPCC is a reliable and valid instrument with α Cronbach coefficients for the 12 items ranging from 0.67 to 0.92 (McCroskey & McCroskey, 1988).

Pilot Study

Anderson (1998) suggests that the number of respondents for pilot study is in the range of 6-12 would be adequate prior to conducting the real data collection. A pilot study was conducted in September 2014 with 79 (50.6 % male and 49.4% female) respondents amongst engineering undergraduates who registered in three sections of the UHL 2422 English for Technical Communication during the semester 1, 2014/ 2015 academic session at UMP. Overall, the respondents took around 15-20 minutes to complete the questionnaires. Respondents were also given an opportunity to ask questions whenever they found ambiguity in the questionnaires and in the instructions.

The purpose of the pilot study is to evaluate ambiguity that might exist in the instructions and to assess respondents' responses to the items in the questionnaires. From the pilot study, the reliability coefficient for the variables under study is 0.903. According to Hair et al. (2010), reliability coefficient greater than 0.70 is considered reliable. This shows that the items in the questionnaires are statistically valid and reliable, and they are ready to be administered. Table 3.6 illustrates the overall reliability coefficient score during pilot study.

Table 3.6

Overall reliability coefficient for pilot study

Cronbach's α	**Number of items**
0.903	28

Table 3.7 illustrates the reliability coefficient for each context evaluation, input evaluation and process evaluation for this study.

Table 3.7

Reliability coefficients for context, input and process evaluation

Variables/Constructs	Cronbach α
Context evaluation	0.721
Input evaluation	0.865
Process evaluation	0.916

Data Collection Procedure

Data Collection Procedure for Questionnaires A and B

Questionnaire set A were distributed to instructors teaching the English for Technical Communication (ETC) during the semester 1 2016/2017 session. While Questionnaires set B were distributed to students who enrolled in English for Technical Communication (ETC) course in the same semester.

Data Analysis Procedure

Data which were collected using the proposed instruments resulted in both qualitative and quantitative strands. Quantitative data were obtained from both sets of questionnaires; Set A (for language instructors) and Set B (for engineering undergraduates). Qualitative data were collected from interviews with engineering undergraduates, language instructors as well as from interviews with stakeholders from industry.

Quantitative Data Analysis

The quantitative data were analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 21. The analysis will yield data in the form of frequencies, percentage, means, standard deviation (SD) and Analysis of Variance (ANOVA).

This study employs the five points Likert scales for the Context, Input and Process Evaluation. The following Table 3.8 and 3.9 depict the Likert scale indicators used and their interpretations.

Table 3.8

Five-points Likert scales and their interpretation in the Context, Input and Process evaluation

Likert Scale	Interpretation in the Context, Input and *Process evaluation
1	Strongly disagree (SD)
2	Disagree (D)
3	Fairly agree (FA)
4	Agree (A)
5	Strongly Agree (SA)

**except items P8 to P13 of the process evaluation in the questionnaire for instructors.*

As shown in Table 3.9, the five-points Likert scales for items ‘p8 to p14’ in the process evaluation questionnaire for instructors mean the following

Table 3.9

Five points Likert scales and their interpretation for Process Evaluation (items p8-p13 in questionnaire for instructors)

Scale	Interpretation for Process evaluation
1	This item rarely or never occurred while giving feedback
2	This item sometimes occurred while giving feedback
3	This item occurred about half the time while giving feedback
4	This item frequently occurred while giving feedback
5	This item almost always occur while giving feedback

Reliability of the SPCC Result

Table 3.10 displays the reliability or Cronbach Alpha values of each of the SPCC sub scores. McCroskey and McCroskey (1988) reported that SPCC is a reliable and valid instrument with α Cronbach coefficients for the 12 items ranging from 0.67 to 0.92. Similarly, alpha Cronbach coefficients for the 12 items in this study also ranged from 0.626 to 0.859, thus it is considered a reliable instrument. Hence, it can be stated that this study has fulfilled the internal consistency.

Table 3.10

Cronbach alpha table used in this study

SPCC sub scores	Cronbach alpha
Friend	0.765
Dyad	0.626
Group	0.729
Public	0.713
Acquaintance	0.859
Meeting	0.732
Stranger	0.818
Total	0.840

Table 3.11 below shows the interpretation of mean scores for both questionnaires Set A and Set B.

Table 3.11

Interpretation of mean scores for the 5-point Likert scale used in the questionnaires Set A (Instructors) and Set B (Engineering undergraduates)

Mean	**Interpretation**
1.00-1.804	Very low
1.805-2.804	Low
2.805-3.404	Moderate
3.405-4.204	High
4.205-5.00	Very high

Table 3.12 shows the interpretation of mean scores for items P8 to P13 questionnaire for instructor.

Table 3.12

Interpretation of mean scores for items P8 to P13, Questionnaires Set A (Instructors)

Mean	**Interpretation**
1.00-1.804	Rarely occur
1.805-2.804	Sometimes occur
2.805-3.404	Occur about half the time while giving
3.405-4.204	Frequently occur
4.205-5.00	Almost always

Table 3.13 shows the data analysis procedures for the research questions in the study.

Table 3.13

Data analysis procedures of the research questions

Research questions	Source of data	Data analysis
RQ1: Context evaluation		
a) What are the instructors' perceptions on the 'relevance' of the English for Technical Communication (ETC) course outcomes to engineering undergraduates' English oral communication and Technical Oral Presentation (TOP) skills development for their future workplace needs?	Questionnaires	Mean score
b) How do engineering undergraduates perceive their interest in TOP?	Questionnaires	Mean score
c) How do instructors perceive engineering undergraduates' interest in TOP?	Questionnaires	Mean score
d) To what extent do assets and facilities help support engineering undergraduates' TOP skills development?	Questionnaires	Mean score
e) What are problems faced by engineering undergraduates in developing their TOP skills?	Interview	Interview themes
RQ2: Input evaluation		
a)What are the instructors' perceptions on the suitability of contents and material for TOP skills T & L in the ETC module?	Questionnaires	Mean score
b) What are the engineering undergraduates' perceptions on the contents of TOP skills in the ETC module?	Questionnaires	Mean score
c) What are the qualification profiles and background experience of English language instructors teaching ETC course?	Questionnaires	Percentage
RQ3: Process Evaluation		
a) What are the TOP teaching and learning activities that occur in classroom?	Interview	Interview themes
b) What are the TOP assessment rubrics?	Content analysis	Content themes
c) How are these rubrics emphasised by instructors while	Questionnaires	Percentage, mean score,

Table 3.13 (Continuation)

Research questions	Source of data	Data analysis
teaching in class?	Interview	interview themes
d) How do instructors give feedback to engineering graduates' TOP? What are their beliefs when giving feedback?	Questionnaires Interview	Percentage, mean score, interview themes
e) What are the engineering undergraduates' perceptions of instructors' feedback on their TOP performance?	Questionnaires	Percentage, mean score.
f) What are students' suggestions on ways to improve their TOP skills?	Interview	Interview themes
<u>RQ 4: Product Evaluation</u>		
a) How do stakeholders from engineering industry perceive engineering undergraduates' technical oral presentation skills?	Interview	Interview themes
b) In what ways could students' TOP skills be enhanced as suggested by engineering industry stakeholders?	Interview	Interview themes
c) How do students perceive their competency in delivering Technical Oral Presentation (TOP)?	Questionnaires SPCC	Mean score
d) Is there any significant difference in students' competencies across the faculties? H_0: There is no significant difference in competencies among undergraduates from different faculties at UMP H_1: There is significant difference in competencies among undergraduates from different faculties at UMP	Questionnaires	ANOVA
e) Is there any significant difference in students' competencies across the faculties by controlling gender? H_0: There is no significant difference in competencies among undergraduates from different faculties at UMP by controlling gender variable H_1: There is significant difference in competencies among undergraduates from different faculties at UMP by controlling gender variable	Questionnaires	ANCOVA

Qualitative Data Analysis

Qualitative data in the form of interview were analyzed based on Creswell's (2011) models of data analyzing and data coding. The analysis involved several steps which began with the analysis of audio-recorded data from interviews. The audio-recorded data were listened to, read thoroughly and transcribed comprehensively.

Next, the researcher assigned code to the data. Coding is defined by Creswell (2011) as the process of "segmenting and labeling text to form descriptions and broad themes in data" (p.243). During this process, data in the form of interview transcriptions were scrutinized and salient categories were identified through a complete analysis of every single word phrase and sentences.

According to Creswell and Clark (2007), qualitative validation refers to "assessing whether the information obtained through the qualitative data collection is accurate" (p.134). In this study, data were validated using peer examination and data triangulation techniques. Qualitative data were obtained from focus group semi-structured interviews with students, one to one interviews with instructors and industrial stakeholders.

To ensure reliability of qualitative data, Cresswell and Clark (2007) suggest that researcher should conduct a process of making comparison of coding among several coders known as "intercoder agreement" (p.135). In this study, two coders were selected to code the transcript. The comparisons of the coding of the transcripts were made and the results showed that both coders assigned similar codes as the researcher's coding.

Ethical Consideration

To safeguard the interest of all parties involved, this study addressed and adhered fully to the rules and regulations of research ethics. Gaining access to research site, informed consent and confidentiality are among the most important issues that were addressed fully in this study.

Summary of the Chapter

This chapter outlines the methods and procedures in conducting the evaluation of Technical oral presentation (TOP) skills in the English for Technical Communication course. Using the framework of the CIPP Model (Stufflebeam & Shinkfield, 2007), this study employs quantitative and qualitative methods for data collection process. Quantitative data were generated from the questionnaires Set A and set B while qualitative data were generated from interviews with respondents who were engineering undergraduates, language instructors as well as experts from engineering industry. Quantitative data were analyzed using SPSS version 21 while qualitative data were analyzed to complement quantitative data. This would provide a comprehensive analysis of the CIPP model components proposed in this study.

CHAPTER IV

FINDINGS

Introduction

This chapter presents findings of the study where data were derived from Questionnaire Set A (for instructors), Questionnaire Set B (for engineering undergraduates), focus group interviews with engineering undergraduates, semi-structured interviews with English language instructors and semi-structured interviews with stakeholders from engineering industry.

Profile of Respondents

Profiles of Teaching Instructors

The profiling of teaching instructors is important as it provides valuable background information of the teaching personnel involved in the teaching of UHL 2422 English for Technical Communication course.

From Table 4.1, it can be seen that there are more female respondents as compared to male with percentages of 58.3 and 41.7 per cent, respectively. In addition, half of the respondents are between the ages of 36 to 45. It may be argued that the age of the teaching personnel reflects the experience that they have accumulated in teaching profession. It could be argued that the longer years of teaching experience of instructors may suggest more 'maturity' in terms of handling teaching and learning process.

Table 4.1

Profiles of teaching instructors (n=12)

Item		Frequency	Percentage (%)
Gender	Male	5	41.7
	Female	7	58.3
Age	Less than 25	1	8.3
	26-35	4	33.3
	36-45	6	50.0
	More than 45	1	8.3

Profiles of Engineering Undergraduates

In evaluation of curriculum, profiling of respondents who are taking the course under evaluation will provide vital demographic information of beneficiaries and other relevant information towards understanding their needs. The following profiles of engineering undergraduates provides background information of gender, age, MUET band scores as well as their faculty of study.

According to Stufflebeam and Coryn (2014) in describing a program's context, the profiling of respondents involved in the study from multiple data source may provide needed contextual information which is significant to address participants' needs and problems in an evaluation study. Evaluators may employ qualitative or quantitative methods through the use of a variety of techniques to obtain information from multiple sources. This information will be useful later in order to make informed decisions in any improvement effort as a result from the study. From Table 4.2 below, it can be inferred that there is almost a balanced number of male and female respondents with 51 % and 49%, respectively. In addition, the majority of the respondents are aged between19 to 25 years old with

96.8%. Other than that, it can also be seen that half of the respondents' English proficiency are in MUET band 3 with the percentage of 52.3%.

Table 4.2

Profiles of engineering undergraduates

Demographics of the Respondent

n=310

Measure	**Item**	**Frequency**	**Percent**
(%)			
Gender	Male	158	
51.0			
	Female	152	
49.0			
Age	19-25	300	
96.8			
	26 and above	10	3.2
MUET	Band 1	11	3.5
	Band 2	58	
18.7			
	Band 3	162	
52.3			
	Band 4	74	
23.9			
	Band 5	3	1.0
	Band 6	1	0.3
	Not stated	1	0.3

In Table 4.3, it can be seen that FKKSA (The Faculty of Chemical and Natural Resources Engineering) has the highest number of respondents with 17.4%, and followed by FKM (Faculty of Mechanical Engineering) with 16.5%. The least number of respondents is in FKP (Faculty of Manufacturing) with only 4.5%.

Table 4.3

Distribution of engineering undergraduates based on faculties (n=310)

Faculty	Frequency	Percentage
Faculty of Industrial Science & Technology	22	7.1
Faculty of Electrical Engineering	31	10.0
Faculty of Civil Engineering & Earth Resources	51	16.5
Faculty of Chemical Engineering & Natural Resources	54	17.4
Faculty of Engineering Technology	43	13.9
Faculty of Computer Systems and Software Engineering	23	7.4
Faculty of Manufacturing Engineering	14	4.5
Faculty of Mechanical Engineering	51	16.5
Faculty of Industrial Management	21	6.8

The next section will report findings for each research question according to the components of *context, input, process* and *product* evaluation posed in the study.

Research Question 1: CONTEXT EVALUATION

This section will report the findings regarding the research question 1, Context Evaluation, and its sub-research questions a, b, c, d, and e.

Research Question 1 (a):

What are the instructors' perceptions on the 'relevance' of the English for Technical Communication (ETC) course outcomes to engineering undergraduates' English oral communication and Technical Oral Presentation (TOP) skills development for their future workplace needs?

'Relevance' of course outcomes as seen by instructors

Instructors' perspectives were sought on the relevance of the course outcomes statement as stated in the English for Technical Communication document towards meeting the engineering undergraduates' TOP English language needs and development. The notion whether the CO2 statement is perceived by instructors to be in line or not with the mission and vision of the Universiti Malaysia Pahang and its suitability for engineering undergraduate language needs are assessed.

Data for RQ 1 (a) are derived from instructors' perception on the relevance of the English for Technical Communication (ETC) course outcome No 2 statement below;

By the end of the semester, students should be able to;	
CO 2 ***(Course outcomes No 2)***	**demonstrate presentation skills using relevant content, accurate language and appropriate delivery strategies individually and in group presentations**

From Table 4.4, the highest mean score is 4.67 and it showed that all respondents regardless of age and years of experience are in complete agreement that the course outcomes of the ETC course below is suitable for English language needs of engineering students in Malaysia and also in line with the mission and vision of the Universiti Malaysia Pahang (UMP).

Second, the majority of the respondents also agreed that the course outcome (CO2) of ETC course is suitable for engineering undergraduates at UMP with mean score of 4.58. The lowest mean score is 3.83, where respondents were in slight agreement that the course outcome (CO2) of ETC course above designed based on Engineering Accreditation Council (EAC) manuals.

The overall mean of all the items 'relevance' of the ETC course outcomes is 4.33, 0.799 SD indicating very high level. This shows that the instructors highly agree on the relevance of the course outcomes towards meeting students' TOP needs and institutional needs. It can be argued that the instructors understand the relevance of the CO2 statement to their students' English language needs especially that of TOP needs and this reflect their understanding of institutional educational mission and vision. All the instructors are also aware that they need to meet the engineering faculty programme outcomes based on the Engineering Accreditation Council (EAC) requirements.

Table 4.4

Mean and standard deviation of items for 'relevance' of ETC Course Outcomes (related to TOP element) seen by instructors

Statement	Mean	Std. Dvt	Interpretation
Ca1) I think the course outcome (CO2) of the ETC course above is suitable for English language needs of engineering students in Malaysia.	4.67	0.778	Very high
Ca 2) I think the course outcome (CO2) of ETC course above is designed based on Engineering Accreditation Council (EAC) manuals.	3.83	0.937	High
Ca 3) I think the course outcome (CO2) of ETC course above is consistent with the Board of Engineers Malaysia's (BEM) aspiration of producing competent professional engineers.	4.17	0.835	Very high
Ca4) I think the course outcome (CO2) of ETC course above is in line with the mission and vision of the Universiti Malaysia Pahang (UMP).	4.67	0.651	Very high
Ca5) I think the course outcome (CO2) of ETC course above is suitable for engineering undergraduates at UMP.	4.58	0.669	Very high
Ca6) In my opinion, the course outcome (CO2) of ETC course above is achievable by engineering undergraduates at UMP.	4.33	0.492	Very high
Ca7)The course outcome (CO2) of ETC course above focuses on technical oral presentation (TOP) skills.	4.00	1.044	High
Ca8) The course outcome (CO2) of ETC course above is suitable for engineering undergraduates' English technical	4.42	0.900	Very high

Table 4.4 (Continuation)

Statement	Mean	Std. Dvt	Interpretation
oral presentation needs for their future workplace.			
Ca9) The course outcome (CO2) of ETC course above is relevant for engineering undergraduates' technical oral presentation (TOP) skills development for their future workplace.	4.33	0.888	Very high
Overall	**4.33**	**0.799**	**Very high**

Research Question 1 (b):

How do engineering undergraduates perceive their interest in TOP?

Engineering Undergraduates' Level of Interest in TOP

Engineering undergraduates' perception of interest towards the English for Technical Communication course that they are studying is an important indicator to evaluate *Context Evaluation* and it could possibly be used as a predictor to measure achievement of the course outcomes.

Data for RQ 1 (b) are drawn from the Questionnaire Set B distributed among engineering undergraduates who participated in the study. From Table 4.5 below, it can be stated that respondents are in agreement that they have a good level of interest in TOP. The mean scores range from 3.25 to 3.93 with the standard deviation values were in between 0.884 to 0.927.

The item *"I am interested to learn about technical oral presentation skill"* is the highest mean score with 3.93, SD 0.884 as compared to other items. This is followed by the item *"I look forward to attending technical oral presentation (TOP) class"* with the mean of *3.72, SD 0.922.*

The items *"I like to give technical oral presentation in class"* and the item *"I feel that giving technical oral presentation is easy* received the mean scores of 3.35, SD 0.922 and 3.25, SD 0.927 respectively.

The overall mean of all the items measuring the engineering undergraduates' perception of their interest in TOP was 3.56, 0.913 SD indicating high level of interest towards TOP.

Table 4.5

Engineering undergraduates' perception of their interest in TOP

Item	Mean	Std. Deviation	Interpretation
Cb1) I am interested to learn about technical oral presentation skill	3.93	0.884	High
Cb2) I look forward to attending technical oral presentation (TOP) class	3.72	0.922	High
Cb3) I like to give technical oral presentation in class	3.35	0.919	Moderate
Cb4) I feel that giving technical oral presentation is easy	3.25	0.927	Moderate
Overall	**3.56**	**0.913**	**High**

Research Question 1 (c):

How do instructors perceive engineering undergraduates' interest in TOP?

Instructors' Perception on Students' Interest in TOP

Data for RQ 1 (c) is derived from the Questionnaire Set A distributed among instructors teaching the English for Technical Communication course.

From Table 4.6 below, it can be inferred that the instructors perceive that their students are interested to learn about technical oral presentation (TOP) skills with mean score of 4.33. They also believe that their students realize the importance of developing technical oral presentation (TOP) skills for their future career with mean score of 4.00. The least mean score is 3.83 where instructors feel only slight agreement that their students show enthusiasm when asked to give TOP. The standard deviation ranging from 0.492 to 0.853 indicated that respondents' answers were near mean scores.

The overall mean of all the items for instructors' perception on engineering undergraduates' interest in TOP was 4.05, 0.640 SD, indicating high level. This implied that the instructors highly agree that engineering undergraduates are perceived to have high interest in TOP.

Table 4.6

Instructors' perception on engineering undergraduates' interest in TOP

Statement	Mean	Std. deviation	Interpretation
Cb1) In my class, students are interested to learn about technical oral presentation (TOP) skills.	4.33	0.492	Very high
Cb2) In my class, my students show enthusiasm when asked to give technical oral presentation.	3.83	0.577	high
Cb3) I believe that students realize the importance of developing technical oral presentation (TOP) skills for their future career.	4.00	0.853	High
Overall	**4.05**	**0.640**	**High**

Research Question 1 (d):

To what extent do assets and facilities help support engineering undergraduates' TOP skills development?

Assets and facilities that support Students' TOP Development (Perceived by Students and Instructors)

It can be argued that engineering undergraduates' process of TOP skills learning and development will take place more effectively in a conducive environment in terms of adequate facilities and assets. Another important evaluation item under the context evaluation is the extent assets and facilities are supportive towards students' TOP skills learning and development, as seen by both instructors and engineering undergraduates.

Data for Research Question 1 (d) are drawn from Questionnaire set A for instructors and Questionnaire Set B for engineering undergraduates.

From Table 4.7, it can be stated that engineering undergraduates are in agreement that the assets and facilities support their TOP development. The mean scores ranged from 3.31 to 3.77 with the standard deviation values ranged between 0.895 to 0.973. The item "*Internet access is efficient whenever instructors need to show online materials related to giving technical oral presentation"* was the highest mean score with 3.77, 0.973 SD as compared to other items.

This is followed by the item "*Classrooms are equipped with facilities that support students' technical oral presentation learning"* with the mean value of 3.76, 0.877 SD. The lowest mean value was for the item "*Self-access software available in* *the language labs like tell me more are somewhat helpful in my learning of technical oral presentation skills"* with the mean value of 3.31, 0.969 SD.

The overall mean of all the items measuring engineering undergraduates' perception of whether assets and facilities are supportive to their TOP development was 3.61, 0.936 SD, indicating high level. This indicates that the majority of the engineering undergraduates highly agree that assets and facilities provided for them support their TOP development.

Table 4.7

Engineering undergraduates' perception of whether assets and facilities are supportive to their TOP development

Item	Mean	Std. Dvd	Interpretation
Cc3) Internet access is efficient whenever instructors need to show online materials related to giving technical oral presentation	3.77	0.973	High
Cc1) Classrooms are equipped with facilities that support students' technical oral presentation learning	3.76	0.897	High
Cc5) Classroom, language lab facilities and other assets for students' technical oral presentation learning are sufficient	3.68	0.895	High
Cc4) Students do not complain about lack of facilities and tools which hinder their technical oral presentation learning	3.65	0.969	High
Cc2) I can access learning software related to learning oral presentation skills even after class	3.50	0.913	High
Cc6) Self-access software available in the language labs like tell me more are somewhat helpful in my learning of technical oral presentation skills	3.31	0.969	Moderate
Overall	**3.61**	**0.936**	**High**

Assets and Facilities Perceived by Instructors

It can be argued that facilities provided in classrooms could enhance efficiency in instructors' teaching process thus well benefiting students. Among important facilities deemed important is availability of efficient internet connection important when instructors want to show online resources such as video of famous presenters from YouTube channels.

From Table 4.8, it can be inferred that the internet connection is excellent for the instructors whenever they need to show online material related to teaching and learning of technical oral presentations (TOP) to the students with the mean score of 4.50, 0.674 SD. This is followed by item "*Students do not complain about lack of facilities and tools which hinder their technical oral presentation skills learning"* with the mean score of 4.33.

Next, respondents were in slight agreement with item *"Learning software related to learning oral presentation (TOP) skills are available for students to use in the language labs*" and the item *"Self-access software like Tell Me More and others are somewhat helpful in my students' learning of technical oral presentation skills"* with the mean scores of only 3.25 and 3.33, indicating moderate level. However, the overall mean score is 3.915, 0.99 SD reflecting high level.

The moderate level of respondents' agreement in item learning software which is related to learning of Technical Oral Presentation in the language labs may be due to the fact that certain language learning software was installed quite some years before and it may already be obsolete and becoming less interesting considering the time factor.

Table 4.8

Instructors' perception whether assets and facilities are supportive to their TOP teaching to engineering undergraduates

Statement	Mean	Std. Dvt	Interpretation
Cc1) Classrooms are equipped with facilities that support students' technical oral presentation (TOP) skills learning.	4.00	0.853	High
Cc2) Learning software related to learning oral presentation (TOP) skills is available students to use in the language labs.	3.25	1.215	Moderate
Cc3) Internet connections are efficient whenever I need to show online material related to teaching and learning technical oral presentations (TOP) to my students.	4.50	0.674	Very High
Cc4) Students do not complain about lack of facilities and tools which hinder their technical oral presentation skills learning.	4.33	0.651	Very High
Cc5) Classroom and language labs facilities and assets for students' technical oral presentation learning are sufficient.	4.08	1.084	High
Cc6) Self access software like Tell Me More and others are somewhat helpful in my students' learning of technical oral presentation skills.	3.33	1.435	Moderate
Overall	**3.915**	**0.99**	**High**

Research Question 1 (e):

What are problems faced by engineering undergraduates in developing their TOP skills?

Problems faced by Engineering Undergraduates in TOP Skills Development

The findings on problems faced by students in their TOP skills development will be presented in the following sequence. In order to understand problems faced by engineering undergraduates while developing their technical oral presentation skills, data were collected from open ended questionnaire, the focus group interviews with engineering undergraduates as well as from open ended questionnaire distributed among instructors.

First, the data from open ended questionnaires (Questionnaire Set B) collected from the responses of engineering undergraduates based on statement will be presented. This is followed by data from focus group interviews with engineering undergraduates. Next, data from open ended questionnaires (Questionnaire Set A) based on feedback from instructors teaching the English Technical Communication course will be presented. Finally, data from semi-structured interviews with instructors will be presented.

TOP Problems Faced by Students from Open Ended Questionnaire Analysis

Together with the Questionnaire Set B distributed for engineering undergraduates, there is an open ended section prompting the respondents to describe in written form problems that they face while developing their TOP skills. The responses were analysed and the problems were divided into the following categories of problems and difficulties faced by the engineering undergraduates as can be seen in Figure 4.1.

In order to better visualize the problems faced by students, data derived from students' open ended responses are illustrated in terms of percentages as shown in Figure 4.1 below. It is important to note that, it is not always the case where one respondent stated only one problem; sometimes multiple problems hindering their TOP development were listed by respondents.

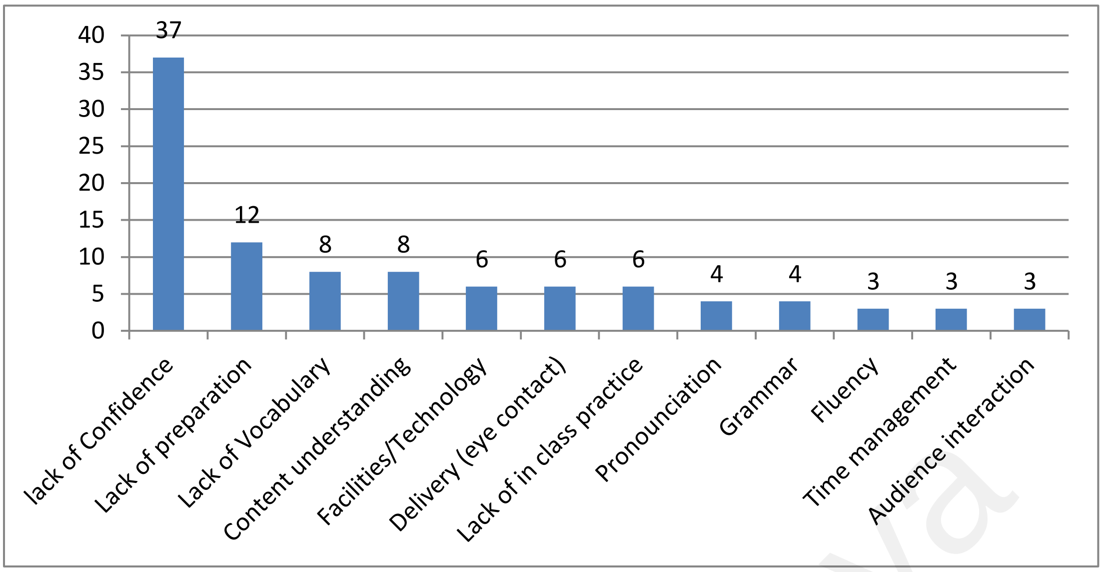


Figure 4.1: Problems (%) faced by students in TOP skills development (n=310)

From the analysis of open ended questionnaire prompting students (*n*= 310) to describe the problems they face while developing their TOP skills as shown in Figure 4.1, most of the students stated that lack of confidence is the main problem faced by them in the development of TOP skills with 37 %.

Other than that, lack of preparation is the second problem faced by them with 12%. Further, 8% of the respondents stated difficulty in vocabulary and content understanding while 6% stated that they face problems in facilities/ technology, delivery problems which include eye contact as well as lack of in class TOP practice. Furthermore, 4% of the respondents reported that they have problems in pronunciation and grammar while 3% stated that their problems lie in fluency, time management and audience interactions.

To show samples of students' responses written in the open ended section of the survey questionnaire, a few samples are shown here taken from a survey paper which is coded with the label RX, where X depicts the number of respondent as the response sheet is labelled for data entry purposes. The following excerpts are samples of statements taken from students' responses depicting issues of low self confidence, lack of vocabulary, lack of delivery skills, facilities/ technology problems, time management and audience interaction. Respondents' expressions were not altered and reported here as they were written in the open ended section of the questionnaire.

Self-confidence

R7: Low self-confidence.

R47: My pronunciation is still low; my confidence is a bit low.

R48: Confidence level of student is a bit low.

R104: Nervous when all audience look at me.

R197: Nervous and sometimes voice cannot be heard clearly, need to use microphone.

R213: Lack of confidence

Lack of vocabulary

R118: Do not understand the meaning of certain word.

R135: Pronunciation and lack of vocabulary.

R103: Hard to understand technical term.

Lack of delivery skills

R166: Eye contact and low voice

R183: Scare to make eye contact and nervous

R241: Problem on how to attract audience attention; problem in grammar; and feel nervous during presentation.

Others

R119: Internet connection is too slow.

R173: Time management

Students' TOP Problems findings from Students' Focus Group Interviews

To gain more understanding on problems faced by students in their TOP, nine focus group interviews were conducted with engineering undergraduates who enrolled in English for Technical Communication classes. Participants were voluntary students who agreed to participate in the focus group interviews.

The analysis of focus group interview data required several steps including participant verification and data coding. The transcriptions were analysed manually and repeated themes were looked for and grouped together with the help of a qualitative analytical software tool known as Weft QDA.

The respondents in the focus group interview were coded based on their focus group interview number, gender and participant number. For instance, a participant code G2/1/M refers to a participant who is interviewed in the focus group number 2, participant number one and a male engineering undergraduate.

The focus group interviews were conducted in English and *Bahasa Melayu* and engineering undergraduates could code switch between the two languages whenever students were at ease in using both languages. All speeches in Bahasa Melayu were translated into English by the researcher who is a bilingual speaker (proficient in both English and Malay) and great care was taken to ensure the meaning of utterances remains the same.

The following findings i-iv emerged from the students' focus group interview describing problems that engineering undergraduates face in developing their TOP skills;

i. Low Self-Confidence and High Anxiety Level

The participants for each focus group interview were given code; for example *G1/1/F* refers to respondent from focus group interview one, speaker number one and a female. In the focus group interview, participants were asked to describe problems that they face while developing their technical oral presentation skills.

Many respondents highlighted that their feeling of nervousness affected them very much while they are presenting. This affects their level of self-confidence during technical oral presentation delivery.

For instance,

G1/1/F: "I am a person who have a very low self-confidence level, in fact very low. I cannot present in front of people… I am so nervous that I don't know what to say although I have prepared earlier …when I am in front of the audience I felt very nervous".

G6/2/M: "For me, nervousness is the real problem. When I started to feel nervous, I will forget everything".

Respondents also suggest that nervousness occur due to lack of exposure to delivering presentation at their faculty.

G2/5/F: "Nervous. Because we were not exposed to presentation. It's very rare for us to present. Because in our faculty, we present only in English class".

One respondent identified shyness as one of the major hurdles.

G1/2/F "Shy. Lack of confident. May be because we do something we don't normally do. New thing".

ii. Difficulty in Language

Pronunciation

Respondents stated that they feel nervous because they think the audience would find it difficult to comprehend their presentation as they think their English word pronunciation is not good. For instance,

G2/2/M: "I think I feel nervous every time I present. I know English is not my native language. I sometime afraid if I present and nobody could understand. Maybe my pronunciation is not so good. Maybe I understand what I said, but afraid that my friend don't understand".

G1/3/F: "For me, my problem is pronunciation of words in English".

Grammar

Difficulty to form sentences and grammar issues are also highlighted by students as problems affecting their ability in presentation. G1/2,3,4/F spontaneously agreed that grammar is their biggest challenge while G1/2/F stated sentence structure and content arrangement as one of the main challenges to deliver effective TOP.

Vocabulary

Another student suggests that lack of vocabulary affects effective presentation delivery.

G1/5/M: "Vocabulary. Lack of vocabulary. But if I have prepared earlier on, maybe I can. But if spontaneous, surely I cannot".

G7/3/F: "I think the difficulty is language. When students want to speak in English, they will need to think about the ideas in Bahasa Melayu. So the conversion process from Bahasa Melayu to English would take time if students lack vocabulary…so students will end up looking for words err…..err….errr…."

G7/1/F: "If we were to present about specific measurement, we must know specific word and the right term, we cannot just simply say things".

iii. Issues in explaining presentation content and facing audience

Engineering undergraduates suggested that they face challenges in facing unfamiliar audience, inability to deliver presentation content as well as facing TOP assessment.

New/Unfamiliar Audience

One of the focus group interview respondent stated that nervousness can occur due to new unfamiliar classmates when they present.

G3/2/1: "If our audiences are new friends whom we know only for a few weeks, it is very nervous to present in front of them. If we already knew the audience, probably there won't be any problem".

Another respondent suggested that although she has practiced, presenting in front of new classmates made her feel nervous and affected her fluency.

G3/4/F: "I was not fluent when I presented in the assessment although I had practiced. I was nervous because there were new classmates".

For another respondent, the fact that there was an audience was reason enough to cause anxiety, despite earlier preparation, not necessarily new faces.

G7/5/F: "The factor that made me feel nervous is the audience. Even though I have prepared for the presentation, I still feel nervous".

Other respondents pointed out that nervousness can occur due to inability to explain technical presentation content to audience.

G4/1/M: "I am the type who is very nervous. Before presentation, I started to feel nervous, when I see the audience, I become more nervous. The situation that made me become very nervous is when, for instance, when I need to present technical things, I don't know how to explain to make my audience understand".

iv. Anxiety Due to Assessment

One respondent suggested that students feel nervous if they know there will be presentation assessment and their final mark depend on their performance in presentation.

G9/1/M: "If I present just for fun, I am not that nervous. However when we present for the final assessment and we know that our marks depend on our performance, we feel that we are obliged to deliver our best, then we will feel pressure and become very nervous".

Students' TOP difficulties from Instructors' Perspectives (Written)

Data were also collected from open ended section from the instructors' questionnaire (Set A) distributed for instructors. The open ended section of the questionnaire (Cd1) prompts instructors to list problems that they think are faced by engineering undergraduates which hinder their technical oral presentation skills development. Data from the open ended section from the Set A questionnaire for teaching instructors were collected from six out of twelve respondents from the English Language Department (DEL) who returned the questionnaires with their written responses. The instructors involved in the study were also teaching the same group of students during that period and the returned questionnaires were marked with *Xa* where *'X'* depicts instructor and an '*a*' is the number written on each returned questionnaire. For instance, each returned questionnaire is marked with code *X1* depicting Set A questionnaire received from instructor 1. The followings are the problems observed and reported by the instructors.

i. Lack of confidence and High Anxiety Level

Instructor X1 observed that students are nervous and show lack of confidence during their presentation. Instructor X1 observed *that* "Students tend to read from slides, lacking delivery skills such as eye contact possibly due to nervousness". Instructor X1 also reiterated that generally students display lack of confidence in their presentations,

X1: "Some students are highly dependent on power point slides.. use power point slides as crutches... Some students' voice is very soft".

Instructor X6 listed the following shortcomings as factors affecting students' TOP performance;

X6: "Lack of confidence level (shy), poor command of English, lack of motivation to present instead treating presentation just for the sake of passing the presentation, too many words on slides and inability to handle Q&A (questions and answer) session with the audiences".

ii. Lack of Practice

Another problem observed by the instructors is lack of students' TOP practice on their own. Instructor X1 believed that more practices will lead towards higher self-confidence level.

X1: "Students don't practice enough. The more they practices, the more the confidence level will increase. There are right ways to practice".

Instructor X3 similarly suggested that,

X3: "Students' performances were not up to the level that I expected…I suspect that students ignore the fact that they have to do a lot of practices on their own before the actual presentation day".

In similar vein, instructor X 5 also observed that students lack

X5: " ..the ability to comprehend the importance of rehearsal before the presentation" as well as lack of "ability to deliver their presentation within time limit".

It is suggested that engineering undergraduates should change their perceptions and treat learning as a pleasant experience where making mistakes is common. Instructor X1 remarks that,

X1: "In their minds, English is difficult for them. This creates a barrier for them to move forward. So we have to remove the barrier. Show them that English is easy. English class has to be a non-threatening environment where making mistakes are 'cool' things".

iii. Limited Time in Preparation of Presentation

Instructor X3 stated that among problems students face which hinder them from delivering good technical presentations were due to,

X3: "Limited time to elaborate and emphasize on technical details, low proficiency level and lack of preparation due to the many assignments from all courses".

iv. Lack of Vocabulary, Language and Presentation Skills

Instructor X4 observed that lack of vocabulary, language and lack of presentation skills are among the problems students face in their TOP,

X4: "Lack usage of terminologies in their technical oral presentations, weak delivery skills and weak language skills"

Findings from Interviews with Instructors on Students' TOP Difficulties

During interviews with instructors teachings TOP to engineering undergraduates who enrolled in English for Technical Communication course, instructors were also asked about problems and difficulties faced by students in TOP. The following four themes were derived from semi structured interviews with six instructors.

i. High Anxiety Level and Lack of Confidence

Students were seen by their instructors to have high anxiety level and issues with self-confidence in delivering technical oral presentations. The following excerpts illustrate these problems.

ELI/F/1: "Number two is how they handle the lack of confidence. How do they tackle the fear, apprehension and lack of self-confidence?"

ELI/F/1: "They also have problem with communication with fear of presenting, with the anxiety that come from presentation".

ELI/F/1: "This semester I have two different classes, first is 95% Chinese and the second is 100% Malay. So I can see the Malay group are struggling with the language and anxiety/self-confidence. Whereas for Chinese group, not so much of the language but maybe self-confidence. They are not afraid, but sometimes they make mistake, but it's ok".

ELI/F/2: "Confidence. Due to lack of content, lack of practice, the input is not strong enough and they know it, so they will not feel confident and then language itself".

ELI/F/3: "I would say the students lack practices and confident, or maybe we didn't give them enough practice whereby they can develop their confident".

ELI/F/4: "For the delivery, usually we have vocal characteristic, body language. Some of them experienced anxiety when they have to present. And I can actually have noticed whether they have the anxiety or not to their vocal characteristics. Whether their tone is stable or not, their body language, whether they just stood and not moving at all".

ELI/F/5: "I think biggest anxiety and fear for them is standing in front of people that they don't know".

ELI/F/6: "I really had a bad case. This person cried after presentation for about 10-15 seconds and I ask her to stop and breath. But she refused, she want to proceed, then when she continued, she cried some more and this has happened for 3 times and it was so difficult for me. How did I give mark for someone like this? But later I talk to her and she said that she had slept about 3-4 hours to prepare for that presentation. We think that the students don't really face the high anxiety level, but actually they really do. I think anxiety level for presentation for good student it would be 6 out of 10, and for those average student it would be about 7 or 8. And we think that they don't prepare, but they actually do. But because of the anxiety, the presentation was ruined".

ii. Lack of Preparation and Practices

Instructors also observed that students do not prepare and practise enough on their own. The following excerpts reflect these issues.

ELI/F/2: "So, the issue that I have with them is not only they are shy, they are not confident, but I think it comes from lack of preparation. So, it's a major impact when you don't prepare, it will affect your delivery skills".

ELI/F/2: "Most of my students, not only lack delivery skill, but also lack preparation, they go hand in hand".

ELI/F/3: "I would say the students lack practices and confident, or maybe we didn't give them enough practice whereby they can develop their confident".

ELI/F/3: "So that means, their delivery skills are also lacking. I think the student just needs the practices".

ELI/F/5: "Sometimes, they have problem in reading the slide all the time instead of rather than facing the audience. There also some students that unprepared and we can see the differences if you have some preparation or not".

iii. Lack of Content Knowledge Understanding

Instructors also reported that students have problems due to limited knowledge of the TOP presentation content, as can be seen in the following excerpts.

ELI/F/1: "To prepare their assignment, definitely they need to understand first the task. What is it they required to do? I think understanding of topic, relevance of the topic is essential because this is the sort of foundation. If they feel comfortable with the topic, they can talk about the topic. Even when they missed a few couple of seconds, they still can catch up because they know the topic. So I think topic selection and topic understanding is very important".

ELI/F/2: "Other than that, preparing the content. Like I said I can teach them the intonation, how to present, how to deliver, the confidence level. And I gave them also the template, the structure, how to present the intro, the content, the conclusion. And then it's up to the student to get that content down for them to present. So if they don't have that content to present, it will also affect the delivery skills at the same time".

ELI/F/4: "For me, in term of the content, the technical oral presentation is different with oral presentation. The terminology used also different. Let say we have the first assessment which is technical description, which the student has to make a research on the object, they have to know better about the object. So I think the difficulty could be come from the research part. Because when we talk about researching, most of the student will going to do online research, sometimes it would be easier for them to search it online. But some of the object cannot be found in online research. It is not in internet. So, to understand the object itself would be difficult for some of them".

ELI/F/6: "I think what we did at the lab was to search for the content and when I walk around I think they have tendency to cut and paste. Then a lot of assistance on how to organize the content, what is exactly the point of the presentation and we start from there. They have the content, but they still need the assistance on which content is appropriate and relevant. Actually they need to have critical reading. If you're not careful, they tend to cut and paste someone else presentation".

iv. Difficulty in Language

Instructors explained that engineering undergraduates were observed to have issues with English language which affect their TOP presentation ability. These excerpts below reflect students' language struggles in TOP.

ELI/F/1: "They also have problems with English language".

ELI/F/1: "With regard to language, I think our student lack of the reading skills. Lack of vocabulary. So when you explain the product and you don't have enough vocabulary, you are not able to use adjective to describe/elaborate the word. Or you not able to use adverb to describe how in term of manner".

ELI/F/1: "Because in describing technical object, we use a lot of adjective. Sometimes they even can't differentiate between long and length, high and height etc".

ELI/F/1: "As far as we know, some of the student come in with band 1 or 2, majority of our Bumiputra (Son of soil) student are in that band 1 or 2 group. So, I hope they will learn something from the previous subject, so that I don't have to spend so much time for the language. However that is not the case. I still spend time on language. So I do it simultaneously with speaking, content and language because of the time factor".

ELI/F/2: "Confidence. Due to lack of content, lack of practice, the input is not strong enough and they know it, so they will not feel confident and then language itself".

ELI/F/3: "Another problem would be the language, especially when we are teaching in English".

ELI/F/3: "As for delivery, we can just tell the people to increase the volume, dressed better, and practice so that the practices will give the confident to deliver better. But language should be the hardest; it only comes with the practice, the more we practice, the more the language will set to our brain and the more we're familiar to it. Because if we are not so good in terms of language, we will stuck at the wording process. On language, they have to work a lot on their own but I do give them the activities and resources which can help them".

ELI/F/4***:*** **"**In terms of the language of course like I mentioned just now, they lack of vocabulary, in term of the terminology and in term of their pronunciation, grammar".

ELI/F/5: "When I asked them what they think about public speaking, they don't like it because of the language. Yes, I asked them if you have to present in BM (Malay Language), you like or not. And most of them said they can present. So it's actually problem in language. That is the biggest problem for them".

ELI/F/6: "They don't see the benefit of reading a lot. Then the use of vocabulary which is not appropriate, and their timing because I think they're not rehearse enough".

ELI/F/6: "Then I think some students that have very low proficiency probably the anxiety is high. It is unusual to see in students that have high proficiency, but I think they go through as well".

In short, various problems related to engineering undergraduates' difficulties were discovered from written responses and interviews involving both instructors and engineering undergraduates. Data from instructors in both from written sources and interview themes were consistent, that the comments were focusing on engineering undergraduates' preparation for TOP. From both data sources, the instructors highlighted problems of lack of confidence, high anxiety, lack of practice time and language issues as the inhibitors for engineering undergraduates to be successful in their TOP delivery. Table 4.9 provides a list of Technical Oral Presentation (TOP) difficulties faced by engineering undergraduates.

Table 4.9

Summary of TOP difficulties as seen by instructors and engineering undergraduates

Source	Engineering undergraduates' perspectives	Instructors' perspectives
Written responses	1. Lack of confidence 2. Lack of preparation 3. Lack of vocabulary 4. Issues in content understanding 5. Problems related to facilities/ technology 6. Problem in delivery skills (eye contact) 7. Lack of in-class practice 8. Language issues (Pronunciation, grammar, fluency) 9. Time management during presentation 10. Issues with audience interaction	1. Lack of confidence 2. High anxiety level 3. Lack of students' practice 4. Limited time in preparation of TOP 5. Lack of vocabulary 6. Issues in language and presentation skills
Interview themes	1. Low self confidence 2. High anxiety level 3. Difficulty in language (pronunciation, grammar, vocabulary) 4. Issues in explaining TOP content 5. Issues in audience management 6. Anxiety due to assessment	1. Lack of confidence 2. High anxiety level 3. Lack of preparation 4. Lack of practices 5. Lack of content knowledge understanding 6. Difficulty in language

Data from engineering undergraduates' side for both written and interview themes generally echo what the instructors have identified as stumbling block affecting their TOP delivery. Similar to the descriptions provided by their instructors, engineering undergraduates cited problems of lack of confidence, preparation problem and most predominantly they voice out the issues of language proficiency as factors affecting their TOP delivery. Besides language related issues, engineering undergraduates also highlighted the problems of facility and mastery of delivery skills – all these were quite similar notion to what were put forth by their instructors.

Drawing from the above description of issues faced by engineering undergraduates in their TOP delivery, Table 4.10 delineates the common recurring issues and source of data specifically.

Table 4.10

A closer look at the issues faced by engineering undergraduates in TOP and sources

Issues	**Source Engineering undergraduates**		**Instructors**	
	Written responses	Focus group Interview	Written responses	Individual Interview
+ Lack of confidence & high anxiety level	✓	✓	✓	✓
+ Lack of preparation	✓	✓	✓	✓
+ Lack of vocabulary	✓	✓	✓	✓
+ Issues in language proficiency	✓	✓	✓	✓
+ Issues in delivery skills (eye contact with audience and audience management)	✓	✓	✓	✓
+ Issues on TOP Content	✓	✓		✓
+Time management during presentation	✓	✓	✓	✓
+ Issues with technology	✓		✓	✓

The TOP challenges put forth here may be categorized according to components which are commonly used in assessing oral presentation skills which are 'Language', 'Content' and 'Delivery' (See for e.g Alwi & Sidhu, 2013; Weir & Robert, 1994). The data gathered from engineering undergraduates in this study suggest that they perceived themselves as facing difficulties in the three components of *language, delivery* and *content.* Instructors in the study also hold the same view regarding engineering undergraduates' ability TOP as the engineering undergraduates. However, the study conducted by Alwi and Sidhu (2013) showed that students' self-evaluation scores for all 37 aptitudes statement used in the study were mostly higher than average and that they perceived themselves as quite accomplished in oral presentation skills. In contrast, the evaluators believed that the students' actual performance in *language* and *delivery* skills were below average and to some extent are far from being outstanding, thus depicting discrepancies in students actual performance as seen by their instructors and students' self-evaluated scores for language and delivery component.

Henceforth, as data from this study suggest, the three components of language, content and delivery only may not be adequate to describe the necessary components where engineering undergraduates must show mastery of TOP skills. Perhaps another component may be needed to expand this limitation and the researcher proposes a new component to be added known as "Professionalism". For instance, issues of properly handling and managing audience such as responding to audience's questions during presentation may be classified under the "Professionalism' rubric. The researcher discusses the notion of "Professionalism" in a more detailed elaboration in chapter five.

The difficulties faced by engineering undergraduates as reported from both engineering undergraduates themselves and that of observations made by instructors above delineate the multifaceted challenges which might be obscure to course designers and would be helpful for improvement effort. In essence, a large proportion of engineering undergraduates are struggling with various problematic factors which hinder successful and effective delivery of Technical Oral Presentations thus requiring further attention. Low self-confidence and high anxiety issues, lack of preparation, language related difficulties such as unfamiliar vocabulary, grammar, pronunciation of words and lack of fluency are among the factors affecting their TOP delivery. Similarly, the respondents in the study conducted by Hamouda (2013) pointed out that delivering oral presentations in the classroom were regarded as the most anxiety-provoking activity. The problems faced by students above are similar to the findings reported by Mariana Yusoff (2008), who stated that most students were not able to convey their technical messages effectively to audience during technical presentation. According to her, struggling for appropriate vocabulary, producing ungrammatical sentences and phrases are impediments to get their message across to their audience.

Some difficulties as reported above are similar to Tong's study (2009) who reported that among the difficulties faced by his Vietnamese students in oral presentations were in expressing presentation content, organizing selected information, finding large amount of ESP vocabulary in materials, selecting topics, selecting presentation forms, selecting visual aids, selecting roles of group members, lacking of time to rehearse, lacking concentration and lacking presentation skills. However, selection of topics and gathering information, preparation of visual aids and managing roles of group members were not listed among the TOP challenges as expressed by the respondents in this study. Besides that, similar to difficulty in unfamiliar vocabulary as reported by the respondents in this study, Seffar (2015) reported that, in a study involving 40 EFL instructors and 200 Moroccan high school students, both instructors and students identified learners' vocabulary deficiency as the main factor behind students' inability to speak English. Seffar (2015) also suggested that explicit vocabulary learning strategies should be integrated into existing curriculum.

Similarly, the difficulties reported above are similar to the findings in the study conducted among University Teknologi Malaysia (UTM) engineering undergraduates by Mahani Stapa, Noor Asniza Murat and Norasita Ahmad (2014), who reported that students had difficulty in language, possessing low self-confidence, facing difficulty to explain presentation content as well as limited knowledge on presentation skills. The findings also corroborate the many concerns highlighted in previous research with regards to lack of confidence among engineering undergraduates in execution of Technical oral presentations and other communication tasks. Lack of confidence may occur as a result of high anxiety level faced by the engineering undergraduates whenever they are required to deliver technical oral presentations in front of the audience (Mohd Radzuan & Kaur, 2011). Adding to that, Woodrow (2006) points out that delivering oral presentation is considered the most stressful communicative event for Asian students. Along the same notion, Hussain, Ganapathy and Mohamad (2015) asserted that more opportunity should be provided for students to practice oral communication skills; and they also need more time to prepare and practice oral presentation skills which are important for their professional development and towards fulfilling workplace communication needs upon completion of study.

Evaluation of all the problems and challenges faced by engineering undergraduates as discussed above require attention from parties responsible for course improvement effort. This is vital because, in light of these engineering undergraduates' employment opportunity upon graduation, Wahiza Wahi (2014) reported that employers list the ability to deliver successful presentations first among the list of other skills sought from new graduates who enter the workforce.

Research Question 2: INPUT EVALUATION

This section will report the findings regarding the research question 2 Input Evaluation and its sub-research questions a, b, c and d.

Research Question 2(a):

What are the instructors' perceptions on the suitability of contents and material for TOP skills T & L in the ETC module?

The instructors' Perceptions on the Suitability of Contents and Material for TOP Skills learning

One important evaluation question being asked in the input evaluation component is the suitability of content and material provided in the English for Technical Communication module designed to facilitate engineering undergraduates' TOP skills learning and development. For this purpose, both instructors' and engineering undergraduates' perspectives on the suitability of contents and material for TOP skills learning were collected and analysed.

To gauge instructors' perception on the suitability of the contents and material provided for teaching and learning of TOP skills in the ETC module, data for items *ia1* to *ia6* in the questionnaire Set A for instructors were analysed and reported in Table 4.11.

From Table 4.11, the highest mean score is 4.42, 0.669 SD where respondents were in agreement that they had no difficulty in following the ETC course materials related to teaching of TOP.

This is followed by the item "*The contents / materials in oral presentation section in the ETC module are appropriate for students' pace, interaction pattern and the sequence in acquiring technical oral presentation skills" with the mean value of* 4.08, 0.793 SD, where respondents agreed that the contents / materials in oral presentation section in the ETC module are appropriate for students' pace, interaction pattern and the sequence in acquiring technical oral presentation skills.

The respondents also agreed that the ETC module materials related to oral presentation skills correspond to the course objectives. The least mean score is 3.75 which is shared by two items which are "*The overall design of activities (pictures, chart, lay out) related to teaching-learning of oral presentation skills in the ETC course module is satisfactory"* and "*The ETC course material provides students with what they need to know in the learning of technical oral presentation skills"*. The standard deviation ranges were between 0.669 to 0.996 and this showed that respondents' answers were near the mean scores.

The overall mean scores for instructors' perceptions on the suitability of contents and material for TOP skills teaching and learning in the ETC course module is 4.00, 0.786 SD. This indicates high agreement among instructors where they agreed that the contents and TOP related material in the ETC module are suitable for teaching engineering undergraduates.

Table 4.11

Instructors' perceptions on the suitability of contents and material for TOP skills teaching and learning in the ETC course module

Statement	Mean	Std. Deviation	Interpretation
ia1) The overall design of activities (pictures, chart, lay out) related to teaching-learning of oral presentation skills in the ETC course module is satisfactory.	3.75	0.622	High
ia2) The ETC course material provides students with what they need to know in the learning of technical oral presentation skills.	3.75	0.965	High
ia3) The contents / materials in oral presentation section in the ETC module are appropriate for students' pace, interaction pattern and the sequence in acquiring technical oral presentation skills.	4.08	0.793	High
ia4) The ETC module materials related to oral presentation skills correspond to the course objectives.	4.08	0.669	High
ia5) I had no difficulty in following the ETC course materials related to teaching of technical oral presentation skills.	4.42	0.669	Very high
ia6) The tasks and exercises in oral presentation skills unit in the ETC module are effective in improving engineering undergraduates' technical oral presentation skills.	3.92	0.996	High
Overall	**4.00**	**0.786**	**High**

Research Question 2(b):

What are the engineering undergraduates' perceptions on the contents of TOP skills T & L in the ETC module?

Engineering Undergraduates' Perceptions on the Content of TOP Skills Learning in the ETC Module

Data for Research Question 2 (b) are drawn from Questionnaire Set B distributed among engineering undergraduates.

Table 4.12 shows respondents' perceptions towards the content related to the learning of TOP skills provided in the English Technical Communication course module. The findings showed that they were in high agreement in their perception regarding the contents of the TOP skills learning in the ETC module. The mean score for the item "*The module material related to oral presentation skills correspond to the course objectives*" was the highest with 3.86, 0.753 SD.

This is followed by the item "*The course material provides you with what you needed to know in learning of oral presentation skills*" with the mean score of 3.85, 0.773 SD. The lowest mean score was for the item "*You had no difficulty in following the course material relevant to technical oral presentation skills in the module*" with 3.74, 0.840 SD.

The standard deviation score (0.753 to 0.840) demonstrated greater consistency among the respondents in responding to the questionnaire; most of the them responding near to the mean, which was 3 to 4 on 5-point Likert scale.

The overall mean of 3.81, 0.799 SD showed that the majority of the engineering undergraduates highly agree that the content of the material in the ETC course module were suitable for their TOP skills learning.

Table 4.12
Engineering undergraduates' perceptions on the content for TOP skills learning in the ETC module

Item	Mean	Std. deviation	Interpretation
1) The module material related to oral presentation skills correspond to the course objectives	3.86	0.753	High
2) The course material provides you with what you needed to know in learning of oral presentation skills	3.85	0.773	High
3) The tasks and exercises in oral presentation skills unit in the module are effective in improving your technical oral presentation skills	3.81	0.837	High
4) The overall design of activities (pictures, chart, lay out) related to teaching-learning of oral presentation skills in the course module is satisfactory	3.80	0.780	High
5) The content materials in oral presentation section in the module are appropriate for students' pace, interaction pattern and the sequence in acquiring technical oral presentation skills	3.79	0.812	High
6) You had no difficulty in following the course material relevant to technical oral presentation skills in the module	3.74	0.840	High
Overall	**3.81**	**0.799**	**High**

Research Question 2 (c):

What are the qualification profiles and background experience of English language instructors teaching ETC course?

Profiles of Instructors' Background Experience

According to Stufflebeam and Shinkfield (2007), one important criteria of input evaluation is the extent of the use of available resources. This is done by critically examining to what extent they are used and whether they are used appropriately in order to achieve the underlying course objectives. In this study, the available resource refers to instructors who were teaching English for Technical Communication course and data about their academic background and experience were profiled.

Data for the research question 2(c) above were drawn from the Questionnaire Set A distributed among instructors teaching English for Technical Communication course. Table 4.13 below displays the background information of instructors teaching English for Technical Communication course. The majority of respondents had master's degree with the score of 50%, followed by doctoral qualifications with 41.7%.

In terms of experience in teaching, ten instructors (83.3%) had between 5 to 21 years of teaching experience while only 2 (16.7%) had less than five years experience. Lastly, the majority of respondents were involved in the development of the ETC course material with the percentage of 66.7%. This data showed that the majority of the instructors can be regarded as highly experienced teaching personnel and have been in teaching profession between five to 21 years.

Table 4.13

Instructors' academic qualification, teaching experience and involvement in the development of TOP course material

Item		Frequency (*n*=12)	Percentage (%)
Academic	Bachelor	1	8.3
	Master	6	50.0
	PhD	5	41.7
Experience	Less than 5 years	2	16.7
	5-10	2	16.7
	11-15	3	25.0
	16-20	4	33.3
	More than 21	1	8.3
Involvement in the development of TOP course material	Yes	8	66.7
	No	4	33.3

Research Question 3: PROCESS EVALUATION

This section will report findings pertaining to RQ 3 Process Evaluation and its sub-research questions a, b, c, d, e and f.

Research Question 3 (a):

a) What are the TOP teaching and learning activities that occur in classroom?

TOP Learning Activities that Occur in Classroom

Data for the research question 3 (a) above were derived from nine focus group interviews with engineering undergraduates. The following themes emerged from the analysis of the focus group interviews with engineering undergraduates when they were asked to describe activities related to learning of technical oral presentation (TOP) conducted in classroom with their instructors. The following were the activities conducted by their instructors in classrooms.

i. Pre-Presentation Activities

Instructors conducted pre-presentation practices by asking students to present in pair in front of the class.

G3/5/F: "Pre-presentation means that we practise to speak in front of class and we have to do it in pair work".

From these pre-presentation activities, the instructors then gave feedback on how to improve students' presentation.

G3/2/M: "From the pre-presentation, we will improve our presentation based on the feedback given by our instructor".

ii. Drawing and Guessing of Object

An instructor asked the students to draw an object then ask other students to guess the object.

G21/1/M: "We need to draw something, explain about the object and the audience need to guess it.

iii. Impromptu Presentation

Instructors also asked students to deliver impromptu presentations in front of the class.

G2/4/F: "Besides drawing, we also have public speaking..the lecturer gave the topics and we have to present on the spot".

iv. Previewing of Video Clips from Famous Speakers.

Instructors also showed video clips of public speakers like Steve Job in order to inspire their students.

G3/5/F: "Our lecturer shows us Jobs's presentation. From the video, we watch and learn how he presents in front of the audience".

Students were sharing the similar beliefs that viewing famous public speakers video clips had helped them to learn about presentation skills and these too helped to improve their confidence level in their technical oral presentations.

G6/4/F: "For me, the most interesting part is when the lecturer shows us video clips of famous speakers".

v. Solving and Preparing Presentation Tasks in Group Work

Students were required by the instructors to work in a group of 4 to 5 students. The groups are required to choose an object and then they are required to search for more information about the object online. Examples of the objects are microphone, USB pen drive, mouse etc. Students searched the information by using the computer in the language labs or by using their internet communication devices. Respondents seem to enjoy working with the classmates while searching for the information about the object online.

Students reported that they like to participate in group based activities.

G6/6/M: "It is fun to work in group. We are asked to choose an object then together we have to look for more information about the object. It is a good activity and it teaches us cooperation skills".

vi. Constant Exposure to Improve Presenters' Confidence Level

Students also informed that instructors tried to expose them to do a lot of practices to build confidence level and to improve presentation skills from the beginning of the class.

G4/4/F: "During our first class, our lecturer gave us a chance to introduce ourselves in front of the class, one by one. Since then, the training of becoming an effective has begun".

One of the instructors even employs a special technique to develop students' presentation skills. The students are required to present and then record their presentations at their hostel rooms. These video clips of students' presentations are then sent to their instructor via *WhatsApp* application.

G4/3/F: "We had one activity where we need to record our presentations in our rooms and the send to our lecturer using *whatsApp*. Only instructor can view the video clips".

All the activities above were geared towards preparing engineering undergraduates for pair work technical oral presentation assessment on technical description of a product they choose which was held in week 6 of Semester 1, 2016/2017 session. Building students' skills and ability and at the same time developing them to achieve a higher level of confidence as the week's progress towards in class TOP assessment is crucial and this has to take place almost naturally in them. Instructors' roles are important at this stage as developing students' confidence level requires their tactful care as sometimes the progress may not be as expected by instructors.

Research Question 3(b):

What are the TOP assessment rubrics?

TOP Assessment Rubrics

Data for the research question 3(b) above were drawn from the Assessment 1A document, obtained from the English for Technical Communication course coordinator.

According to the document *Assessment IA (see Figure 4.2)*, which outlines instructions for the pair technical oral presentation assessment for UHL 2422 English for Technical Communication course for Sem 1, 2016/2017, students are required to deliver 10 minutes presentation describing a technical product (students choose their own product) to their classmates. Students were given a specific scenario – that they were supposed to describe the product and to persuade the audience (their classmates) to purchase the product. Students were informed about the presentation outlines and they are required to prepare not more than ten power points slides for this assessment.

The IA assessment carries 25% of the total marks for that semester and students' TOP were assessed individually in *Content* (20 marks), *Language* (15 marks) and *Delivery* (15 marks) respectively. The total marks (50 marks) *for Content, Language* and *Delivery* will be computed for percentage. Figure 4.2 shows the assessment scheme for the IA assessment.

COMPONENTS	STUDENT 1	STUDENT 2
Content (20 marks) **Introduction** • Attention getter • Self-introduction • Purpose of the presentation • Overall description followed by preview of main parts	**1 2 3 4 5**	
Body • Major part 1 and/or sub-part (purpose & sources of description)	**1 2 3 4 5**	
Body • Major part 2 and/or sub-part (purpose & sources of description)	**1 2 3 4 5**	
Body • Major part 3 and/or sub-part (purpose & sources of description)		**1 2 3 4 5**
Body • Major part 4 and/or sub-part (purpose & sources of description)		**1 2 3 4 5**
Conclusion Summarize your presentation. Explain the benefits of the product and provide a persuasive closing.	**1 2 3 4 5**	**1 2 3 4 5** **1 2 3 4 5**
Visual aids • Effective use of visual aids		
	/20	/20
Language (15 marks) • Effective transition signals • Specific language expressions & sources of description • Correct language use of tenses (SVA & Simple Present tense)	**1 2 3 4 5** **1 2 3 4 5** **1 2 3 4 5**	**1 2 3 4 5** **1 2 3 4 5** **1 2 3 4 5**
Delivery (15 marks) • Vocal characteristics • Eye contact, posture & gestures • Appearance & time management	**1 2 3 4 5** **1 2 3 4 5** **1 2 3 4 5**	**1 2 3 4 5** **1 2 3 4 5** **1 2 3 4 5**
	/30	/30
TOTAL	**/50**	**/50**

Figure 4.2: Top technical oral presentation assessment rubrics taken from Assessment 1A, English for Technical Communication Sem 1, 2016/2017.

Research Question 3(c):

How are these rubrics emphasised by instructors while teaching in class?

Instructors' Teaching Emphasis on Components of TOP Assessment Rubric *(Content, Delivery and Language)* as seen by Engineering Undergraduates

To gauge data on how engineering undergraduates perceive their instructors' TOP skills teaching emphasis according *to Content, delivery* and *Language* components as written in the TOP Assessment 1A rubrics, data were collected from items *P1* to *P4* in the Questionnaire Set B for engineering undergraduates (refer to Table 4.13) and items P1 to P7 (refer to Table 4.14) in Questionnaire Set A for instructors.

Table 4.14 indicates that the engineering undergraduates highly agree that all components in the TOP skills assessment rubrics were given strong emphasis by their instructors. However, the highest is item p1) *"While learning in class, my lecturer gives emphasis on students' mastery of delivery skills (e.g. eye contact, gesture)"* with the mean score of 4.28, SD 0.794.

Instructor emphasis on students' mastery of language skills were ranked second by the respondents with the mean score of 4.22 with standard deviation of 0.788. Data also shows that respondents perceived that their instructors gave a fairly equal emphasis on delivery skills, language skills and content knowledge while teaching with the mean score of 4.15 and standard deviation 0.782.

On the other hand, instructors' emphasis on mastery of content knowledge received the lowest mean score of 4.11 and 0.790 SD. The standard deviation score (0.782 to 0.794) demonstrated greater consistency among the respondents in responding to the questionnaire; most of the them responding nearest to the mean, which was 4 to 5 on 5-point Likert scale.

The overall mean scores of 4.19, 0.789 SD for items measuring engineering undergraduates' perception on instructors' TOP skills teaching emphasis showed highly positive perceptions towards instructors' teaching emphasis on mastery of delivery skills, mastery of language skills, mastery of content knowledge and mastery of all the three skills. The respondents perceived that their instructors give equal emphasis to components of delivery, language and content during their TOP skills teaching in classrooms.

Table 4.14

Engineering undergraduates' perception of instructors' TOP skills teaching emphasis

Item	Mean	Std. deviation	Interpretation
P1) While learning in class, my lecturer gives emphasis on students' mastery of delivery skills (e.g. eye contact, gesture)	4.28	0.794	Very high
P2) While learning in class, my lecturer gives emphasis on students' mastery of language skills (pronunciation, fluency)	4.22	0.788	Very high
P4) My lecturer gave a fairly equal emphasis on delivery skills, language skills and content knowledge in students' oral presentation	4.15	0.782	High
P3) While learning in class, my lecturer gives emphasis on students' mastery of content knowledge (e.g. mastery of knowledge and information related to presentation topic)	4.11	0.790	High
Overall	**4.19**	**0.789**	**High**

Instructors' emphasis in teaching of TOP based on assessment rubrics components

From Table 4.15, it can be interpreted that instructors highly agree that they give more emphasis on students' mastery of content knowledge (e.g. knowledge and information related to presentation topic) and they explain clearly about the marking schemes and assessment criteria to students before their technical oral presentation test, with both having mean score of 4.67, SD 0.651 and 0.492 respectively.

Other than that, three items have the same mean scores of 4.33 which are P2) *In my teaching, I give more emphasis on students' mastery of language skills (pronunciation, fluency etc.),* P5) *I explain clearly about the assessment procedures (e.g time given for students to deliver their technical oral presentation test)* and P7) *I allocate enough time for students to practice their technical oral presentation skills in class before conducting the test.*

The overall mean score of 4.48, 0.69 SD for items on instructors' TOP skills teaching emphasis showed all items were given very high emphasis by instructors while conducting their TOP teaching. The data suggests that instructors give similar attention to all the three important components of TOP as stipulated in the TOP assessment rubrics.

However, the quantitative data when analysed with the findings of qualitative from semi structured interview with instructors show little discrepancies where instructors reported to have given more attention to certain aspects of the TOP assessment components. This is discussed further in the qualitative findings section.

Table 4.15

Instructors' TOP skills teaching emphasis as seen by instructors

Statement	Mean	Std. Dev.	Interpretation
P1) In my teaching, I give more emphasis on students' mastery of delivery skills (eg eye contact, gesture).	4.58	0.515	Very high
P2) In my teaching, I give more emphasis on students' mastery of language skills (pronunciation, fluency etc.	4.33	1.073	Very high
p3) In my teaching, I give more emphasis on students' mastery of content knowledge (eg knowledge and information related to presentation topic).	4.67	0.651	Very high
P4) In my teaching, I give equal emphasis on students' mastery of delivery skills, language skills and content knowledge in students' technical oral presentation.	4.42	0.669	Very high
P5) I explain clearly about the assessment procedures (e.g time given for students to deliver their technical oral presentation test).	4.33	0.778	Very high
P6) I explain clearly about the marking schemes and assessment criteria to students before their technical oral presentation test.	4.67	0.492	Very high
P7) I allocate enough time for students to practice their technical oral presentation skills in class before conducting the test.	4.33	0.651	Very high
Overall	**4.48**	**0.69**	**Very high**

Research Question 3(d):

d) How do instructors give feedback to engineering graduates' TOP? What are their beliefs when giving feedback?

Instructors' Strategies in Giving Feedback to Engineering undergraduates' TOP

First, to gauge data on instructors' strategies in giving feedback for engineering undergraduates' TOP skills learning, data were collected from items P8 to P13 in Questionnaire Set A for instructors (Table 4.16) as well as from semi-structured interviews with instructors.

Second, data for instructors' beliefs while giving feedback is shown in Table 4.16. Third, semi structured interviews were conducted with instructors in order to gain deeper understanding of their strategies in giving feedback to engineering undergraduates' TOP skills development.

From Table 4.16, the item P12 *Most of the time, my feedback is about correcting students' delivery skills in their technical oral presentation* is the highest mean score with mean 4.00, SD 0.900.

The least mean scores were for item P10 *I give feedback to students' assessment performance by giving detailed comments for items according to technical presentation assessment rubrics stated in the mark sheet* and item P11 *Most of the time, my feedbacks are about correcting students' mistakes in language usage in their technical presentations* with the mean score of 3.42, SD 1.165 and 0.900 respectively.

The overall mean is 3.68, SD 0.945 for items relating to instructors' practices in giving feedback to engineering graduates' TOP showed all items are frequently practiced by instructors to support students' TOP skills development.

Table 4.16
Frequencies of instructors' strategies in giving TOP feedback

Statement	Mean	Std Dev	Interpretat-ion
P8) I give feedback to students' technical presentation performance individually after their presentation test/assessment.	3.67	0.985	Frequently occur
P9) I give feedback to students' technical presentation test/ assessment performance in general (addressing the whole class) without specifying individual students upon the completion of students' presentations.	3.92	1.240	Frequently occur
P10) I give feedback to students' assessment performance by giving detailed comments for items according to technical presentation assessment rubrics stated in the mark sheet.	3.42	1.165	Frequently occur
P11) Most of the time, my feedback is about correcting students' mistakes in language usage in their technical presentations.	3.42	0.900	Frequently occur
P12) Most of the time, my feedback is about correcting students' delivery skills in their technical oral presentations.	4.00	0.603	Frequently occur
P13) Most of the time, my feedback is about correcting mistakes in the content of their technical presentations.	3.67	0.778	Frequently occur
Overall	**3.68**	**0.945**	Frequently occur

To gauge data on instructors' beliefs in giving feedback to students' TOP, data were collected from items P14 to P19 (Questionnaire Set A) as shown in Table 4.17.

As can be seen in Table 4.17, the highest mean score was 4.67 in which instructors highly agree that giving feedback helps them to shape their teaching of technical oral presentations to engineering undergraduates. Second, with the mean score of 4.50, respondents agreed that they clarify to their students on what constitutes good performance in terms of goals, criteria and expected standards.

This is followed by item P16) *I encourage students to be involved in dialogue among their peers around the learning of skills in delivering effective technical oral presentation* and item P17) *Through my feedback, I help students to close the gap between their current performance and desired performance in their technical presentation* with the mean scores of 4.17 and 4.08.

Lastly, the smallest mean score is 3.42 which is shared by item P10 *I give feedback to students' assessment performance by giving detailed comments for items according to technical presentation assessment rubrics stated in the mark sheet* and item P11 *Most of the time, my feedback is about correcting students' mistakes in language usage in their*

The overall mean is 3.68, SD 0.945 for items relating to instructors' practices in giving feedback to engineering graduates' TOP showed all items are frequently and highly practiced by instructors and they also held positive beliefs that these practices support students' TOP skills development

Table 4.17

Instructors' practices and beliefs in giving TOP feedback

Statement	Mean	Std Dev	Interpreta-tion
P14) I clarify what good performance is (goals, criteria and expected standards).	4.50	0.674	Very high
P15) I facilitate the development of self-assessment (reflection) in students' learning.	3.92	0.793	High
P16) I encourage students to be involved in dialogue among their peers around the learning of skills in delivering effective technical oral presentation.	4.17	0.937	High
P17) Through my feedback, I help students to close the gap between their current performance and desired performance in their technical presentation.	4.08	0.515	High
P18) I think giving feedback helps me to shape my teaching of technical oral presentations to engineering undergraduates.	4.67	0.492	Very high
P19) Through my feedback, I believe the students will boost their self –esteem and be motivated.	4.17	0.718	High
Overall	**4.25**	**0.688**	High

Instructors' Strategies in Giving Feedback on Students' TOP (Semi-Structured Interviews with Instructors)

To gain a deeper understanding, data on instructors' strategies in giving feedback towards students' TOP skills development were also obtained from semi-structured interviews with six instructors.

For the purpose of reporting the findings, these instructors were identified using a pseudo code such as **ELI/F/1** which stands for *English language instructor (ELI), F* refers to gender *(F=female, M= male)* and *1* refers to the turn of interview. However, all the respondents in this study were female instructors. The following themes on instructors' strategies in providing feedback emerged from the analysis of the semi-structured interviews with instructors teaching the English for Technical Communication course.

i. Providing Overall Feedback Addressing the Whole Class

Some instructors provide feedback to students' TOP by addressing arising issues to the whole class. This is usually done as a summative feedback once all students have completed TOP assessment. ELI/F/6 for instance stated that she gave feedback to students only after everyone had presented,

ELI/F/6: "In terms of feedback, when everybody finished their presentation, I will comment on them. Sometimes I don't want them to feel discourage, negative, so I am emphasize more on what student did correctly, rather than what student did that were really bad".

This is supported by another instructor, ELI/F/4 who described the way she gave feedback by addressing arising issues and points for improvement to overall group as

ELI/F/4: "Most of the time, I tried to give comment, but because of the time constraint, usually I did not manage to address all. What I did was, I highlighted the most common mistakes that they students did and the mistake that were very obvious. And how I highlight the mistakes usually it is depending on the situation. Because I am the type of person who do not really like correction. So I will comment in overall group. I mean group by group".

ii. Providing Immediate Response to Students' Mistake

Instructors also opted for giving immediate feedback if students made only one mistake during their Technical oral Presentation delivery. ELI/F/3 remarked that,

ELI/F/3: "If there is just one mistake, I'll just point it out to them straightaway".

Similarly, ELI/F/2 suggested that she gave verbal feedback once the students have presented,

ELI/F/2: "In terms of feedback, I give verbal feedback, right after the presentation".

Instructors will determine the types of feedback based on the mistakes that the students make. At times, the instructors will provide immediate feedback if the mistakes is minor. If the mistakes occur in a recurring pattern, the instructors will allocate specific time to rectify such mistakes. For instance, ELI/F/3 suggests that,

ELI/F/3: "If they're just one mistake, well just points it out to them straightaway. But when it is a lot and recurring mistakes among the groups, I'll highlight the mistakes in some other specific class and some activities will be done to address the aspect of the language that they are not good at".

iii. Using Peers to Provide Feedback

Instructors also ask for help from classmates to provide feedback to their friends to improve certain problematic areas. For instance, ELI/F/3 remarked that, ELI/F/3: "If they're very bad at the delivery, I will stop them. And I'll have another student who I know can do it I will ask she or he to demonstrate; at the same time I'll ask the student who can't perform earlier to observe and repeat the demonstration. So there is role-modelling involve. Then we'll applaud both of them and encourage the student with weak delivery skills earlier asked he/she to do it again. I have stop student presenting midway on their presentation, redo it from beginning and give them guide on how to do it. Sometime I asked the class to give the feedback on how to improve the presentation".

ELI/F/1 believed that her students appreciated feedback from their classmates. In her words,

ELI/F/1: "Based on my experience, they appreciated the feedback. But I think the feedbacks from the audience are much more appreciated, more real compared to the lecturer's feedback. That might be the feeling of acceptance. It is better when it comes from their friends. So what I did was I have two parts of paper, the first part is 'I love your presentation because…', then the second part is 'I think you need to improve …….'. And I told them to be more specific with regard to your comment. So that's mean if I have 30 students, the presenter will get 29 pieces of commented paper. But the thing is when they receive the 29 pieces of commented paper, some of the comments might talk about the same issue/problem that presenter need to improve, so the acceptance is there. The presenter might be agreeing with feedback. And I told them based of this peer feedback, we continue to develop the activities throughout the semester".

ELI/F/6 provided a 'recommendation form' where classmates write comments when other students are presenting in front of the class. According to her,

ELI/F/6: "When there are students in front presenting, I will ask the rest to fill in the recommendation form".

iv. Focusing On Delivery Skills

Some instructors believe that developing students' TOP delivery skills is very important and efforts are dedicated towards achieving this purpose. For instance, ELI/F/3 stated that,

ELI/F/3: "Other than that, I also show them the presentation by previous students to encourage them, and I even show them one presentation that was in Malay, a very bad presentation, to show them on the importance of delivery skills regardless the language used".

This aspect is also emphasised by ELI/F/2 as she stated,

ELI/F/2: "Normally when they practice, I'll tell them you have to show confidence, you have stand straight, you cannot be facing the board, delivering tone, intonation. That definitely something that we can teach when we gave them practices. So, practice is very important, we point the mistakes during delivery. And yes, that is the very important factor of course".

ELI/F/6 believed that teaching delivery skills is challenging as she put it,

ELI/F/6: "Even though I can say you can teach delivery, because yes, what we (teacher) can do is provide practice, provide the platform for the student to practice. And then show them what to do in terms of how to face crowd, how to voice out, focus on the voice volume etc. But then, it's up to them to do it. Sometimes we have student can do it well and performed, but sometimes there are still student that failed to deliver even we tell them earlier. So, that's the most difficult I guess because if language wise, we can provide them with exercises, they should improve naturally. Delivery is something individual; they have to figure out themselves".

ELI/F/4 analysed delivery aspects of students' TOP as she observed,

ELI/F/4: "For the delivery, usually we have vocal characteristic, body language. Some of them experienced anxiety when they have to present. And I can actually have noticed whether they have the anxiety or not to their vocal characteristics. Whether their tone is stable or not, their body language, whether they just stood and not moving at all..".

vi. Focusing On Correcting Language Mistakes

Instructors give feedback specifically on language used in students' TOP. EFI/F/3 pointed out that,

ELI/F/3: "The recurring pattern of mistakes is usually involving passive voice and SVA. Normally they're fluent at speaking, but sometimes the language was bad, sometimes, it is not making any sense. But we will try as much as possible to address the issue. And some of them came to me personally at the office after the class, so I help them".

She also expressed her concern if the incorrect language expression used in students' TOP may affect audience understanding, according to her,

ELI/F/3: "I will look at whether the use of language will change the meaning or not. For examples, supposedly we use past tense but then we use present tense, the meaning changes. We also talk about subject-verb agreement a lot, because it will confuse people when they're not used correctly".

ELI/F/1 helped students to develop their vocabulary needed in order to be an effective TOP presenter. She reiterated that, ELI/F/1 "With regard to language, I think our student lack of the reading skills. Lack of vocabulary. So when you explain the product and you don't have enough vocabulary, you are not able to use adjective to describe/elaborate the word. Or you are not able to use adverb to describe how in terms of grammar. So, I think for me if I would tackle the language part, I will give a few reading tests for them to be familiar with technical description or describing technical object. Because in describing technical object, we use a lot of adjective. Sometimes they even can't differentiate between long and length, high and height etc. So what we need to do is start of by looking at short text, or normally what I do is I give them to read newspaper. Every Monday we have that gadget section in News Straits Times, so I just ask them to read. And at the same time while we do reading analysis, we take a look at language aspect as well. So as far as language is concerned, that's how I do it first, because we are talking about technical description".

vii. Focusing On TOP Content

Certain instructors chose to pay more attention to students' TOP content because they believe that teaching ETC should be focused more on content. EFI/F/6 claimed that,

ELI/F/6: "I think for the language, I would put the lowest emphasis. Delivery I would put on number 2 and content for number 1 and it is the hardest... because the course was heavy on content. So I always spent time on how you need to describe certain item. Then for delivery, your voice should be loud. But language itself, because I think they should not be many words in the slide. And it is kind of hard to coach on language when they are presenting".

ELI/F/6 further reiterated that,

ELI/F/6: "I think what we did at the lab was to search for the content and when I walk around I think they have tendency to cut and paste. Then a lot of assistance on how to organize the matter (*content*), what is exactly the point of the presentation and we start from there. They have the content, but they still need the assistance on which content is appropriate and relevant".

ELI/F/2 suggested that she gave more attention to students' TOP content. She stated,

ELI/F/2: "I helped students a lot in their content preparation. Like I said I can teach them the intonation, how to present, how to deliver, the confidence level. And I gave them also the template, the structure, how to present the intro, the content, the conclusion. And then it's up to the student to get that content down for them to present. So if they don't have that content to present, it will also affect the delivery skills at the same time".

In a similar notion, ELI/F/5 argued that,

ELI/F/5: "When looking at presentation, I focus on the content and their style, whether they have confidence or not. I do not focus so much on the language. But some lecturers must not agree with me because they think that language is one part of the presentation. But for me, if they can deliver and I can understand and get the messages, it is enough for me".

viii. Adopting Tactful Strategies in Giving Feedback

Instructors adopt specific tactful strategies in helping their students to improve their ability in delivering effective TOP. ELI/F/3 tried to create conducive non-threatening atmosphere during classroom practice by promoting peers to give feedback to their colleagues. She reiterated that, ELI/F/3: “Sometimes, normally with my guidance, the students themselves gave feedback to the group presenting in front of the class. For examples, I will stop the student that are giving very general feedback and encourage them to give more specific feedback. And I like the honesty in their feedback. Firstly before giving the presenter any feedback, we need to applaud them for having come in front as volunteer. But we still need to give them comment on their content and their delivery. So I ask them two things on what they like on the presenter and presentation, and 1 thing that presenting group can improve, and sometimes they gave me the feedback more than that. As I said, we must have a non-threatening environment, so even our comments are non-threatening”.

ELI/F/5 cautioned that she would avoid intimidating students in language aspects as she is afraid such action would affect students’ confidence in delivering TOP. According to her,

ELI/F/5: “But for the practice normally I said you have to focus more on content. In term of skills, like deliver thing, such as more eye contact, don’t refer to the slides so much. And the language-wise cannot be very difficult. Because I don’t want them to be scared if I said you have to speak in grammatically correct”.

Instructors also adopted positive strategy so as to avoid being seen as discouraging students’ TOP development as ELI/F/6 illustrated,

ELI/F/6: “In terms of feedback, when everybody finished their presentation, I will comment on them. Sometimes I don’t want them to feel discourage, negative, so I am emphasizing more on what student did correctly, rather than what student did that were really bad”.

ix. Not Giving Feedback After Assessment

Instructors stated that they did not provide any feedback after the TOP assessment. Feedback was given only during classroom practice prior to actual TOP assessment. According to EFI/F/5,

ELI/F/5: "For assessment, I don't give them feedback. But for the practice normally I said you have to focus more on content. In term of skills, like deliver thing, such as more eye contact, don't refer to the slides so much".

Similarly, ELI/F/3 acknowledged that,

ELI/F/3: "We don't give the student the final results, but during the mock presentation, we used the actual marking scheme, so that they can evaluate themselves based on the mark given".

In order to be fair to students who have presented earlier, feedback were not given during actual TOP assessment as such feedback would benefit the students who have not yet presented. ELI/F/6 argued that,

ELI/F/6: "During assessment, I do not give that much (feedback) because I am afraid that the presenter that not yet present will take advantage".

x. Giving Feedback Regarding Power Point Slide Content

Some instructors give more attention to students' delivery aspect and they give feedback specifically to help improve students' slides. ELI/F/6 raised issues about students' Power Point as she said,

ELI/F/6: "Because in presentation, the big part of it is the Power Point slide. Then, when they go for their job interview, write a proposal, the slide is important thing. I always remind them to pay extra attention to the content in the slides".

According to ELI/F/3,

ELI/F/3: "For delivery, I don't like them to depend on their notes and Power Point slides. They should be in control on their Power Point slides. I will guide them on how to make proper use of the slides**".**

ELI/F/5 asserted that,

ELI/F/5: "Sometimes the student will ask me to check their slide, whether it is ok or not before they start the presentation. So, if they show me, I would help them. Usually they just ask about the slides, not the presentation".

xi. Giving Feedback Aimed at Reducing Students' High Anxiety Level in TOP

Instructors realised the high anxiety level students have and the needs to develop students' self-confidence in TOP. Instructors channelled their feedback towards anxiety reduction strategies while developing students' self-confidence. For instance, ELI/F/1 shared her strategy,

ELI/F/1: "Speaking and presentation skills are the activities that I do first. I try to reduce the anxiety first. Because for me that is the major obstacle for them to speak. So when I say anxiety, it's not just only with regard to the topic. Anxiety with the audience, anxiety with yourself, that lack of confidence things. So what I do is first of all, we do group work first. The topic should be fun. For example, how to be an interesting person. So they will discuss with their group mates. So actually, when you do one to one discussion, you will be more comfortable. Because you are not worried about the others observing/looking at you. And this group at the same time this activity happening in different group separately. Normally we have 4-5 groups in a class. So I'm developing the self-confidence first by doing this group work activity. That works".

ELI/F/4 gave feedback by encouraging students through sharing of her own experience dealing with anxiety as she stated,

ELI/F/4: "What I did was, I explained to the students, anxiety is actually is the common phenomenon and everyone is experiencing it. And I emphasize to them and I used myself as the example. I shared my experienced before with my students. Whenever they listen to my story, I think they somehow reduce their anxiety".

Instructors also exposed students to more practice in order to tackle the issue of anxiety while delivering TOP in front of the classroom. ELI/F/2 expressed her opinion that,

ELI/F/2: "I think most of us (instructor) know that practice is number 1. If let say we have a problematic student who has issue with anxiety, he/she might need to practise without many people in class etc. But I think the important one is practice. You have to allow that student to be able to get platform to work on presentation".

ELI/F/5 thought that students have anxiety whenever they have to deliver presentation in front of people that the students are not familiar with. According to her,

ELI/F/5: "I think biggest anxiety and fear for them is standing in front of people that they don't know. For the presentation in class, I don't think they have the same anxiety and fear because they know I am their lecturer and it will feel a bit more comfortable for them. But, if they have to stand in front of stages, it would be a lot more fearful. So, to overcome the anxiety and fear, I am telling them, they need to practice. Join the theatre, debates or go to Teluk Cempedak and play the guitar".

ELI/F/6 thought that students experience high anxiety level possibly due their low English proficiency level as she described,

ELI/F/6: "I really had a bad case. This person cried after presentation for about 10-15 seconds and I ask her to stop and breath. But she refused, she want to proceed, then when she continued, she cried some more and this has happened for three times and it was so difficult for me. How did I give mark for someone like this? But later I talk to her and she said that she had slept about 3-4 hours to prepare for that presentation. We think that the students don't really face the high anxiety level, but actually they really do. I think anxiety level for presentation for good student it would be 6 out of 10, and for those average student it would be about 7 or 8. And we think that they don't prepare, but they actually do. But because of the anxiety, the presentation was ruined. Then I think some students that have very low proficiency probably the anxiety is high".

The findings above show that instructors understand engineering undergraduates' high anxiety feelings when they were required to present in front of the classmates. Instructors were also putting up efforts to help students overcome this situation.

The findings above provide an overview of how instructors give feedback towards engineering undergraduates' TOP skills development in their classrooms. This illustrates the fact that instructors adopted various strategies of giving feedback and it can be stated that all instructors of the views that giving feedback is crucial towards engineering undergraduates' TOP skills development.

The themes drawn above also suggest that instructors equally pay attention and provided their feedback towards to the three important components used in the TOP assessment rubric which are *Language, Content* and *Delivery.*

However, it can be argued thus far that the practices of giving feedback and strategies adopted were determined solely by individual instructors' preferences. Drawing upon this point, it appears that the feedback giving practices adopted by instructors were highly flexible, done in oral form and not institutional-dependant. Perhaps a more systematic written feedback of components where engineering undergraduates' need to improve their TOP skills will be more significant. This is not easy as such task would be time consuming and often time for presentations assessment is limited as it was done within two hours of class period only.

Research Question 3(e):

What are the engineering undergraduates' perceptions of instructors' feedback on their TOP performance?

Engineering Undergraduates' Perceptions on Instructors' Feedback

To gauge data of engineering undergraduates' perception on instructors' practices in giving feedback to students' TOP, data were collected from items P5 to P12 in Questionnaire Set B for engineering undergraduates (refer to Table 4.18).

As Table 4.18 shows, it can be seen that the majority of the respondents highly agree with most of the instructors' feedback giving practices on their TOP performance. The highest mean is item P5) *"My lecturer explains clearly about the* *assessment procedures (e.g. time given for students to deliver their technical and oral presentation test)"* with the mean score of 4.29, SD 0.832.

With the mean score of 4.25, SD 0.809, the item P8) "*My lecturer clarifies what good technical oral presentation performance is (goals, criteria, expected standards)"* is the second highest score illustrating respondents' very high agreement to this statement.

On the other hand, the item P9) *My lecturer facilitates the development of self-assessment (reflection) in my learning* is the lowest mean score with 3.86, SD 0.881. The standard deviation score (0.809 to 0.894) demonstrated greater consistency among the respondents in responding to the questionnaire; most of the them responding nearest to the mean that was 4 to 5 on 5-point Likert scale.

The overall mean score for the items measuring students' perception on instructors' practices in giving feedback to students' TOP is 4.09, SD 0.865 indicating high level. This indicates highly positive students' perceptions towards their instructors' practices of giving feedback. This also shows that, from the perspectives of engineering undergraduates in this study, instructors were seen to have employed various strategies in giving feedback to them. When analysed with qualitative findings from semi structured interviews with instructors involved, this findings resonate well with what echoed by instructors that they adopt various strategies in providing feedback to their students. In some aspects, feedbacks were given with the aim to develop students' confidence level as well as developing their language skills in terms of vocabulary enrichment, grammatical accuracy and aspects of fluency. This is discussed further in qualitative findings sections,

Table 4.18

Engineering undergraduates' perception on instructors' practices in giving feedback for their TOP

Item	Mean	Std. Dev.	Interpre-tation
P5) My lecturer explains clearly about the assessment procedures (e.g. time given for students to deliver their technical and oral presentation test)	4.29	0.832	Very high
P8) My lecturer clarifies what good technical oral presentation performance is (goals, criteria, expected standards)	4.25	0.809	Very high
P7) My lecturer allocates enough time for students to practice their technical oral presentation skills in class before conducting the test	4.18	0.833	High
P6) My lecturer explains clearly about the marking schemes and assessment criteria to students before their technical oral presentation test	4.05	0.889	High
P11) Feedback from lecturer helps to boost myself self-esteem and motivation to deliver technical oral presentation effectively	4.03	0.892	High
P12) Feedback from the lecturer helps me to close the gap between my current performance and desirable level in technical oral presentation	4.03	0.890	High
P10) My lecturer encourages students to be involved in dialogue between lecturer and peers in improving my technical oral presentation skills	4.03	0.894	High
P9) My lecturer facilitates the development of self-assessment (reflection) in my learning	3.86	0.881	High
Overall	**4.09**	**0.865**	**High**

Research Question 3(f):

What are students' suggestions on ways to improve their TOP skills?

Engineering Undergraduates' Suggestions on Ways to Improve Their TOP Skills

To answer the research question 3(f) above, engineering undergraduates were also asked during the focus interviews on activities which they think should be retained. They were also asked to propose any suggestions that they would like to have in order to improve the learning and teaching of TOP in the following semesters. Numerous feedback were received such as students think that more opportunities should be provided for students' self-learning activities thus promoting self improvement efforts.

One of the suggestions is where instructors could assign students to prepare and deliver an individual technical oral presentation in front of the class. The students also suggest that instructor should provide feedback to presenters individually, once each presenter completed their presentation. The students reiterated that instructors normally provide overall general feedback to students' TOP, without addressing individual presenters.

G1/3/F: "Assign students to stand and deliver a presentation, then lecturer give comments. So we will improve our selves based on the comments given. However, so far, the comments are overall for all students. I mean not individual feedback".

G2/3/M: " I'd like my lecturer to give comments about my presentation in front of other people in the class. Because my friend could also learn something from the feedback. So they will make better presentations.

However, the feedback should use positive words because if feedback is too negative, that would me be not comfortable and I would feel that I am not worth to deliver any presentation elsewhere".

G7/1/F: "In my case, I would prefer lecturer to give comments to each student individually. This is because when comments are made for specific individual, we would be able to know our faults. Besides, when lecturer comments others' presentations, we could also learn".

Students also put forth the notion that instructors could show video presentation of professional presenters in teaching TOP presentation skills in class.

G2/3/M: "For me, when I watch other people deliver presentation in videos, I think my confidence level increase. Because I think both of us are human, so what's the difference between me and him. So I think I can present like him or better. So they can give me confidence".

G2/5/F: "Because if we watch video, it gives us effort to deliver juts like the presenters. If they can do it, so do us".

G6/6/M: "Watching video of successful presenters. From there we could learn how they present, what do they do, what is needed when delivering presentations. Because students must watch others, must see the models. From there students can improvise the skills that they already have".

G6/4/F: "For me, the most interesting part is when the lecturer shows us video clips of famous speakers".

G3/1/M: "If we watch video about Steve Jobs's presentation, we could learn how to attract audience's attention. For instance, Steve Jobs uses less word and just showing an image of I-phone only".

This is supported by another student,

G3/2/M: "Steve Jobs is very careful with his presentation. He just lists main points only. He is very straightforward".

However, another student thinks that everyone is different. Some are introvert while others are extrovert.

G3/5/F: "Honestly, every human being has different personality. Some are introvert while others are extrovert. May be Steve Jobs is an extrovert. But for me, when I practise in my room, I have very high confident level, but when I present in front of class, everything 'Steve Jobs's personality that I learned just disappeared".

Another student echoed the same sentiment.

G3/1/M: "The confidence 'graph' before presentation is very high. Once I am in front of audience in the class, it decreases rapidly".

Students agree that watching video of famous presenters provide opportunities for learning skills to be effective presenters.

G6/6/M: "Students must watch video of successful presenter. From this video, we can learn how the presenters present and learn what should be included during presentation. Because students need to observe other people's presentation so that it becomes their model. From there onwards, students could improve their presentation skills".

Although students want their instructors to provide more in class practices of delivering TOP, they dislike the idea of impromptu presentations on unfamiliar topics.

G2/2/M: “I don’t like being asked to present on the spot on topics that I am not familiar. So I will feel bad. So at that time, my confidence level drops and I feel very nervous”.

G6/3/F: “I don’t like if lecturer pull students on the spot to present spontaneously”.

Instructors’ suitable and tactful strategies to help students improve their TOP skills such as suggested by the respondents above are similar to the strategies employed by Suwa, Miyahara and Ishimatsu (2012) who proposed several strategies to enhance Malaysian students’ technical presentation skills in Japanese language. The strategies, according to them, are applicable to improve students’ technical presentation in any language.

First, students were required to conduct their practice sessions at least twice one week before the actual presentations. The practice sessions motivate students to work on their presentation further to some extent that they conduct 10 or more practice sessions even without any instructions.

Second, students were required to deliver their technical presentations in front of instructors and other students where presenters were imposed with questions and answers. Initially, questions were on what they want to say in presentation but later on the questions shifted to the contents of the presentations as students’ confidence level increased.

Thirdly, presenters benefited from the many feedback given by their instructors and peers from the practice sessions conducted prior to actual official presentation assessment. Slide presentations were also scrutinized by instructors and returned to students while for peer feedback, students fill out form while listening to their classmates' presentations. Suwa, Miyahara and Ishimatsu (2012) further reiterated that "By repeating presentation practices they familiarize their actual speaking capabilities. At the same time, their confidence is enhanced" (p.162). Adding to this, according to Marín-García and Miralles (2008), to some extent, peers may be involved in the formal marking of their classmates' oral presentation as students can be adequate markers provided that they are trained beforehand. Brown and Diem (2009) also reported that peer assessment in small groups was very motivating for students in their study.

Similar notion in which exposure to more practice would enhance TOP performance as suggested by engineering undergraduates in this study concur with the findings of other studies. Smith and Frymier (2007) reported their findings on strategies to manage students' anxiety and enhance their performance in public speaking via various speech practice methods. They discovered that students who practice in front of audience received higher assessment score. In addition, students who practiced their speech in front of a larger audience received higher assessment score compared to students who practice in front of a smaller audience.

Research Question 4: PRODUCT EVALUATION

This section will report findings pertaining to research question 4 for Product Evaluation and its sub-research questions a, b and c.

Research Question 4 (a):

How do stakeholders from engineering industry perceive engineering undergraduates' technical oral presentation skills?

Engineering Industry Stakeholders' Perception on Students' TOP Skills

The RQ 4(a) above seeks to obtain engineering industry stakeholders' perception on engineering undergraduates' technical oral presentation skills. In order to obtain impression of engineering undergraduates' TOP competencies from the perspectives of engineering industry stakeholders, semi-structured interviews were conducted with eight respondents. These eight different sessions of semi-structured interviews with each respondent were held from December 2016 to January 2017.

In each session, the respondents were asked to freely preview eight video clips of students' delivering technical oral presentations of different technical product descriptions taken from English For Technical Communication Assessment 1A, Sem 1 2016/2017. Each video clip contains a recording of students' pair work technical oral presentation on product descriptions. The products that were presented by the students were concrete mixer (video clip 1&4), food recycler (video clip 2), vacuum cleaner (video clip 3), light microscope (Video clip 5), fire extinguisher (video clip 6 & 8) and an electric hand drill (Video clip 7). The following figure 4.3 illustrates the video clips number and title.

Video clip Number	Title
Video Clip 1	Concrete Mixer
Video Clip 2	Food Recycler
Video Clip 3	Vacuum Cleaner
Video Clip 4	Concrete Mixer
Video Clip 5	Light Microscope
Video Clip 6	Fire Extinguisher
Video Clip 7	Electric Hand Drill
Video Clip 8	Fire Extinguisher

Figure 4.3: List of video clips TOP presentations titles

In order not to be forceful, the respondents from engineering industry were given freedom to preview any of the video clips and they are in full control of it without any time limit or any instructions on which video clips they should watch. Figure 4.4 showed an engineering stakeholder respondent previewing engineering undergraduates' TOP video clips.

Figure 4.4: An industry stakeholder previewing engineering undergraduates' video clips TOP presentations.

Based upon these video clips previews, the engineering industry respondents were then asked general questions such as *"What do you think these engineering students have to do to get to the level where they are able to function at a communicatively competent level in terms of delivering technical oral presentation in industry?"*

Analysis of the engineering industry respondents' comments were divided into three themes in which engineering undergraduates were perceived to be (A) displaying poor presentation skills, (B) good presentation skills and (C) acceptable presentation skills.

A. Video Presenters Displaying Poor Presentation Skills

After previewing the video clips, the respondents gave their comments and general impressions regarding the engineering undergraduates' ability to present. The following themes show several scenarios which were regarded as engineering undergraduates displaying poor presentation skills by the engineering stakeholders.

i. Poor Presentation Skills in Regards to the Use of Short Video Clips As Presentation Aids

Engineering stakeholders pointed out that embedding video clip in presentation as visual aids require some considerations or else it could jeopardize the overall effectiveness of presentations. The following excerpts illustrate this point;

IS/M/1: "The use of video clips did not make presentations interesting. Lost opportunity. Because the total presentation time is about 8 minutes. And she spent close to 3 minutes on introduction. So, that is about more than 20-35% of the time. So she spent 35% of the time just for introduction. Actually, I don't really like using video because for me it's just putting people to sleep...it is boring.. because video is something for them to do it themselves later. It's a reference document. It's not a presentation document".

IS/M/1: "I will sit for presentation because I want to hear you, not somebody else presenting (referring to students' use of short video clip in presentation). So you see it I lost my interest".

IS/F/5: "While showing video, the presenters should make explanation as the video is being played. It will be more effective".

ii. Poor Use of Non Verbal Cues

Non-verbal cues were regarded as something important for successful Technical oral presentation by engineering industry stakeholders. However, engineering undergraduates were seen grappling with this skill.

IS/M/1: "The body language of the presenters is already turning me off. Another thing in workplace presentation, you have a few second to gain in the interest of people and to make sure they don't tune off. Especially if you want to try to convince, so if you are projecting negative, you lost me immediately".

IS/M/7: "The body gesture also, if you see the video, the second guy the back should also involve in the presentation and must not just standing and doing nothing".

IS/F/5: "Some presenter keep looking at their laptop, it's annoying for the audience. Look at a glance at the screen then focus on the audience. Maintain eye contact with the audience".

iii. Lack of Language Fluency and Articulation Problem

Another quality highly valued by the engineering stakeholders is language fluency and clear articulation. These were problematic areas for some video clip presenters as noted by the engineering stakeholders in the following excerpts.

IS/M/1 : **"...**She is not fluent and probably put me to sleep. Sometimes I can find out who not fluent and who fluent immediately. So, she (video) even in the first few sentences, she is fluent. There's a flow. Even she does not pronounce some word correctly, it's still fluent and people can understand. Even she is presenting to a *Mat Salleh* (a Westerner), they still can understand that. So there is no issue. The point did come cross."

IS/M/1: "And the fluency grabs my attention. Definitely if you *gagap* (speaking hesitantly) you may lead the brain to go to somewhere else. And to get to people pay attention to you is difficult".

IS/M/4: "The way they express the ideas in the presentations are understandable. But they not do direct to the point. They should explain in detailed straight way. They need to improve in terms of fluency because it is expected engineers in industry to have fluency so that you won't waste anybody's time".

IS/F/2: "Fluency in speaking of course. In case of students in video clips, articulation did not reach desirable level. Articulation for example you can get 10 slides and I get the same 10 slides. But when we present, the way we present will be different though we are given the same task, the same object. Because of the way you articulate is different. Everybody has his way of articulation. Voice does not need to be very strong, but convincing. You must be able to anticipate what the audience wants. Then you have to meet their expectation. Then you have to convince them that you are responsible for the things that you present. That's articulation".

Engineering industry stakeholders perceive students' presentation in the video clips as lacking specific technical terminology.

IS/F/2: "Actually I am not satisfied with all the presentations in the video clips. Because that is narrative, that is story telling. There is no terminology, no technical involved. No engineering language. Like in your video, the description that student present are so general, just surface. But in engineering, you must be specific in describing the specs of your object".

iv. Lack of Self-Confidence

Engineering stakeholders noticed that some video presenters were seen as lacking self-confidence and this affected their delivery of presentation.

IS/M/3: "For video 3, it is OK. Maybe he lacks the preparations. Because he is not really confident, he made a lot of movement".

IS/M/4: "I think they need to have confidence. The way I see it, majority of them they don't have confidence. Confidence can be translated into effective way in expressing the idea. So if they do not able to express the idea, then they are not able to make sure the audience receive their message or not. If the audience are not able to receive the point, there is no two-way communication. So that means it become useless".

IS/M/4: "If they do not have the confidence, they tend to memorize. Some of the presenters look at the notes. It is expected that you don't have to see the notes".

IS/F/5: "The confidence levels of the presenters are low, some presenters struggle to presents, and some presenters speak hesitantly....presentation is not smooth .. no continuity".

IS/M/7 suggested that lack of confidence may be due to lack of background knowledge of the subject.

IS/M/7: "In terms of confidence level, if you don't know your subject your confidence level will be very low. So you must know better".

v. Poor Audience Management

The engineering industry stakeholders also share the views that some video clip presenters were not appropriately able to manage their audiences, as can be seen in the following excerpts;

IS/M/3: "For video 1, the student was very confident. But the way he presenting was not really suitable for managerial level audiences *(referring to the way the presenter addressed the audience as "hi guys")*. He looks like he did not understand the audiences. We are not really paying attention to the accent, as long as they are understandable".

IS/M/7: "In terms of audience management, the presenter hand gesture is not good, he playing with his hand and his friend doing nothing. But he is not bad and he can improve by not looking at the screen all the time. And this girl, no need to see the PC, but she can ask audience any question. Let the other person handle the technical thing and she just get involve with the audience".

IS/M/8: "In order to be effective communicator, they need to connect with the audience and get the audience's attention and make the audience have strong interest to listen to your message/contact. So you can see the presenter they just like to get the things done. During presentation they have to look at the audience eye especially the target audience".

IS/M/7 also spotted another pair of presenter in the video clip not having good audience management.

IS /M/7: "The presenter should not see the PC screen (referring to presenter's action of looking at the PC screen on the desktop), just see at the screen on the wall. Because the audience will see the screen, so he must see the same screen too. And more eye contact with the audience rather than looking at the PC screen".

IS/M/7 also pointed out that one important aspect of audience management is the necessity to get clarification on audience's understanding of the presentation content via asking "Any Questions?".

Reading too frequently from slides can affect audience's attention. IS/M/8 pointed out that some presenters in the video clips tend to read from slides too frequently.

IS/M/8: “Most of them, they read the slide too much. They look at the slide too frequent and some of them read the sentences one by one. In order to be effective communicator, they need to connect with the audience and get the audience’s attention and make the audience have strong interest to listen to your message/contact. So you can see the presenter they just like to get the things done. During presentation they have to look at the audience eye especially the target audience”.

IS/M/7: “And for every presentation, you must have Q & A session. Because you not sure whether your audience understand what are you talking about. So you must ask them. Not necessarily have Q &A session, just ask “Any question?”.

Engineering stakeholders also pointed out that some video presenters lack skills to relate presentation topic to audience and to make audience feel they are ‘involved’ in the presentation.

IS/M/1: “Another thing that presentation is missing is the objective of the object. If I’m sitting for this presentation, my first question is what is this equipment to me? Why these object important to me? So immediately you have to explain the application. Why should they invest another 5-6 minutes of their time looking at you and listening to what you have to say. Time is luxurious. So any presenter need to ask themselves, is this presentation worth the time of the audience”.

IS/F/5: “If it is too formal, the presentations become bored. Presenters need to make joke. Need to attract the audience or they become stressful. Cannot be too serious”.

vi. Lack Eye Contact with the Audience

Lack of audience management is evident from lack of eye contact with audience;

IS/M/6: “I observed that some of them are not really looking at the audience. No eye contact. Eye contact is the big thing for me. All the audience’s eyes are on you. If they are giving attention at you meaning that you have captured their attention already”.

Industry stakeholder 6 also noticed that due to lack of preparation, students tend to read information from slides and this resulted in lack of eyes contact with the audience.

IS/M/6: “Actually in doing the presentation, you need to prepare. So you don’t have to look at the slide more often”.

In a similar notion, IS/M/8 also made the same observation

IS/M/8 : “Most of them, they read the slide too much. They look at the slide too frequent and some of them read the sentences one by one. In order to be effective communicator, they need to connect with the audience and get the audience’s attention and make the audience have strong interest to listen to your message/contact. So you can see the presenter they just like to get the things done. During presentation they have to look at the audience eye especially the target audience”.

Similarly, IS/M/7 observed

IS/M/7 : “The only problem for me is how they do the presentation, the preparation and eye contact. Most of the student, because their confidence level is low, so rather than have eye contact with the audience, they like to see the screen more. So that is not good for presentation”.

One way to attract audience’s attention is by making jokes.

IS/F/5: “Too formal and the presentation become not interesting. It becomes boring. So need to have joke”.

vii. Poor power point slides management

Industry stakeholders also stated that some presenters did not have good power point slide management which were obvious in excessive number of slides used. Video presenters also were seen to have read the content of their power point slides. This shows that engineering undergraduates need to be trained in handling of visual aids of power point slides.

IS/M/4: "The students in video clips always looking at the slide…and there are many slides because they try to take their own sweet time to make sure the transition from slide to another slide. Actually it is taking time. So in industry of course this kind of thing will not happen. We don't have time for that. Everything must be very efficient".

IS/M/7 observed that some presenters in the video clips have the tendency to read text in the power point slides. He observed that

IS/M/7: "Most of the student, because their confidence level is low, so rather than have eye contact with the audience, they like to see the screen more. So that is not good for presentation. If he works in a big company, most of the people are very experience, they can read, you also can read, whatever the subject of your presentation must be not really detail. So you must be able to explain the subject that you bring without looking at the screen. So the audience would like to have eye contact with you rather than to see the screen".

The same notion is observed by IS/M/8.

IS/M/8: "Most of them, they read the slide too much. They look at the slide too frequent and some of them read the sentences one by one. In order to be effective communicator, they need to connect with the audience and get the audience's attention and make the audience have strong interest to listen to your message/contact. So you can see the presenter they just like to get the things done. During presentation they have to look at the audience eye especially the target audience".

Laser pointer usage

Besides appropriate skills to manage power point slides, industry stakeholders suggest that students should be trained to use laser point while presenting.

IS/F/5: "No presenters use laser pointer to explain parts which they were presenting. Because the presentation in factory, we use laser pointer. All students in the video clips used their hands to show the points".

IS/M/7: "It is good to have laser pointer or ruler when you do presentation".

viii. Lack of Preparation

Engineering stakeholders also voiced their concerns regarding engineering undergraduates' lack of good preparation prior to presentations. In their words,

IS/M/7: "From the three videos that I've seen, I think all the students not prepared well for the presentation. I mean whatever you do, you need to train, so that when you do the presentation you can convince people whatever you present. Then you need to know whatever product that you present".

IS/M/7 believed that with good preparation, students can improve their fluency.

IS/M/7: "In terms of fluency, I don't have comment on that because as the time
goes, they will improve themselves. For me it is just preparation. Not really the language".

IS/M/3: "For video 3, it is OK. Maybe he lacks the preparations. Because he is not really confident, he made a lot of movement".

To triangulate data on engineering undergraduates' areas of difficulties, the following Table 4.19 provides a comparison of problematic areas based on perspectives of engineering undergraduates themselves, instructors as well as engineering industry stakeholders.

Table 4.19

Engineering undergraduates', Instructors & Engineering industry stakeholders' perspectives on TOP difficulties

Engineering undergraduates' perspectives	**Instructors' perspectives**	**Engineering industry stakeholder perspectives**
# Lack of confidence # High level of anxiety # Lack of preparation # Lack of vocabulary/specific terminologies # Lack of content knowledge understanding + Problem due to technology/facility (eg Slow internet connection) # Problem with eye contact # Shyness + Lack of in-class practices # Pronunciation difficulty # Issues with Grammar # Lack of fluency # Time management # Issues with audience interaction	*# Lack of confidence # High level of anxiety # Lack of self-practice + Lack of time to prepare due to commitment to other subject # Lack of vocabulary # Poor command of English # Issues in Q&A handling with audience # Low proficiency level # Slides too wordy +Lack of enthusiasm in Presentation # Poor time management during presentation # Lack of content knowledge # Pronunciation problem # Issues with Grammar*	*# Lack of self-confidence # Lack of language fluency and articulation # Lack of preparation # Lack of eye contact with audience +Poor use of non verbal cues +Poor use of video clips during presentation # Poor audience management # Poor power point slides management (reading from slides)*

**By no means were the elements above ranked by their degree of significance; but rather with the purpose to show their similarities / recurring themes*

** # Marked items referred to common similar themes which were derived from the three data sources; unmarked themes were stand alone i.e not recurring pattern*

As can be seen from Table 4.19, all respondents agreed that lack of self-confidence is one of the greatest hurdles that affects engineering undergraduates' successful TOP delivery. It can be argued that lack of self-confidence may be caused by high anxiety level and both elements may significantly have huge impact on engineering undergraduates' TOP delivery. Similar to this study, lack of self-confidence and high anxiety have been associated to students having difficulty in delivering effective presentations in many studies (Benraghda, Radzuan, & Ali, 2018; Hamouda, 2013; Radzuan & Kaur, 2011; Soomro et, al, 2019; Ibrahim & Daud, 2013; Mahani Stapa, Asniza Murad and Norasnita Ahmad, 2014; King, 2002; among others). In line with this notion, developing students' self confidence and adopting strategies to reduce anxiety in engineering undergraduate presentations should be given emphasis by instructors.

Al Hebaish (2012) conducted an empirical study among undergraduate female English majors in which he found that there is a positive correlation between the higher the students' level of general self confidence, the higher were their oral presentation scores. On the other hand, he also reported that conversely, students with lower self - confidence had lower scores. Hence, according to him, students' level of self confidence was a significant predictor for their academic achievement in language learning.

Adding to this, in a study by Ibrahim and Daud (2013) who studied students' public speaking anxiety in a podcast aided language classroom, it was observed that students' level of anxiety were reduced due to the practice the students had gone through and the instruction given by their instructors who provide authentic environment for public speaking skills practice. This shows that the students' anxiety can be reduced with appropriate practice guided by instructors.

The issues highlighted in Table 4.9 can be divided into components normally used in TOP assessment rubric which are ‘Language, Content and Delivery’ rubric (UHL 2422 TOP assessment rubric). ‘*Language’* related issues were clearly identified by the all of respondents (engineering undergraduates, instructors and engineering industry stakeholders) as among the main challenges in engineering undergraduates’ TOP. Among elements of language vividly described as problematic are lack of fluency, lack of vocabulary, poor command of language, low proficiency, issues with grammar and pronunciation.

Similarly, a study by Soomro, Siming, Channa, Shah, Naeem and Abbasi (2019) among engineering undergraduates in Pakistan showed that problems in presentation were due to several factors which include issues with English language itself, low vocabulary and lack of knowledge. Interestingly, Soomro et al. (2019) categorised engineering undergraduates’ oral presentation difficulty into psychological barriers (peer pressure, lack of self-confidence, anxiety, hesitation & inferiority complex), social barriers (lack of interest, inadequate educational background, unsuitable environment & unfamiliar audience) and linguistic barriers (low vocabulary, lack of knowledge and barrier due to English language). Some of the problems listed above were not reported in this study such as peer pressure, inferiority issues, inadequate educational background as well as serious issue with English language itself.

To a certain extent, it shows that engineering undergraduates in this study were not facing serious problems as the psychological and social challenges faced by engineering undergraduates in Pakistani context as reported by Soomro *et al.* (2019). However, for linguistic challenges, similar to the findings in Soomro’s et al. (2019) study, the engineering undergraduates in this study also reported issues with language such as lack of fluency, poor vocabulary, low proficiency level, issues with grammar, poor language command and pronunciation problems. It may be argued that, on a global scale, English language skills and abilities still pose great challenges to the engineering undergraduates' successful delivery of technical oral presentations. As a result, efforts to overcome linguistic challenges faced by the engineering undergraduates in their TOP must be given priority by instructors and course administrators.

Also, element of lack of content knowledge understanding of the TOP '*content'* were highlighted by the respondents to be among difficulties faced by engineering undergraduates. Furthermore, issues as reported in Table 4.19 were related to *'delivery'* problems such as shyness, lack of enthusiasm in presentation, poor use of non verbal cues as well as lack of eye contact with the audience. Padula (2009) asserts that psychological research has indicated that friendly and natural facial expressions together with good eye contact can help build a sense rapport with the audience thus maintaining their attention during presentation. In contrast, looking blankly at the audience and not maintaining eye contact with them can render the presentation to be far less effective (Sweeney, 1997).

Besides the three components, engineering undergraduates' also had issues in audience interaction and technology. For instance, all the respondents stated that poor audience engagement occurs when TOP presenters struggle in interacting with the audience as well as in handling Q&A sessions. Slow internet connection, poor use of video clips during presentation, poor power point slide management as well simple things like not using laser pointer are among technology related issues reported by the respondents.

Despite the similarities reported above, it is interesting to note that only instructors and engineering industry stakeholders gave comment related to power point slides and no description of issues with power points were raised by the engineering undergraduates. Also, data from engineering undergraduates side suggest that they felt in class practice were not adequate. In contrast, instructors had the opinion that engineering undergraduates did not have much time to prepare due to academic commitment to other subjects. It seems obvious that, while engineering undergraduates were expecting instructors to have more in TOP class practice, the instructors were expecting the engineering undergraduates to make their own preparation. The 'contrasting' expectation and perspectives between instructors and students was also discovered in a study by Al-Nouh, Abdul-Kareem and Taqi (2015).

In their study, the researchers investigated the female EFL students' perceptions of difficulties faced by them in their classroom oral presentation. Data were also collected from semi-structured interview with teaching instructors. It was discovered that students viewed their difficulty as related to 'personal traits' such as students' fear of evaluation, avoidance of instructors' eyes and forgetting what they want to say, as among the most important factors affecting their presentation ability. However, instructors viewed students lack of 'oral presentation skills' which include reading from notes, difficulty to follow time limit and linguistic difficulty as among the most important factors that have impact on students' successful delivery of presentation. Students also reported other difficulties such as technology-based equipment, suitable environment for presentations as well ample time given for presentations. The researchers suggest that instructors should provide more suitable environment, encouragement and support to their students.

In this study, data from engineering industry stakeholders suggest that language fluency and articulation are viewed as something highly valued in engineering workplace presentation. This is similar to the finding reported in a study of industry requirements and expectations of graduates conducted by Alih, Yusof, Raof, Zakaria, Shamsudin, Omar and Jobil (2018). Although their study was not focusing on presentation, the industry respondents in their study reported that soft skills which comprise English communication skills especially the English language speaking skills, teamwork, attitude, professional image and critical thinking ability, were highly demanded by employers. In one of the findings reported, the respondents who were industry stakeholders were asked to rank speech sample of students. It was found that the students were ranked based on their good command and the ability to speak well in English language.

Alih et al. (2018) speculated that students were ranked based on their English language capability due to workplace communication demand where English is needed to successfully participate in presentations, discussions, meetings, customer services relation in both local and international, interaction and problem solving activities. Along this similar notion, a study by Bhattarcharya, Patil and Sargunan (2010) among professional engineering community reported that, similar to this study, presenters' mastery of audience 'receptivity', technical competency and English language proficiency were essential skills and attributes required for effective presentation.

The use of laser pointers while presenting as well as appropriate use of video clips during presentations were given special emphasis by the engineering industry stakeholders. Although these may be seen as simple issues, they have far more serious implications as lacking these may be associated with presenters' lack of ‘professionalism’. Using laser pointers and ability to appropriately use video clips during presentation are among the techniques which should be mastered by engineering undergraduates so they are seen as able to deliver TOP like a professional.

To the industry stakeholders, everything boils down to preparation, or lack thereof. If preparations were properly done, it could eliminate high anxiety and engineering undergraduates would appear more confident. Besides, by having adequate preparation on their own, TOP presenters could properly execute TOP delivery task and observe time allocated during presentation and thus able to well manage the audience. This is to say that, appropriate preparation could lead presenters to appear more “professional”.

The aforementioned qualities depicted the engineering industry stakeholders’ views in which they contend that some video clip presenters were displaying poor quality of TOP. The following qualities deal with what were considered as acceptable TOP qualities as seen by the engineering industry stakeholders.

B. Video Presenters Displaying Acceptable TOP Skills

The engineering industry respondents also acknowledge that students in the video clips had shown some qualities which could be considered as acceptable TOP skills. For instance, although presenters’ language ability is of medium to lower proficiency, the ability to engage audience throughout presentations could contribute towards effective presentation. IS/M/1 was impressed with students’ ability to retain audience interest.

IS/M/1: "Immediately I love these guys *(video clip 1, male students presenting a description of a concrete mixer)*. He said that this machine is very important in our life. I want know how important this machine is. And now, he is getting feedback. And he is explaining this application in general. He can retain my interest, the language I would say low-medium, he is getting the point a cross and he is engaging with the audience. Unlike the previous one, he is trying to find himself in front of the audience. They just show the lack of preparation".

IS/F/2: **"**Whatever the student is trying to do, for me it is still correct but they have to change the language, change the contents, and rephrase the objectives. So if they *(student in the video clip)* enter my class, I will help them to improve about these kind of mistakes. I think in terms of their English wise is ok. I can give them 7 for content and 5-6 for the confidence level".

IS/F/2: **"**Based on the video, the flow of the presentation is all ok, just the terminology and the goal is less clear".

Industry stakeholders also suggest that some presenters' had clear and easy to understand presentation but certain components need improvement.

IS/M/4: "The ways they express the idea are understandable. But they do not do direct to the point. They should explain it straight way".

IS/M/7: "In terms of language, we understand that we are not English speaking country, as long as we can understand. It is not a big problem".

Besides displaying what were considered as acceptable qualities in delivering TOP, engineering stakeholders were also praising some qualities possessed by the video clip presenters as good set of skills. The following section delineates this notion.

C. Video Presenters Displaying Good TOP Skills

The engineering industry also stated that some presenters had displayed some good TOP skills and qualities in terms of fluency, self-confidence and Power Point slide preparation.

i. Able to Relate Presentation Content to Audience

One important skill is the ability to analyse audience via relating and conforming to audiences' reactions and needs throughout the presentation.

IS/M/1: "Video 7 is ok *(referring to presenter in video clip No 7 who presents a Electric Hand Drill)*,… she is good in terms of explaining the components. Because she does a reflection. For example when I do presentation to audience who have poor English, we need to do reflection so that they would understand. So it is necessary to know your audience, so that you will know what kind of reflection that you need to do. Because the objective of any presentation is to get the audience to understand, what you want them to understand, and then you understand what they understand. So you must know. And again, it is not about what you want to show".

ii. Possessing Fluency

Engineering stakeholders suggest that possessing fluency is deemed to be an advantage point for technical oral presenters.

ISM/3: "For video 4 *(referring to presenter in video clip No 4 who presents a concrete mixer)*, the presenter is very good. She seems to be very composed, confident, fluent and well prepared. There is not much words on the slides, which is good”.

IS/M/1: “So far, she is the best presenter *(referring to a presenter in video clip No 7 who presented an electric hand drill)* So if I want to hire someone, I will hire her. Fluency comes from preparation”.

IS/M/3: “For video 2 *(referring to presenter in video clip No 2 who presents a food recycler)*, generally it is good. But it looks more professional if she is using a remote control for the slides”.

iii. Displaying High Self-Confidence Level

An engineering stakeholder believed that at least one of the video clip presenters displayed high self-confidence level throughout her presentation.

IS/M/3: “For video 4, the presenter is very good. She seems to be very composed, confident, fluent and well prepared. There is not much words on the slides, which is good”.

iv. Good Power Point Slide Preparation

Some presenters in the video clips have displayed good presentation skills with good graphical information on the slides. The following excerpts illustrate this point.

IS/M/3: “For video 4, the presenter is very good. She seems to be very composed, confident, fluent and well prepared. There is not much words on the slides, which is good”.

IS/F/5: “Power point slides look ok with clear and suitable font size. There isn’t too much wordings in power point slides”.

IS/M/6: “There should be very minimum number of words on slides. Most of them write suitable minimum word and figures in the slide. The facts are there in the slide and the elaboration had been done by the presenter which is very good".

ISM/3: "For video 4, the presenter is very good. She seems to be very composed, confident, fluent and well prepared. There is not much words on the slides, which is good".

IS/M/6: **"**Most of them are very good in presenting the topic that had been given. But there is some improvement that we can get from the video".

IS/M/6**:** **"**Information on the slide most of them are ok. Because they are using graphic and keyword that stating the flow of the item they are presenting."

IS/M/6: **"**I can say they are ready and they know what they are presenting they know how to connect the information between the slide".

IS/M/8: **"**For the presenter, they really comprehend the subject matter, they have the technical knowledge of the content and I saw the slide is quite interesting".

The engineering stakeholders' analysis of the qualities of effective TOP skills as displayed by the students are similar to the findings in the study of Mohd Radzuan, Ali and Kassim (2008). In their study, industry stakeholders perceived elements such as organization of oral presentation, content or technical knowledge, language and delivery style must be given due emphasis by students. However, unlike this study, Mohd Razduan, Ali and Kassim (2008) stated that industry stakeholders in their study perceived the usage of technical jargons and English language fluency in oral presentations to be more important than language accuracy. In this study, as stated by the engineering industry stakeholders above, technical oral presenters are expected to be equally good not only in terms of fluency and accuracy, but also other important aspects in order to be effective TOP presenters.

Research Question 4(b):

In what ways could students' TOP skills be enhanced?

Engineering Industry Suggestions on Ways to be an Effective TOP Presenter

To answer the research question 4(b) above, suggestions and recommendations from the semi-structured interviews with engineering stakeholders were compiled and reported here. The suggestions were grouped into several themes as the following. In order to achieve level of competent technical oral presenters, engineering stakeholders suggest that engineering undergraduates should be trained to learn/achieve the following 12 elements.

i. To Learn Skills to Maintain Audience's Interest

One important skill to be a good technical presenter is the ability to retain audiences' interest. The following excerpts illustrate engineering stakeholders' emphasis on equipping technical oral presenters' to be skilful in audience management.

IS/M/1: "If someone lack in term of language, but can retain the audience interest, people still is willing to give you a chance. If you have poor command in English, poor preparation, and you making yourself a joke in front of the audience, equal to you wasting my time. And this guy (referring to the foreign student who was the presenter in the video clip) has his accent in English, but he has some technique in presentation, he asks the right question and gets the audience to be involved".

IS/M/1 described this point further,

IS/M/1 : "For example I now I am going sitting in front of this presentation (undergraduate). I will forgive these lacks of command in English in order to just see how his skills set, then we will be looking at his interpersonal skill, how he communicates with people, immediately I can see I can use this guy for something. Those English, we can teach them later. But the interpersonal skills, body language is there, confidence, if his brushes it a little bit, sure he can be a good player. When we are looking at the undergraduate presentations, we are looking at the potential. The question is we will ask will this guy be our investment?, and would he be the end product that we want?".

One way of maintaining audience interest is by presenting only the key points and leaving sometime for question and answer session. By presenting only main points, the audience will have more curiosity and they will be asking for more explanation during the Q&A.

IS/M/6: "What they need to do is they must speak the main point only. Speak something that can attract the client to ask them more because if you are given 10 minutes and you are giving the main points then client will have more questions. They will ask more because they don't mind they take the longer time. If the audience do not really ask, then something is wrong with your presentation".

Technical oral presenters need to avoid action which could be seen as offending the audience such as reading from slides.

IS/M/8: "You cannot read all the time, you can refer/read a few word, then you have to explain the key message. Don't have to read every single word because you are offending the audience. Because the audience can read. Let say your slide have four bullets, you read a few words and summarize the four bullets so that people can comprehend".

IS/M/8 remarked that,

IS/M/8: "Most of them, they read the slide too much. They look at the slide too frequent and some of them read the sentences one by one. In order to be effective communicator, they need to connect with the audience and get the audience's attention and make the audience have strong interest to listen to your message/contact. So you can see the presenter they just like to get the things done. During presentation they have to look at the audience eye especially the target audience".

ii. To be Well Verse with Presentation Content

Engineering stakeholders suggest that technical oral presenters must make sure the information related to their presentation is at their 'finger tip'.

IS/M/1: "First of all, basic information of the product must be at the finger tip. Then, you must be fluent of each component, what they do. When you rehearse, you have to try to link, for example you have the audience, and you have the item. Then presentation is how you get connect with your client, so that your information can come cross properly".

IS/M/3**:** **"**An effective presenter is someone who can deliver on a subject matter".

IS/M/7: "They can speak even not well enough but the subject that they bring up, they also not sure about their product. So to convince people about the product, you must know well".

IS/M/7 also remarks that,

IS/M/7: "So you must be able to explain the subject that you bring without looking at the screen. So the audience would like to have eye contact with you rather than to see the screen".

IS/M/7 also points out that it is important for engineers to know computer application so that information can be presented graphically when asked by audience. In his words, IS/M/7 : "...the engineer must definitely know how to use basic program. Like Microsoft excel and power point so that when people ask question, he manage to explain graphically rather that explain orally".

iii. To Learn Skills to Elicit Feedback from Audience

It is important for technical presenter to get feedback from audience before they end their presentations. This feedback is important as the presenters could judge audience understanding of the presentation content.

IS/M/1: "For example when I do presentation to audience who have poor English, we need to do reflection so that they would understand. So it is necessary to know your audience, so that you will know what kind of reflection that you need to do. Because the objective of any presentation is to get the audience to understand, what you want them to understand, and then you understand what they understand. So you must know. And again, it is not about what you want to show".

IS/M/1: "Some presenters, as I have seen in my career, they seemed to enjoy listening to their own voices *(referring to presenters who ignore audience in presentation).* You are presenting to your audience, and not to yourself, don't forget that".

IS/M/3: "As a tip, for a good presentation, we try to predict the questions that will be asked by the audience, prior to the presentation. So the direction of the presentation will favour the interest of the audiences. So when they have the questions, and we already provide the answer in the slide, they will feel satisfied".

IS/M/4: "Effective presenter should be able to make his /her point received by the audience. So, if the audience has not received the message, I think the communication is still not effective. So, how to pull the attention is very important. Sometimes in the meeting, it is quite straight forward because it is expected when you are in the meeting, you will pay attention. But if in lecture, everyone is free to do what they want to do, the attention is not directly to the speaker. So that could be a problem. But in normal meeting, all of the participant would pay attention. So in that case, it is quite easy for him to get attention".

IS/F/5: "Two way communications is successful when we are able to look at the audience while presenting. Don't just look at the slides. Or else you just give the slide to the audience. Even though we do not answer anything, we have to maintain audience interest. When audience look at us, it means they are willing to listen to our presentation".

IS/M/6: "In terms of facial expression, they need to look confident and interact more with the audience by asking them question or answering the question from them. It should be two ways communication".

IS/M/7: "And for every presentation, you must have Q & A session. Because you not sure whether your audience understand what are you talking about. So you must ask them. Not necessarily have Q &A session, just ask "Any question?"

Maintaining eye contact with the audience throughout the presentation is one strategy to get their attention. As IS/M/7 illustrated,

IS/M/7 : "The only problem for me is how they do the presentation, the preparation and eye contact. Most of the student, because their confidence level is low, so rather than have eye contact with the audience, they like to see the screen more. So that is not good for presentation".

Guiding audience to follow presentation flow by pointing key points on slides is also very helpful to expedite audience understanding of the presentation content. Engineering undergraduates should learn the skills to engage /guide audience to follow content.

IS/M/1: "In typical engineering presentation, we normally do sit down presentation, because the audience are normally small group. There were slides behind me and the audience will be looking at me and the slides as well. I'm using the mouse if I forgot to bring my pointer. I will stand up if only I want to stress out the point and I will use my hand to point at the slide/screen".

IS/M/4: "The length of the presentation normally in many cases they are very short between 5-10 minutes. But if you have too many slides which is sometimes is not useful, people would not pay attention because normally if you are working in the engineering field, they are very busy. The time is very precious. So they are not there just to listen to your lecture. They want the point to be direct. So you have to go direct to the point. And of course at the end of the presentation, you can offer the audience if they have any question. So I would imagine 5-10 minutes would be enough unless for the specific presentation such as presenting on new project".

iv. To be Aware of the Importance of Non Verbal

One important criterion to be an effective technical oral presenter is the understanding of the non-verbal communication skills. Wearing appropriate attire for technical oral presentation is one aspect of non verbal communication skills in which technical oral presenter's professional images is at stake. An industry stakeholder suggests that appropriate attire is important in technical presentation especially for the lady presenters.

IS/F/2: "To be honest, in terms of attire for presentation, I never wear *baju kurung* (Malay traditional dress for ladies) when I work in engineering field. Because I cannot perform my work if I wear *baju kurung.* It doesn't matter if you put on slack, blazer or long sleeves shirt, but not the traditional dress. Personally, when people look at you in traditional dress, to me, people see you as not being serious in your work. People see you as a kind lady, sweet heater and highly tolerant".

Another important non-verbal communication is presenters' way of standing and making movement in front of the audience.

IS/F/5: "Presenters should not be standing in front of the slide. They should stand next to the slide".

IS/M/1: "The body language of the presenters is already turning me off. Another thing in workplace presentation, you have a few second to gain in the interest of people and to make sure they don't tune off. Especially if you want to try to convince, so if you are projecting negative, you lost me immediately".

IS/M/7: "The body gesture also, if you see the video, the second guy the back should also involve in the presentation and must not just standing and doing nothing".

IS/F/5: "Some presenter keep looking at their laptop, it's annoying for the audience. Look at a glance at the screen then focus on the audience. Maintain eye contact with the audience".

IS/M/1: “Ok the presenter *(in the video)* is all over the place. Normally, presenters stand at one side and looked at the audience and explain the situation. Or you will have a laptop in front of you and you will be talking to the audience. In typical engineering presentation, we normally do sit down presentation, because the audience are normally small group. There were slide behind me and the audience will be looking at me and the slide as well. I’m using the mouse if I forgot to bring my pointer. I will stand up if only I want to stress out the point and I will use my hand to point at the slide/screen. And she (presenter in video clip) is all over the screen”.

IS/F/5: “No presenters use laser pointer to explain parts which they were presenting. Because the presentation in factory, we use laser pointer. All students in the video clips used their hands to show the points”.

IS/M/7: “It is good to have laser pointer or ruler when you do presentation”.

IS/M/8: “First your expression and body language must be positive. If you really confidence this is the right thing to do. Your facial expression and body language will be convincing and people can observe and see that this guy is really believe in this and people will buy in. So it comes from within”.

IS/M/8: “They have to be confident through body language. Sometime engineer present while their hand in the pocket, they don’t stand straight. Body language will project your confidence level”.

v. To Improve Language Fluency

Engineering stakeholders recognize the importance of fluency in speaking and delivering technical oral presentation for engineers.

IS/M/1: **“**So far, she is the best presenter *(referring to a presenter who presents “An electric drill”).* So if I want to hire someone, I will hire her. Fluency comes from preparation”.

IS/F/2: **“**Fluency in speaking and presentation of course very much important aspect”.

IS/M/3: “I think fluency is an advantage, because it is good to have people talking in good English. However, it is not really necessary because some people talk a little bit slower then, but as long as people can understand. Because we take English as a second language. Even when we go to present to other international companies, they will understand that we are not a native English speaker. But, if we have the fluency, it will be regarded as added advantage”.

vi. To Ensure Accurate Presentation Content

The engineering industry stakeholders suggest that technical oral presenters must make sure the content of their presentations is correct. When presenting, they must use specific technical terminology in description of products or processes. The following excerpts show the importance of giving the correct information while delivering technical oral presentations to audience.

IS/F/2: “So in the industry, the content must correct, the terminology must be specific, must have analysis data. Actually you cannot use the word “describe”, because when you use that word, that will become narrative presentation. So in engineering, the keyword is ‘product description’. Like in your video, the description that student present are so general, just surface. But in engineering, you must be specific in describing the specs of your object”.

IS/M/6: "And the information must be correct and you must make sure that. I can say they are ready and they know what they are presenting they know how to connect the information between the slide. Because you need to know the process because most of the engineers follow the SOP. So they need to know the link between the first and second point. They need to know the nature of the process".

IS/M/7: "So you must be able to explain the subject that you bring without looking at the screen. So the audience would like to have eye contact with you rather than to see the screen".

vii. To Develop Language and Communication Skills Towards Becoming Effective Technical Oral Presenters

The engineering industry stakeholders also illustrate ways to develop students' technical oral presentation skills. According to them,

IS/F/2: "In terms of developing presentation skill, I want to suggest we should have two parts of the training. First is the language training about 70% for the people who cannot communicate. So in this part they will learn the grammar, diction, vocabulary, pronunciation etc.. If you don't master your language, it is difficult for you to put up your communication. For the second part which is 30%, after you can speak, you have to learn to speak in engineering language, engineering scenario, real engineering problem, probably real management audience, real engineering perception, terminology in engineering so that they can be coached impromptu. So when you completed the both training, we can expect that students are really good in presentation in the context of engineering. For me, scoring for presentations is very unhelpful. You have to coach your student on the spot. Not just give the marks. Because students do not know what their mistakes are".

IS/M/3: "What I can observe, when the language is good, content and skills usually come together as a package. That is why during the interview we look more on the oral skills than the others".

IS/M/4: "I think the hand gesture, eye contact etc is minor. Because if you know how to communicate, they will come naturally. This is from my experience. Because actually I never learn to present, but once you can articulate the idea, the rest will come naturally".

IS/F/5: "To attract audience attention, we need to develop social skills. To develop social skills, we can start with developing good communication skills. This is the biggest problem among new graduates. Say for instance, even at the factory cafeteria, start with social activity like say hello and start conversation in English. Later, once they have confidence in communication, when it comes time to deliver presentation, because they always speak English outside, it will be easier because they know already some of the colleagues from different department through social activities. Then they would have the confidence to present. It should not be a problem to present".

IS/M/7: "During initial stage, of course you need to practice in front of the mirror but once you getting older, and have more experiences, the training is not necessary but the preparation is still a must".

IS/M/8: "Some of the engineers are very good technically. They do the hard works, they analyse the problem, identify the root cause and come out with good engineering solution. They are very good engineer, however, because of poor communication in English, they are not able to stand out and being recognise by management. Sometimes they are the one who solve the problem, but due to the poor communication, some other people capitalise and there are brave and confidence to explain and present to upper management. As the result, the right person who really expert is not getting the right recognition or promotion because of the perception that this person is not able to communicate well. So they just work behind the scene and they are being taken advantages by somebody else. So this is example poor English communication skills can become a roadblock for the engineer to advances in their career".

An engineering industry stakeholder also suggested that students should be trained until they become highly effective technical oral presenter as if achieving the level of becoming a 'natural presenter'.

IS/F/5: "I would like to propose that students should be trained until they reach a level of becoming a natural presenter. Don't be too serious, be natural. Don't rely too much on slides. If natural, the listeners will feel good even though there isn't much content. Actually we want to evaluate their communication skills".

viii. To be Accurate in Expressing Ideas and to Learn Skills to Pronounce Words Correctly

Engineering industry stakeholders also make it clear that the ability to articulate ideas correctly and the ability to correctly pronounce words are important for technical oral presenters. The following excerpts revolve around the two aspects mentioned.

IS/F/2: "The most important part is you have to be familiar with your language. Then the pronunciation, the pronunciation is very important, because when you pronounce something, it will go directly into the ears of the audience, then into the mind of the audience. And it would make the audience believe that what you are trying to say is correct".

IS/M/7: "Eye contact is very important but hand gesture not so much. For engineering, it is not necessary to have much hand gesture. The good language and pronounce clearly is better communicator compare than presenter that did a lot of hand gesture".

IS/M/8: "The example of grammatical mistake, the engineer wants to describe the frequency of the problem occurred. If he said the problem occurred 'seldom' compared to the word use it occurred 'every shift'. So the choices of words are important to describe the severity of the problem. So the engineer has to use the right words, so that the degree of the problem can be interpreted more accurately. Because the way engineer will react within the 'seldom', the use of the wrong word will need the different reaction. The problem occurred every shift, means every 12 hours, so the engineer manager will assign more resources to work with the problem. It gives the big impact to operation as well. It will determine how accurate the problem statement is. And for example, the engineer wants to collect the data, the way the engineer did the data collection to differentiate frequency of the problem occur, that will represent the different situation".

IS/M/8: "Actually in the MNC, manufacture industry we do not expect the engineer to speak using bombastic language or word. So they don't have to speak fluently like American or British accent. What more important is they must be able to articulate the idea clearly. The way they describe engineering problem has to be clearly articulated. Meaning that they must be able to explain the complex engineering problem into a simplified version so that everybody can understand because audience could be manager, executive, or officer from different background. They should be able to translate or explain the complex technical problem to something that management can understand. That is very important. Another thing is they have to present to global player so their presentation sometime was done using video conference but most of the time, face to face in the meeting room. So ability to present to people from international side is important".

IS/M/8: "Secondly, after confidence, you must be able to articulate it very well. So that the managers who are not familiar with the process could understand the problem you want to describe. If your articulation is not detail, not able to represent the problem, the management do not understand what you try to propose".

ix. To Portray Image of High Self-confidence

Engineering industry stakeholders hold the views that an effective TOP presenter portrays image of high self-confidence.

IS/M/3: "An effective presenter is someone who can deliver on a subject matter, and how they deliver it? The presenters have to show their confidence. It is not about too much talking, it has to be just enough. Sometimes we just show the image, without too much words on the slide, then give some explanation to the clients".

IS/M/3: "In terms of voices, the presenter need to sound confident, not too slow or too loud".

IS/M/6: "They need to look confident and attract the audience by asking the question or answering the question from them. So the presentation sounds interesting.

IS/M/6: "Hand gestures also important. You need to stand straight and not so much movement with the body. Stand straight and be confident, so audience know what are you doing".

IS/M/6: "In terms of facial expression, they need to look confident and interact more with the audience by asking them question or answering the question from them. It should be two ways communication. So the presentation sounds interesting".

IS/M/8*:* "For me, the effective presenter, the person must have a good self-esteem, confidence, that is the key one for me. When you present something you want to transfer your knowledge. In this case the engineer wants to transfer the knowledge or finding. In order to transfer the engineering solution, first you must believe yourself that this is something workable. So the self-confidence must be there in the first place. If you not confident with your finding, you will not be able to convince with your audience. Example, let say I am the engineer, I want to propose to department manager that we should change the machine. This machine gives a lot of problem. I already study. When I present to my manager, I must have all the information, I will recommend the solution by converting to another type of machine. So with all the background information that I have, I need the confidence in order to convince the manager to buy or approve the proposal".

IS/M/8: "They have to be confident through body language. Sometime engineer present while their hand in the pocket, they don't stand straight. Body language will project your confidence level".

ix. To learn skills to use visual aids effectively

Engineering industry stakeholders proposed that an effective TOP presenter should be able to effectively use visual aids during presentations.

IS/M/3*:* "The numbers of slides of presentation depends on audiences and subject matter. we prefer photos, graphs, and statistics, with minimal use of word. Wordings are usually very brief and in organize, point form. It is more precise".

IS/M/4: "From my experience, the slide must be very compact. I would imagine for engineer if they want to express all the technical things, they can use maybe 1 or 2 slides only. That is why I said presentation in engineering has to be short and direct to the point. Can you imagine, if you just put half of it about 25% of the content in one slide, then you move to the next slide, it is taking time... the transition will be distraction".

IS/M/7: "It should not be too much information in the slide. Don't crowd the audience's mind with too much data. Just not so much and not so little. Just a few key points so that people can understand but if they need more detail they will ask question".

In order to deliver effective presentation, presenters can use technology such as laser pointer to assist in their presentation. One way is by using laser pointer.

IS/F/5: "No presenters use laser pointer to explain parts which they were presenting. Because for the presentation in factory, we use laser pointer. All students in the video clips used their hands to show the points".

IS/M/7: "It is good to have laser pointer or ruler when you do presentation".

In the event that engineering undergraduates insert video clips in their power slides or if they intend to show video clips to audience, the engineering stakeholders suggest that they should provide verbal explanation as the video clip is being shown on screen. The following excerpts reflect stakeholders' perspectives regarding the use of video clips in presentation.

IS/F/5: "While showing video, the presenters should make explanation as the video is being played. It will be more effective".

IS/M/1: "The use of video clips did not make presentations interesting. Lost opportunity. Because the total presentation time is about 8 minutes. And she spent close to 3 minutes on introduction. So, that is about more than 20-35% of the time. So she spent 35% of the time just for introduction. Actually, I don't really like using video because for me it's just putting people to sleep...it is boring.. because video is something for them to do it themselves later. It's a reference document. It's not a presentation document".

IS/M/1: "I will sit for presentation because I want to hear you, not somebody else presenting (referring to students' use of short video clip in presentation). So you see it I lost my interest".

xi. To learn skills to insert humour in TOP

One good skill to be an effective TOP presenter is the ability to insert elements of humour whenever appropriate throughout the presentation, as put forth by at least two of the engineering industry stakeholders. In their words,

IS/F/5: "Even though it is very formal presentation, we could insert some humour elements in order to attract the audience. When we talk about technical things, it cannot be very serious, or else it becomes bored. We need to attract audience attention or they would be restless".

IS/F/2: "For facial expression, when you want to open out, you can smile. If the situation is tense, you can make a joke".

xii. To be aware of the importance of good preparation

Engineering industry stakeholders point out that engineering undergraduate should be taught the importance of making detailed preparation prior to presenting to audience. These excerpts illustrate the stakeholders' concern.

IS/M/4: "From my experience, I have seen a new young engineer. When they come to the meeting, they are not really prepared. When they have been asked to present, they don't have confidence to present. Then they don't have ability to answer the question because they are not prepared. So for young engineer, this could be their major problem for the first few years".

IS/M/6: "Most of them are very good in presenting the topic that had been given. But there is some improvement that we can get from the video (Video of students' presentation). Actually in doing the presentation, you need to prepare. So you don't have to look at the slide more often. You have to make eye contact with the audience. Not too depending on the slide".

IS/M/7: "The only problem for me is how they do the presentation, the preparation and eye contact. Most of the student, because their confidence level is low, so rather than have eye contact with the audience, they like to see the screen more. So that is not good for presentation".

IS/M/7 further reiterated that,

IS/M/7: "In terms of fluency, I don't have comment on that because as the time goes, they will improve themselves. For me it is just preparation. Not really the language. During initial stage, of course you need to practice in front of the mirror but once you getting older, and have more experiences, the training is not necessary but the preparation is still a must".

These qualities discussed above are similar to the findings in Noor Raha Mohd Radzuan, Fatimah Ali and Hafizoah Kassim (2008) who reported some essential aspects of effective TOP presenters viewed by the engineering stakeholders in their study of to include appropriate body language, tone, eye contact, movement, voice projection, appropriate facial expression, appropriate volume and speed, articulation and pronunciation, correct grammar and style and vocal varieties.

Adding to that, similarly, Bhattacharyya (2011) reported that engineering stakeholders expect graduate engineer to have a wide understanding of the subject matter as that quality would enable a presenter to present convincingly to his or her audience. To be regarded as an effective technical oral presenter, the above qualities as proposed by the stakeholders from engineering industry should be developed and embedded in the teaching of Technical Oral Presentation (TOP) skills for engineering undergraduates.

By acquiring these important qualities of TOP presenter as proposed above, it can be argued that engineering undergraduates have equipped themselves with required ‘professionalism’ which is vital for their future English workplace communication success.

Research Question 4(c):

How do engineering undergraduates perceive their competency in delivering Technical Oral Presentation (TOP)?

Engineering Undergraduates’ Perception on Their Competencies in Delivering Technical Oral Presentation (TOP)

In order to obtain data on engineering undergraduates’ perception of their own competencies in TOP, the Self-perceived communicative competence (SPCC) questionnaire ((McCroskey & McCroskey, 1988) was distributed. Table 4.20 illustrates the SPCC scores and their interpretation for each communication competence context with *public, meeting, group, dyad, stranger, acquaintance* and *friend* context.

Table 4.20

The SPCC score and interpretation

Communication context	SPCC Score	
Public	>86 High SPCC	<51 Low SPCC
Meeting	>85 High SPCC	<51 Low SPCC
Group	>90 High SPCC	<61 Low SPCC
Dyad	>93 High SPCC	<68 Low SPCC
Stranger	>79 High SPCC	<31 Low SPCC
Acquaintance	>92 High SPCC	<62 Low SPCC
Friend	>99 High SPCC	<76 Low SPCC
Total	>87 High SPCC	<59 Low SPCC

Source: (McCroskey & McCroskey, 1988).

In this study, the data of each communication context are interpreted as low, moderate or high, as suggested by McCroskey & McCroskey (1988). For instance, for communication with *public* context, the value ranging from 0 to 51 is considered as low, 51 to 86 as moderate and 86 to 100 as high (see Figure 4.5).

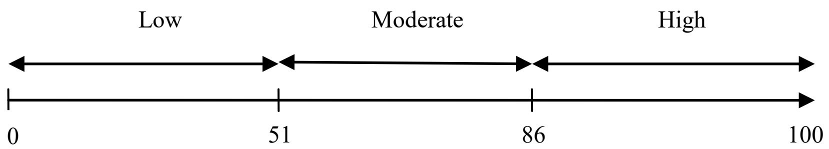


Figure 4.5: Interpretation of scores for the SPCC communication context based on McCroskey & McCroskey (1988)

Engineering undergraduates' self-perceived communication competence (SPCC) overall total scores

Table 4.21 depicts the numbers and percentages of respondents who were classified as representing a high, medium or low self-perceived communication competence based on the SPCC. It was revealed that a total of 15 respondents (4.8%) reported that they perceived high self-perceived communication competence and a total of 225 respondents (72.6%) perceived moderate. On the other hand, 70 respondents (22.6%) perceived themselves to be in low self-perceived communication competence. The findings above indicate that a large majority of the respondents believe that their ability in communication is only at moderate level while about 1/5 of them believe they have lower competencies compared to their colleagues. This is challenging to instructors as the number of respondents who believe that they have high level of communication competence is very small portion of the total number of respondents. Table 4,21 shows that most of the respondents feel that they are in the moderate level in various communication contexts. It can also be seen that almost 1 out of 4 respondents have perceived themselves as having low self-perceived communication competence.

Table 4.21

Engineering undergraduates' self-perceived communication competence (SPCC) overall total scores

SPCC Scale	No of Respondent/%
High self-perceived communication competence	15 (4.8%)
Moderate self-perceived communication competence	225 (72.6%)
Low self-perceived communication competence	70 (22.6%)

Engineering undergraduates' Self-Perceived Communication Competence Scores in Seven Communication Contexts

Table 4.22 displays student' self-perceived communication competence scores in seven communication contexts which were low, moderate and high self-perceived communication competence. The majority of respondent perceived that they had moderate communication competence with *stranger* (86%). Other than that, it can be stated that the majority of respondents perceived themselves to be in moderate communication competence for both of *meeting* and *group,* with the same percentage (69%).

Table 4.22

Students' self-perceived communication competence scores in communication contexts and receivers (n=310)

Scale	**Respondents**		
	Low	**Moderate**	**High**
SPCC subscores			
Public	49 (16%)	245 (79%)	16 (5%)
Meetings	78 (25%)	215 (69%)	17 (6%)
Group	83 (27%)	214 (69%)	13 (4%)
Dyad	111 (36%)	186 (60%)	13 (4%)
Stranger	13 (4%)	267 (86%)	30 (10%)
Acquaintance	120 (39%)	188 (60%)	2 (1%)
Friend	149 (48%)	152 (49%)	9 (3%)

Table 4.23 summarises the mean and standard deviation scores of students' self-perceived communication competence scores in seven communication contexts. The highest mean scores were communication with *friend* context with the mean score of 76.743. This is followed by communication with *dyad* context with the mean

score of 72.5559. These show that engineering undergraduates were feeling comfortable with their communication competence within their social group.

Next, the lowest mean score was the communication with *strangers* context with 59.8435 illustrating that engineering undergraduates were not comfortable when communicating with people that they do not recognise. In addition, it can be seen that other communication contexts such as *group, public, acquaintance* and *meeting* only had the average mean scores with all of them in 60-70 range.

According to McCroskey and McCroskey (1988), to compute the total SPCC score, the mean score *of friends, stranger and acquaintance* are added then divided by 3. In this study, the SPCC score is 67.1145, SD 13.88643, illustrating the engineering undergraduates perceive their communication competence to be at moderate level. This indicates that a large majority of the respondents perceived themselves as having moderate level of communication competence in all communication contexts.

Table 4.23

Mean and Standard Dev. Scores of students' self-perceived communication competence scores in seven communication contexts

	Mean	**Std. Deviation**
Friend	76.7435	19.35221
Dyad	72.5559	21.52383
Group	69.2710	15.51813
Public	65.2054	14.35131
Acquaintance	64.7565	15.61819
Meeting	61.4258	15.72562
Stranger	59.8435	15.28696
Total	**67.1145**	**13.88643**

The finding above is similar to the study conducted by Devi and Feroz Farah Shahnaz (2008) among 32 engineering undergraduates at University Teknikal Malaysia (UTEM), in which the respondents had moderate level of communicative competence in all communication contexts such as public, dyad and groups as well as in communicating with strangers, acquaintances and friends.

Research Question 4(d):

Is there any significant difference in engineering undergraduates' perception on their TOP competencies across faculties?

Comparison of Engineering Undergraduates' Perception on Their TOP Competencies Across Faculties

In order to assess whether there is any difference between students perception of TOP competencies across nine engineering faculties at UMP, data were computed as shown in Table 4.24. Table 4.24 displays the SPCC mean scores among different engineering faculties in the university. The data show that FKP students have the highest mean score of 74.3214, SD 25.27099 followed by FKM with the mean score of 70.9281, SD 10.14532. The lowest mean score was for FSKKP with 62.4022, SD 9.24231.

Table 4.24

Comparison of students' SPCC competencies across the faculties

	N	Mean	Std. deviation
FIST	22	64.8788	16.32241
FKEE	31	65.7715	12.60862
FKASA	51	67.3088	10.57752
FKKSA	54	66.1003	13.33800
FT	43	65.9264	15.03353
FSKKP	23	62.4022	9.24231
FKP	14	74.3214	25.27099
FKM	51	70.9281	10.14532
FIM	21	67.1032	18.86075

From Table 4.24, generally it can be seen that there are differences in terms of the SPCC scores between the faculties. In order to ascertain the assumption, ANOVA analysis was conducted as shown in Table 4.25.

Table 4.25

ANOVA analysis of students' SPCC competencies across the faculties

ANOVA

Total

	Sum of Squares	df	Mean Square	F	Significant (*P* value)
Between Groups	2263.671	8	282.959	1.486	0.162
Within Groups	57321.750	301	190.438		
Total	59585.421	309			

H_0: There is no significant difference in competencies among undergraduates from different faculties at UMP.

H_1: There is significant difference in competencies among undergraduates from different faculties at UMP.

The ANOVA analysis in Table 4.25 illustrates that the significant value of 0.162 is higher than 0.05 (95% confidence interval). Hence, this study fails to reject H0, which means that there is no significant difference of the mean values between students in different engineering faculties. In other words, most engineering undergraduates from these faculties have similar perception of TOP competencies and the majority of them fall within moderate self-perceived communication competence in all contexts, although they were majoring in different engineering areas of study specialisation.

Research Question 4(e)

Is there any significant difference in engineering undergraduates' perception on their TOP competencies across faculties by controlling gender?

Comparison of Engineering Undergraduates' Perception on Their TOP Competencies across Faculties by controlling gender

In order to assess whether there is any difference between students perception of TOP competencies across nine engineering faculties at UMP by controlling gender, data were computed as shown in Table 4.26 using ANCOVA test.

Table 4.26

ANCOVA analysis of students' SPCC competencies across the faculties

Tests of Between-Subjects Effects

Dependent Variable: Competency

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2062.780[a]	9	229.198	1.356	0.208
Intercept	100306.928	1	100306.928	593.571	0.000
Gender	496.506	1	496.506	2.938	0.088
Faculties	1938.090	8	242.261	1.434	0.182
Error	50696.673	300	168.989		
Total	1439061.486	310			
Corrected Total	52759.453	309			

a. R Squared = .039 (Adjusted R Squared = .010)

From the analysis of ANCOVA as shown in Table 4.26, similar to the findings from the ANOVA test, the results indicated that there is still no significant difference for the competencies among the faculties despite controlling for gender in the analysis. It shows that, gender did not affect the level of competency among engineering undergraduate across the faculties in the study.

Conclusion

This chapter presents the findings of the evaluation of TOP skills components within the English for Technical Communication course by using the CIPP Evaluation Model. The findings were presented in the forms of qualitative and statistical data analysis according to the four main research questions outlined in chapter one. An in-depth discussion and interpretation of the findings will be discussed in the next chapter.

CHAPTER 5

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

Introduction

This study was conducted with the view to evaluating the components of Technical Oral Presentations using the CIPP Model (Context, Input, Process and Product) among engineering undergraduates, English language instructors as well engineering industry stakeholders at an engineering and technical university on the East Coast of Malaysia. This chapter will highlight discussion of findings, conclusion and recommendation from the study.

Summary of the study

This descriptive study was conducted to evaluate the implementation of Technical Oral Presentation components within English for Technical Communication course for engineering undergraduates at one technical university in the East Coast of Malaysia. The CIPP Evaluation Model (Stufflebeam & Shinkfield, 2007) was adopted as the conceptual framework of the study and data were collected from engineering undergraduates, instructors teaching the course as well as from engineering industry stakeholders.

DISCUSSION OF THE FINDINGS

The findings of this study of TOP components are discussed based on the four components of the CIPP Model which are Context, Input, Process and Product evaluation.

CONTEXT EVALUATION

The discussion of the Context Evaluation findings cover the aspects of relevancy of the course outcomes in light of engineering undergraduates' TOP skills development, their interest towards TOP, assessment of assets and facilities towards TOP learning and engineering undergraduates' problems and difficulties in their TOP learning.

a. 'Relevance' of English Technical Communication Course Outcomes for TOP Element as Seen by Instructors

The instructors' perspectives were evaluated in terms of whether they think that the course outcomes (CO) statement of the English Technical Communication course document were 'relevant' towards meeting English language needs in terms of developing engineering undergraduates' ability to deliver Technical Oral Presentation in line with the mission and vision of the Universiti Malaysia Pahang (UMP).

The instructors highly agreed with all the items measuring the 'relevance' of the course towards meeting students' TOP needs and institutional needs. The instructors' understandings that the course outcomes related to TOP elements within the English Technical Communication course are relevant for their students' language needs show their understanding of institutional educational mission. This also means that the TOP component within English For Technical Communication course is perceived to be highly relevant. Ganu (2013) opined that every individual connected to any institution must clearly understand its educational mission and this mission must be clearly defined; thus it serves as a guide and inspiration for everyone towards creating desirable institutional climate and culture.

b. Engineering Undergraduates' Level of Interest in TOP as Seen by Engineering Undergraduates

Students' strong interest towards the English for Technical Communication course that they are studying is an important indicator to evaluate *Context Evaluation* and it could possibly be used as a predictor to measure achievement of the course outcomes. The overall mean of items measuring engineering undergraduates' perception of their TOP interest for context evaluation is 3.56, 0.913 SD and this indicates high students' interest towards TOP.

However, for item *"I like to give technical oral presentation in class"* and the item *"I feel that giving technical oral presentation is easy"* received the mean scores of 3.35, SD 0.922 and 3.25, SD 0.927 respectively indicating moderate level.

The scores of these items reflected lower agreement compared to other items in which the mean scores indicated 'very high' agreement to the statements, thus implying that learning of TOP skills is of moderate interest to students. It could be drawn that more effort could possibly be made to increase engineering undergraduates' interest towards TOP.

c. Engineering Undergraduates' Level of Interest in TOP as Seen by Instructors

Instructors were also asked about their students' interest in TOP as they teach the TOP skills in their classroom. The data drawn from instructors' perception implied they highly agree that engineering undergraduates are perceived to have high interest in TOP.

d. Assets and Facilities Supporting Engineering Undergraduates' TOP Development

Another important evaluation item under the context evaluation is the extent assets and facilities are supportive towards students' TOP skills development. The overall mean of all the items measuring engineering undergraduates' perception of whether assets and facilities are supportive to their TOP development was 3.61, 0.936 SD, indicating that the majority of the engineering undergraduates highly agree that assets and facilities available support their TOP development.

The lowest mean score for item 'self access' "*Self-access software available in the language labs like tell me more are somewhat helpful in my learning of technical oral presentation skills"* with the mean value of 3.31, 0.969 SD indicate moderate score. It showed that students believed that language learning software used in the language labs were not very helpful towards their TOP skills development. Since certain language learning software such as "Tell Me More" were installed back in 2007 in the language labs which were meant to assist students' learning, over the years these software are no longer relevant and not of interest to students.

In contrast, the item "*Internet access is efficient whenever instructors need to show online materials related to giving technical oral presentation"* was the highest mean score with 3.77, 0.973 SD, indicating high agreement as compared to other items. The result could be interpreted that the majority of the students highly agree that internet access in the language lab is efficient and were useful for their TOP skills learning. Some instructors show more recent online resources such as video of famous presenters from YouTube channels and this is possible due to efficient internet services provided in these language labs.

The instructors perspectives on the extent in which assets and facilities support students' TOP development were also sought. The result showed that instructors highly agree that internet connection is excellent and this enables them to show online materials related to teaching and learning of TOP skills in the classrooms. Similar to engineering undergraduates' perspectives, the items "*Self access software like Tell Me More and others are somewhat helpful in my students' learning of technical oral presentation skills"* was the lowest mean with 3.33, 1.435 SD, indicating moderate mean score. It showed that instructors hold similar view with engineering undergraduates that language learning software which was installed in the computer labs was somewhat less impactful for students' TOP skills development.

e. Problems Faced by Engineering Undergraduates in TOP Skills Development

The other important element under context evaluation is assessment of problems faced by beneficiaries which impede their TOP skills development. In order to obtain an in-depth understanding of problems faced by engineering undergraduates, various sources of investigations were employed such as administration of questionnaire as well as interviews with both instructors and students' focus groups.

Analysis of open ended questionnaires prompting engineering undergraduates to describe the problems they faced revealed that more than one third of the students stated lack of self-confidence as their major obstacles in TOP. This is followed by other difficulties such as lack of preparation, vocabulary, content understanding, facilities/technology, eye contact, lacking practices in class as well as difficulty in pronunciation, grammar, lack of fluency and issues with time management and audience interaction.

The findings from focus group interview revealed that engineering undergraduates stated that high anxiety level during presentations as well difficulty in matters related to language is among their major hurdles in TOP. Various reasons for high anxiety level that they experience while presenting TOP include not having much exposure in delivering presentation in other subjects, low self-confidence level, unfamiliarity with new classmates, not able to explain things related to content, shyness, not able to face audience as well as feeling nervous upon knowing the presentation is a formal assessment where formal assessment, in which the awarding of coursework marks are conducted.

In terms of difficulties related to English language abilities, engineering undergraduates explained that they include pronunciation of words, difficulty to form sentences, grammar issues, lack of vocabulary, lack of fluency and not knowing specific terminologies to explain specific measurement and concepts.

Data were also collected from open ended section of questionnaire distributed to instructors. Instructors reported that engineering undergraduates were observed to have problems of high anxiety level, lack of self-confidence, lack of practice on their own, lack of time to prepare due to commitment in other courses, language problems including lack of vocabulary, poor command of English, inability to handle Q and A session with audience, low proficiency level, lack usage of technical terminologies and slides that are too wordy. Engineering undergraduates were seen as lacking enthusiasm to present and treating presentation just for the sake of passing the presentation as well as inability to realise the significance of delivering presentation within stipulated time limit.

The findings were triangulated with semi-structured interviews with the instructors teaching English for Technical Communication course. The findings from the interview with six instructors revealed similar problems observed by them. According to instructors, engineering undergraduates' ability to deliver effective TOP are affected by their high anxiety level and lack of self-confidence, lack of preparation and self-practices, lack of content knowledge understanding as well as difficulties in language which include lack of vocabulary, pronunciation problems and grammar issues.

The findings from this study corroborate the many concerns highlighted in previous studies with regard to lack of confidence among undergraduates in executing communication task. Lack of confidence may occur as a result of students' high anxiety level whenever they face the task of delivering a technical presentation in front of others (Radzuan & Kaur, 2011). Along similar notion, a study by Woodrow (2006) also indicates that delivering oral presentations is considered the most stressful communicative event for Asian students. This is worrying as it is evident from the literature that oral communication skills which include the ability to deliver technical oral presentation effectively are highly demanded by employers in the workplaces. In addition, employers reported that employees' lack of confidence is the one of the major obstacles to be successful in workplace communication (Wahiza Wahi, 2014). This evidence points to the fact that more efforts should be taken to ensure these engineering undergraduates possess and continuously develop a set of desirable competencies in their TOP skills prior to graduating. The following Table 5.1 summarised both engineering undergraduates and instructors' perspectives on TOP problems faced by students.

Table 5.1:
Instructors and engineering undergraduates' perspectives on students' TOP difficulties

Instructors' perspectives	**Engineering undergraduates' perspectives**
• Lack of self-confidence • High anxiety level • Lack of self-practice • Lack of time to prepare due to other subjects' commitment • Lack of vocabulary • Poor command of English • Issues in Q&A handling with audience • Low proficiency level • Slides too wordy • Lack of enthusiasm in presentation • Poor time management in presentation • Lack content knowledge • Pronunciation problem • Issues with Grammar	• Lack of self-confidence • High anxiety level • Lack of preparation • Lack of vocabulary/specific terminologies • Lack of content knowledge understanding • Problem due to technology/facility (eg Slow internet connection) • Problem with eye contact • Shyness • Lack of in class practices • Pronunciation difficulty • Issues with Grammar • Lack of fluency • Time management • Issues with audience interaction

Central questions being asked for the context evaluation is assessment of whether beneficiary needs are fulfilled. The question asked is *"Are beneficiary needs met?"* (Stufflebeam & Skhinfield, 2007). In this study, engineering undergraduates' needs are associated with development of their TOP skills when they registered in English for Technical communication course throughout the semester. The findings of the context evaluation discussed above show that engineering undergraduates'

TOP needs are not fully met, and more effort should be taken to improve this situation. For instance, the evidence presented in this section suggest that both instructors and engineering undergraduates perceive that lack of confidence and high anxiety level are among the major difficulties which affect most students' TOP delivery. Therefore in order to realize their TOP needs, engineering undergraduates should be properly trained to achieve a level where lacking self-confidence and high anxiety level are no longer the main hurdles affecting their TOP competencies. According to Arnó-Macià, Aguilar-Pérez and Tatzl (2020), English for Specific Purposes courses should cater engineering undergraduates' needs through building their confidence in using language, practising fluency and expanding specialised vocabulary thus supporting them in both academic and specialised professional communication.

INPUT EVALUATION

The discussion of input evaluation findings is made with the view to evaluating suitability of content and material provided for engineering undergraduates' TOP skills development. Both engineering undergraduates and instructors' views were taken into consideration for input evaluation. Another important aspect of input evaluation is profiling of teaching personnel as discussed in the subsequent section.

a. Instructors' Perceptions on the Suitability of Module Contents and Material for TOP skills

Instructors' view on the content and material in the English Technical Communication course module provided for their TOP teaching were collected from questionnaires distributed to them. The overall mean score of items measuring instructors' views on the suitability of content and material is 4.00, 0.786 SD. This indicates that the instructors highly agree that the contents and material provided in the course module are suitable for teaching of TOP skills for engineering undergraduates.

b. Engineering Undergraduates' Perceptions on the Contents of TOP in the ETC Module

Engineering undergraduates'' views on the content material for TOP skills learning provided in the English for Technical Communication module were collected from questionnaire Set B. The overall mean scores of 3.81, 0.799 SD indicated respondents highly agree with items measuring students' perception of content material suitability. This shows that engineering undergraduates hold similar views with their instructors that the content and material in the ECT module are suitable for their TOP skills development. They also highly agree that the content material provide them with what they need to know in acquiring TOP skills, task and exercises are suitably designed, appropriate for their pace as well as easy to follow.

c. Profiles of Instructors' Background Experience

According to Stufflebeam and Shinkfield (2007), input evaluation is related to the evaluation of resources by critically examining to what extent resources are used and whether they are used appropriately in order to achieve the underlying course objectives. In this study, profiling of instructors' background experience is a method of analysing human resources under input evaluation. Upon examining instructors' background, it was discovered that 50% (six instructors) of them have Master's degree, 41% (five instructors) holds doctoral qualification while only 8% (one instructor) holds only a bachelor degree. In terms of numbers of years of teaching experience, they have been in teaching profession between five to 21 years and they can be regarded as highly experienced teaching personnel. The majority of the instructors were involved in the development of TOP course material for English for Technical Communication. It showed that the instructors were highly experienced, possesses sound academic qualifications and mostly involved in the course material development.

PROCESS EVALUATION

The discussion of process evaluation covers the aspect of TOP classroom learning activities, evaluation of TOP assessment rubrics, instructors' teaching emphasis, instructors' practices in giving feedback, instructors' strategies in giving feedback and students' suggestions on ways to enhance their TOP skills.

a. TOP Learning Activities that Occur in Classroom

From the analysis of focus group interviews transcription, engineering undergraduates described that there were at least six activities related to their TOP skills learning and development which occurred in the classroom conducted by their instructors. The activities were pre-presentation activities, drawing and guessing of object, impromptu presentation, previewing of video clips from famous speakers, solving and preparing presentation tasks in group work and activities to improve presenters' confidence level. Not many previous studies have reported activities related to students' learning of TOP skills in classroom and this study adds on the components which have previously received less attention.

Students gave positive remarks for the activity 'previewing of video clips of famous presenter' like Steve Jobs and working in groups. For video preview, engineering undergraduates stated that they learned the presentation skills shown by these presenters especially on how to manage the audience, how to organise information on slides and how to stand in front of big crowd. Students also think that they could make a famous presenter as their role model where they could observe the famous presenters' skills and to improve their own technical oral presentation skills. By working and preparing for group presentation, students stated that it is a good activity and it provides the opportunity to learn cooperation skills among their classmates. From the students' description of classroom activities designed towards developing their TOP skills, it reflects the many efforts that were put forth by their instructors and these differ from one instructor to another. Students understand that all these activities were geared with the view to improving their TOP skills. However, not all instructors employed this strategy of showing video clips of famous presenters to students. This can be seen in students' focus group interview analysis in which participants suggest that their instructors show video clips, implying that this was not normally practiced by their instructor.

b. TOP Assessment Rubrics

The 1A assessment document for Sem 1, 2016/2017 was referred and it showed that engineering undergraduates were assessed in three components; *Content* (20 Marks), *Language* (15 Marks) and *Delivery* (15 Marks). Under *Content* component, engineering undergraduates were required to have *introduction, body, conclusion* sections as well as *visual aids* in presentation and between one to five marks were allocated for each section. Under *language*, mark between one to five were allocated for effective transition signals, specific language expressions and source of description, correct language use of tenses and subject-verb agreement. Finally, for *delivery skills*, engineering undergraduates were assessed in vocal characteristic, eye contact, posture, gestures, appearance and time management.

The descriptions found in the IA assessment document illustrated a comprehensive assessment of TOP items for *Content, Language* and *Delivery* components. However, more marks were allocated for *Content* (20 Marks) section and similar marks for *Delivery* and *Language* (both 15 Marks). The instructors may need to consider revising the rubric and one way is to pay more attention to students' language and delivery skills. More emphasis on language and delivery would result in more training of these skills to further improve engineering undergraduates' skills in *language* and *delivery.* These two TOP skills set would be 'embedded' with students as they progress further in their tertiary education while knowledge on *content* would be obsolete as time passes by. Also, the component of 'fluency' may be added in the *Language* component in the assessment rubric as fluency is a desirable skill set needed in industry (Kassim & Ali, 2010).

c. TOP Rubrics Emphasised by Instructors while Teaching in Class

Based on the components of the 1A assessment rubric (*Content, Language and Delivery*), students' perspectives on their instructors' emphasis in teaching were collected from questionnaire set B. Overall the result shows that students highly agree that all components in the TOP skills assessment rubrics were given strong emphasis by their instructors. However, the highest mean score 4.28, 0.794 SD was for the item *instructors' emphasis on delivery skills*. This illustrates that students perceived that delivery skills were given more attention by their instructors. Second, the item instructors' *emphasis on language skills* with the mean score of 4.22, 0.788 SD were ranked second. The item instructors' *emphasis on content knowledge* were ranked last with the mean score of 4.11, 0782 SD.

Data were also collected from instructors and their perspectives on teaching emphasis of the assessment rubric components of *content, language* and *delivery* were also analysed. It showed that the item *mastery of students' content knowledge* were given more emphasis by instructors with the mean score of 4.67, 0.651 SD. However, the overall mean score of all items measuring instructors' teaching emphasis indicated that the three components of *content*, *language* and *delivery* were highly emphasised by instructors.

d. Instructors' Strategies and Beliefs in Giving Feedback to Engineering Undergraduates' TOP

First, in order to understand instructors' strategies in giving feedback towards engineering undergraduates' TOP skills learning in the classroom, data were collected from questionnaire Set A for instructors. From the analysis of items measuring instructors' strategies, the Item P12 *Most of the time, my feedback are about correcting students' delivery skills in their technical oral presentation* received the highest mean score of 4.00, SD 0.900. This illustrates that most of the time, instructors' feedback were focused on improving students' delivery skills.

Two items that received the least mean score of 3.42 each were for item P10 *I give feedback to students' assessment performance by giving detailed comments for items according to technical presentation assessment rubrics stated in the mark* *sheet,* SD1.165 and for item P11 *Most of the time, my feedback is about correcting students' mistakes in language usage in their technical presentations,* SD 0.900. This suggests that comments regarding students' performance in assessment and correction of students' language mistake occurred less frequently compared to other strategies. The finding above is consistent with students' viewpoint reported above that their instructors give more emphasis on improving TOP delivery skills.

Second, in order to understand instructors' beliefs when giving feedback, it was found that all instructors highly agreed that giving feedback helps them to shape their teaching of TOP to engineering undergraduates. Instructors also believed through their feedback, they encourage students to be involved in discussions with their peers on ways to further improve students' TOP skills. Finally, instructors believed that through their feedback, they helped students to close gap between their current performance and desired performance in delivering effective TOP.

Findings from semi-structured interviews with instructors show that they adopt multiple valuable strategies in giving feedback towards students' TOP. The following points elucidate their strategies.

1. Providing overall feedback addressing the whole class
2. Providing immediate feedback once student made mistake in assessment.
3. Using peers to provide feedback
4. Focusing on delivery skills
5. Focusing on language
6. Focusing on content
7. Adopting tactful strategies in giving feedback
8. Not giving feedback after assessment
9. Giving feedback regarding power point slide content
10. Giving feedback aimed at reducing students' high anxiety level in TOP

In order to improve students' TOP skills to achieve more competent level, it is highly recommended for instructor to give more emphasis on students' TOP language usage and to provide a detailed comments on students performance as outlined in the assessment rubrics. Instructors adopted several valuable strategies in giving feedback and they also have very positive beliefs that their feedback would help their students developed their TOP skills.

e. Engineering Undergraduates' Perceptions of Instructors' Feedback on their TOP

Analysis of items measuring engineering undergraduates' perceptions of instructors' feedback on their TOP indicated that they highly agree with most of the instructors' feedback giving practices on their TOP performance. The item P5) *"My lecturer explains clearly about the assessment procedures (e.g. time given for students to deliver their technical and oral presentation test)"* is the highest mean score followed by item P8) '*My lecturer clarifies what good technical oral presentation performance is (goals, criteria, expected standards)'* illustrated students highly agree with the two items. However, the item P9), '*My lecturer facilitates the development of self-assessment (reflection) in my learning'* is the lowest mean score with 3.86, SD 0.881. It can be inferred that students demand more instructors' guidance to facilitate their own individual development. Overall, students hold positive view regarding their instructors' practices in giving feedback to students' TOP.

f. Engineering Undergraduates' Suggestions on Ways to Improve Their TOP Skills

From focus group interview with engineering undergraduates, several suggestions on ways to improve their TOP skills learning experience were proposed. First, engineering undergraduates suggest that instructors should provide more opportunities for students' self-learning and at the same time opening up opportunities for self-improvement efforts.

Second, engineering undergraduates suggest that instructors could assign students to present in front of the class and instructor could provide feedback to presenters individually. According to them, it is a common practice that instructors only provide overall general advice to students without specifying any individual presenters. Third, engineering undergraduates suggest that instructor could use video clips of professional presenters while teaching TOP in class. They think that they could learn from the skills shown by the presenters and they also think this activity could increase their self- confidence level. Finally, although students want their instructors to provide more in class practices of delivering TOP, they dislike the idea of impromptu presentations on unfamiliar topics. According to them, when they were asked to present impromptu on the topics that they were not familiar with, they felt very nervous and their self-confidence level dropped drastically.

PRODUCT EVALUATION

According to Stufflebeam and Shinkfield (2007), the purpose of a *Product Evaluation* is to measure, interpret and judge program achievements and they proposed a notion that "A product evaluation should gather and analyse stakeholders' judgments of the enterprise" (p.345). In this study, engineering stakeholders' perspectives on engineering undergraduates' skills in TOP were gathered via the use of students' video clip presentation as prompts during interviews with engineering industry stakeholders. The findings from product evaluation is very important and has pedagogical implications.

a. Perception of Engineering Industry Stakeholders on Engineering Undergraduates' TOP Skills

In order to obtain impression of engineering undergraduates' TOP competencies from the perspectives of engineering industry stakeholders, they were asked to freely preview eight video clips of students' delivering technical oral presentations of different technical product descriptions taken from English For Technical Communication Assessment 1A, Sem 1 2016/2017. Industry stakeholders' impression of competencies of engineering undergraduates' video clips were divided into three categories; Presenters in the video show poor TOP skills, presenters in the video show acceptable TOP skills and presenters in the video show excellent TOP skills.

First, poor TOP skills are associated with presenters' poor use of short video clips during their presentation. The engineering stakeholders stated that some presenters took too much time (approximately close to about 1/3 of allocated time) just to play a video clip embedded in their power point slides. By doing this, the presenters lost audience's interest because the video clips would not make presentation become interesting. However, one suggestion for presenters who opt for showing video clips to audience is that they have to verbally explain related information as the video is being played to audience. Letting the audience watch without any explanation would make presentation become less effective.

Second, presenters in the video clips were seen to display poor non verbal cues. The presenters were seen not having appropriate eye contact with the audience as they keep looking at their lap top screen. Engineering stakeholders also remark that in the event of pair presentation, the second presenter must participate and support the first presenter, rather than standing and not doing anything. To a certain extent, presenters' poor display of non verbal cues could annoy audience and most likely they would not be able to gain interest from their audience.

Third, presenters in the video were seen to be lacking language fluency and expression of ideas. The engineering stakeholders suggest that fluency could grab audience attention easily. In contrast, lack of fluency is regarded as wasting audience's precious time and engineers in industry are expected to be highly fluent. Fourth, the video presenters were seen as lacking self confidence. This is evident when the video clips presenters were seen to read from their notes and when they were seen as not comfortable in expressing ideas.

Engineering stakeholders also pointed out some presenters in the video clips were seen as lacking audience management skills. Appropriate handling of question and answer session after the presentation is an example of good audience management skill. From the video clip, one presenter addressed his audience with expression *"hi guys"* and the engineering stakeholder suggested that this is not appropriate especially when presenting to group of managerial level. Maintaining eye contact with the audience throughout the presentation is an example of good audience management skill. In addition, engineering stakeholders also noticed that some video presenters displayed weakness related to power point slides management. The video presenters were seen reading slides from the screen in front of the class resulting in lack of eye contact with their audience.

The ability to explain presentation content without looking at the slides too much is considered one of the qualities to be an effective TOP presenter. The engineering stakeholders also noticed that many video clip presenters do not use laser pointer to explain parts in which there were presenting.

According to the stakeholders, all video clip presenters use their hand to show the points on their power point slides. Video clip presenters were also seen not doing enough preparation and it is evident when due to lack of preparation, they were not confident in their presentation and they made many unnecessary movements.

The engineering industry respondents also acknowledge that some video clip presenters display acceptable TOP skills. They were seen as having the ability to attract and maintain audience's interest although their English language ability is considered by the industry stakeholders to be within the range of medium to lower proficiency level. Also, some video presenters had smooth flow of presentations and the ways they express their idea were understandable.

The engineering industry also admitted that some video clip presenters had displayed some good TOP skills and qualities in terms of fluency, self confidence and power slides preparation. Some presenters were able to engage audience throughout their presentation. Some video clip presenters possess fluency, high self confidence and their power point slides were not too wordy thus illustrating they had made good slide preparation.

Table 5.2 summarised the themes drawn from the stakeholders' analysis of engineering undergraduates' video clip presentations.

Table 5.2

Engineering industry stakeholders' analyses of engineering undergraduates' video clip presentations.

	Poor TOP skills	Acceptable TOP skills	Good TOP skills
Qualities	• Lack of self - confidence • Poor use of video clips during presentation • Poor use of non-verbal cues • Lack of language fluency and articulation • Poor audience management • Lack eye contact with the audience • Poor power point slides management • Lack of preparation	• Expression understandable ideas • Able to attract and maintain audience's interest • Clear flow of presentation structure	• Engaging audience throughout the presentation • Possessing fluency • Displaying self-confidence • Good power point slides preparation

b. Ways to Enhance Engineering Undergraduates' TOP Skills as Suggested by Engineering Industry Stakeholders

Another important part of product evaluation is ways to improve students' TOP skills as proposed by engineering stakeholders. The following 12 elements were proposed to be included in the TOP training for students.

i. To learn skills to maintain audience's interest.
ii. To be well verse with presentation content.
iii. To learn skills to elicit feedback from audience.
iv. To be aware of the importance of non-verbal cues.
v. To improve language fluency.

vi. To have full understanding of presentation content.
vii. To develop language and communication skills towards becoming effective technical oral presenters.
viii. To be accurate in expressing ideas and to learn skills to pronounce words correctly.
ix. To portray confident self-image.
x. To learn skills to effectively use visual aids.
xi. To learn skills to insert humour in TOP.
xii. To be aware of the importance of being well prepared.

c. Perception of Engineering Undergraduates on their Competency in Delivering Technical Oral Presentation (TOP)

Another component under product evaluation is students' self perception of their own competency in TOP. Using the self-perceived communication competence (SPCC) questionnaire, it was found that only 15 respondents (4.8%) reported that they perceived high self-perceived communication competence and a total of 225 respondents (72.6%) perceived moderate. On the other hand, 70 respondents (22.6%) perceived themselves to be in low self-perceived communication competence. This shows that a large majority of the students perceive themselves as not being in the range of high competence level.

d. Engineering Undergraduates' Perception of their Competencies Across Faculties

It was found that, although students entry into different faculties at UMP were made based on their academic achievement, most engineering undergraduates from these faculties have similar perception of TOP competencies and the majority of them fall within moderate self-perceived communication competence.

Summary of the Main Findings

In order to produce engineering undergraduates who are marketable and highly in demand by employers, these students should be equipped with necessary skills needed by workplace. Suggestion from engineering stakeholders on ways to improve engineering undergraduate TOP skills under the product evaluation component in this study is an effort to link tertiary education and industry stakeholders. This connection is vital as it could provide information for improvement efforts at universities. In contrast, a disconnection between university and industry resulted in a teaching syllabus which does not conform to the industry needs and subsequently resulted in unemployable graduates (Hazlan Zakaria, 2013).

In recent years, there has been growing concern that many new university graduates are unemployed in Malaysia due to the lack of English communication skills. Many employers admit that many new graduates who enter the workforce have the necessary technical skills but still lack of English communication skills which hinder them from functioning well at workplaces (Darmi & Albion, 2013; Nair et al., 2012; Shakir, 2009). This is an important aspect as there is a positive relationship between being a successful engineer in the workplace and communication skills (Martin, Maytham & Fraser, 2005). Studies reported that, upon completion of their education, professionals in accounting, business, medical and technical areas have often not achieved the required level of competency demanded from them (Chan, 2011; Kerby & Romine, 2009). Van Ginkel, Gulikers, Biemans and Mulder, (2015) suggest that higher education should place emphasis on training their students to achieve competent level in communication as this is regarded as an essential skill for graduate effective performance of graduates in various working environments (Smith & Soldano, 2011). Pazil and Razak (2019) reported that communication skills are the first skill among 11 major domains (which include entrepreneurial skills, interpersonal skills, lifelong learning skills, management skills etc) of graduate soft skills consistently demanded by Asian employers since 2010.

Context Evaluation

An evaluation of context reveals that engineering undergraduates' needs for technical oral presentation competencies are not fully met. An evaluation of asset and facilities found that, although there were good internet connection facilitating TOP learning in the language lab, learning software provided were not helpful to students. This is due to the fact that some learning software which were provided in the language lab were obsolete. Therefore, the language lab administrator should consider updating current lab language learning software. For evaluation of problems faced by students in their TOP learning, multiple problems related to their TOP learning in the classroom were reported by students. More efforts are needed in order to facilitate students' TOP learning.

In addition, it is important to note that both engineering undergraduates and instructors identified language related difficulties, such as lack of fluency and inability to express ideas in English during technical oral presentation to be among factors which affect TOP performance. While other difficulties such as factors related to high anxiety and lack of confidence may be developed throughout the semester, improving language fluency may be an uphill task for both instructors and engineering undergraduates and may require much longer process. This is true as literature has described state of fluency of a speaker to be in many perspectives. For instance, Nation (1989) suggests that fluency can be measured in terms of "speed and flow of language production, the degree of control of language items and the way language and content interact" (p.377). Fillmore (as cited in Kormos & Dénes, 2004) conceptualises a fluent speaker as having the ability to talk at length with few pauses, capable of expressing message in a coherent manner, able to express thought in wide range of contexts and creative as well as imaginative in their language use. Along that notion, Skehan (2009) describes fluency as "the capacity to produce speech at normal rate and without interruption" (p.510) while Elis and Barkhuizen (as cited in Pallotti, 2009) refer to fluency as "the production of language in real time without undue pausing or hesitation" (p.139).

Chambers (1997) argues that most foreign language teachers describe fluency as speech flow and speech rate. Chambers also points out that fluency is often used as a synonym of linguistic proficiency rather than fluency as "strictly restricted aspect of delivery in oral production" (p.536). Drawing from these definitions, one of the important aspects of fluency is the smooth flow of speech which occurs in a normal rate without much pause and hesitation, and this may be applicable in describing fluency needed for TOP presenters for this study.

As maintained by Stufflebeam and Shinkfield (2007), the purpose of evaluation is not to prove but to improve things, subsequently, the aspects of fluency which have just been outlined may be used to devise improvement strategies in developing engineering undergraduates to be highly competent and fluent TOP presenters. Furthermore, aspects of fluency are also deemed to be important skills of an effective TOP presenter as perceived by engineering stakeholders in this study. Another domain of language related difficulty as reported by both engineering undergraduates and instructors is in terms of lack of vocabulary which somewhat impede the effectiveness of their technical oral presentations. This is true because acquiring and mastering vocabulary is a very important factor in language learning and in delivering successful technical oral presentations. Lightbown and Spada (2006) suggest that as a result of not using the correct words, communication could break down.

Adding to that, to some extent, learners' mastery of language is judged by mastering certain range of vocabulary. Nation (2001), for example, suggests that "it is wise to direct vocabulary learning to more specialised areas when learners have mastered 2000-3000 words of general usefulness in English" (p.187). Nation (2001) further asserts that language users need around 15, 000 to 20, 000 words in order to avoid "disturbance from unknown vocabulary" (p.20).

Different language learners such as groups of engineers might need to know specialised vocabulary in order to function well in their field. The source of this specialised vocabulary may be generated as a result of conducting frequency counts or made by the experts in the field (*eg* Mudraya, 2006). Furthermore, Ward (2009) provides a list of 299 words to help Thai foundation engineering students read engineering English language textbooks. In short, course designers may introduce specialised technical vocabulary list for engineering undergraduates to master and use in their TOP. As a start, an available word list such as the one proposed by Ward (2009) may be introduced in English For Technical Communication course. It can be argued that equipping engineering undergraduates' with mastery of specialised technical vocabulary is a vital effort as this is important in developing their fluency.

Input Evaluation

In terms of input evaluation, both students and instructors highly agree that content of the ETC module were suitable for students' TOP learning. However, it is important to keep improving the module content as some part become obsolete after certain cycles. Evaluation of background experience of instructors teaching TOP revealed that they were highly qualified and had experience of teaching between five to 20 years.

Process Evaluation

For process evaluation, students reported that their instructors conducted various classroom activities designed towards developing students' TOP. Previewing video of famous presenters like Steve Jobs was one of the students' most preferred activities. Students stated that they were able to learn from viewing of famous presenters' video clips. They also stated that this could enhance their self-confident level. In evaluating instructors teaching emphasis, it was found that their emphasis was based on TOP assessment rubric which are *content, language* and *delivery.* Although the three components were emphasized by instructors in their teaching, students perceived *delivery* component is given more emphasis by the instructors. Based on the finding in context evaluation, one of the students' major problems is in language related domain. Therefore, instructors should also emphasize more on students' *language* skills in TOP. In terms of giving feedback, instructors adopted multiple strategies and they were highly convinced that these strategies were effective. However, there was no feedback for students' final assessment. For continuous improvement effort, it is deemed necessary for instructors to provide feedback for students even if it is the final assessment.

Product Evaluation

In terms of product evaluation, engineering stakeholders' analysis of students' TOP from the video clips suggest that more training for engineering undergraduates are needed in order to achieve competency level required by industry. Multiple strategies and ways to improve students' TOP skills were also proposed by engineering industry stakeholders. In essence, engineering stakeholders view displaying 'professionalism' as a key aspect of an effective technical oral presentations delivery. However, this is an area that most of the video presenters are grappling with and require improvement as seen by the engineering stakeholders. Furthermore, the findings of product evaluation show that there is no significant difference in the self-perceived communicative competence between genders of engineering undergraduates. This suggests that both genders have equal abilities in self-perceived Technical Oral Presentation performance.

Contribution to Knowledge

In conclusion, this study contributes to enrich literature in three areas;

i. The application and the extension of the CIPP Model in the evaluation of English for Specific Academic Purposes course (ESAP) with specific reference to the evaluation of Technical Oral Presentation components;

ii. The formation of 'PRO-ESA-TOP' framework for English Specific Academic Purpose (ESAP) training of Technical Oral Presentation (TOP) skills for engineering undergraduates;

iii. The adoption of 'PRO-ESATOP' framework as part of assessment rubric in assessing engineering undergraduates' Technical Oral Presentations in English for Technical Communication course for the semester 2 2018/2019 sessions.

First, the major contribution of the current study has been the evaluation of TOP components (See Figure 5.1) for engineering undergraduates in an engineering educational context by adopting the CIPP Model of context, input, process and product evaluation.

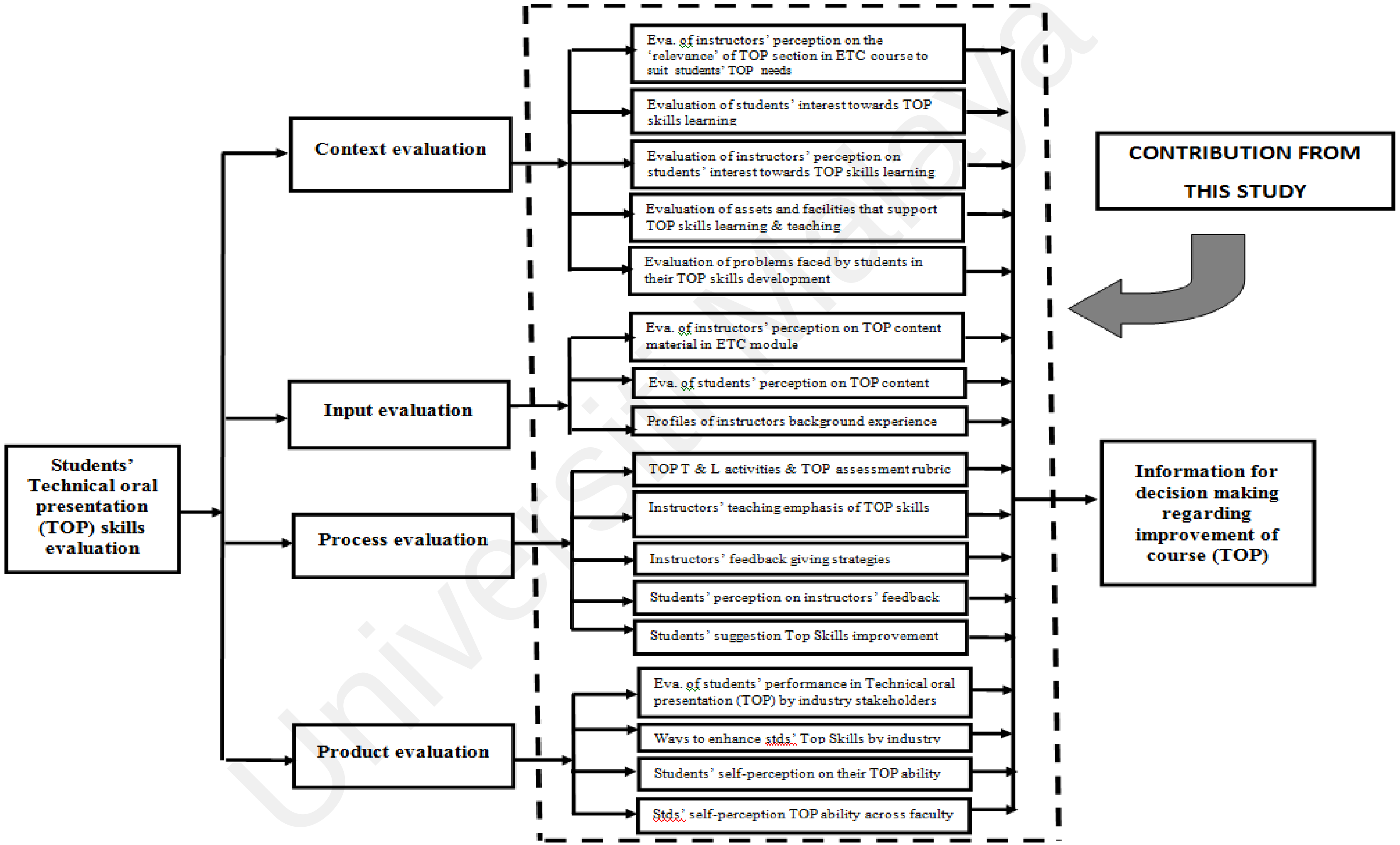


Figure 5.1: Evaluation of TOP components and delineation of contribution from this study

Figure 5.1 delineates the four evaluation components of the CIPP Model and their specific sub-evaluations details of technical oral presentation components. Firstly, the *Context* evaluation assesses the relevance of the TOP course content to suit engineering undergraduates' needs, assessment of engineering undergraduates' interest towards TOP skills learning, assessment of assets and facilities which support engineering undergraduates' TOP learning and evaluation of problems faced by them in their TOP learning.

Second, the *Input* evaluation assesses instructors' and engineering undergraduates' perspectives on the TOP content material in the English for Technical Communication module and profiling of the instructors' background experience. Next, the *Process* evaluation assesses TOP teaching and learning activities, TOP assessment rubric, instructors' TOP skills teaching emphasis, instructors' strategies in giving feedback towards engineering undergraduates' TOP, engineering undergraduates' perspectives on instructors' feedback giving practices and engineering undergraduates' suggestions on way to improve their TOP skills.

Finally, the *Product* evaluation assesses engineering undergraduates' TOP skills as seen by engineering industry stakeholders, suggestions on ways to improve engineering undergraduates' TOP skills from engineering industry stakeholders, engineering undergraduates' perception of their own TOP ability as well as analyzing engineering undergraduates' TOP ability across the faculties.

From the evaluation of the TOP components using the CIPP model as described above, this study has applied and extended the CIPP Model within the context of English for Specific Academic Purposes course (ESAP), with specific reference to evaluation of Technical Oral Presentation components. The second contribution of this study is the 'PRO-ESA-TOP' framework for English Specific Academic Purpose (ESAP) training of Technical Oral Presentation (TOP) skills for engineering undergraduates (see Figure 5.2). This study proposes a framework of teaching and learning of technical oral presentation skills known as 'PRO-ESATOP framework' which stands for *Professional English for Specific Academic Purposes Technical Oral Presentation* (PRO-ESATOP).

The 'PRO-ESATOP' framework which is derived from this study, is based on evaluations of the four CIPP components –Context, Input, Process and Product involving stakeholders who were engineering undergraduates, English language instructors and professional engineering industry stakeholders. The 'PRO-ESATOP' framework provides a set of list of TOP skills to be equipped in engineering undergraduates training so that they are well prepared and able to execute Technical oral presentation tasks successfully.

'PRO-ESA-TOP' framework was formed by taking into consideration the Situated Learning Theory (Lave and Wenger, 1991) principles in which learning to be a good technical oral presenter is embedded within classroom activities; and learning of these skills occurs as a result of social interaction and collaboration among the peers (engineering undergraduates). In the process to be a good technical oral presenter, engineering undergraduates 'assume' the roles of professional engineers in delivering technical oral presentation in engineering workplaces. By doing this, engineering undergraduates engaged in the "Community of Practice" (COP) as proposed by Lave and Wenger (1991). The findings in the study concur with the notion of situated learning activity, a central component of situated learning theory. Students' learning experience reaches its maximum potential when they are actively involved throughout the process of learning to deliver effective technical oral presentations (TOP) with their peers facilitated by instructors in classroom settings. With the input from stakeholders from engineering industry, 'professionalism' components will be inculcated in engineering undergraduates' TOP delivery training in classrooms. These learning opportunities are molded into tasks of delivering oral presentations in which the students need to perform and the objective of such lessons is to acclimatize the students to the technical presentations requirements of an engineer in the working field. As the theory suggests, the engineering undergraduates' technical oral presentation skills would gradually move from being novices or beginners to eventually 'assume' the role of an expert or a professional engineer. For instructors to know what should to be taught to students in order to achieve a competent level as an expert professional engineer, feedback from industry in terms of professional expectation and beliefs of acceptable attributes of TOP skills collected from engineering industry stakeholders in this study form the basis of PRO-ESA-TOP framework presented in this chapter.

From the PRO-ESA-TOP framework, achieving learning outcomes in terms of equipping students with PRO-ESA-TOP list of abilities will lead towards students acquiring Technical Oral Presentation (TOP) competencies. In short, the PRO-ESA-TOP framework is driven by theory (Situated Learning Theory) and the list of abilities are proposed based on suggestions drawn from industry stakeholders containing significant components in which a TOP presenter might be seen as a 'professional' technical oral presenter.

PRO-ESA – TOP Framework

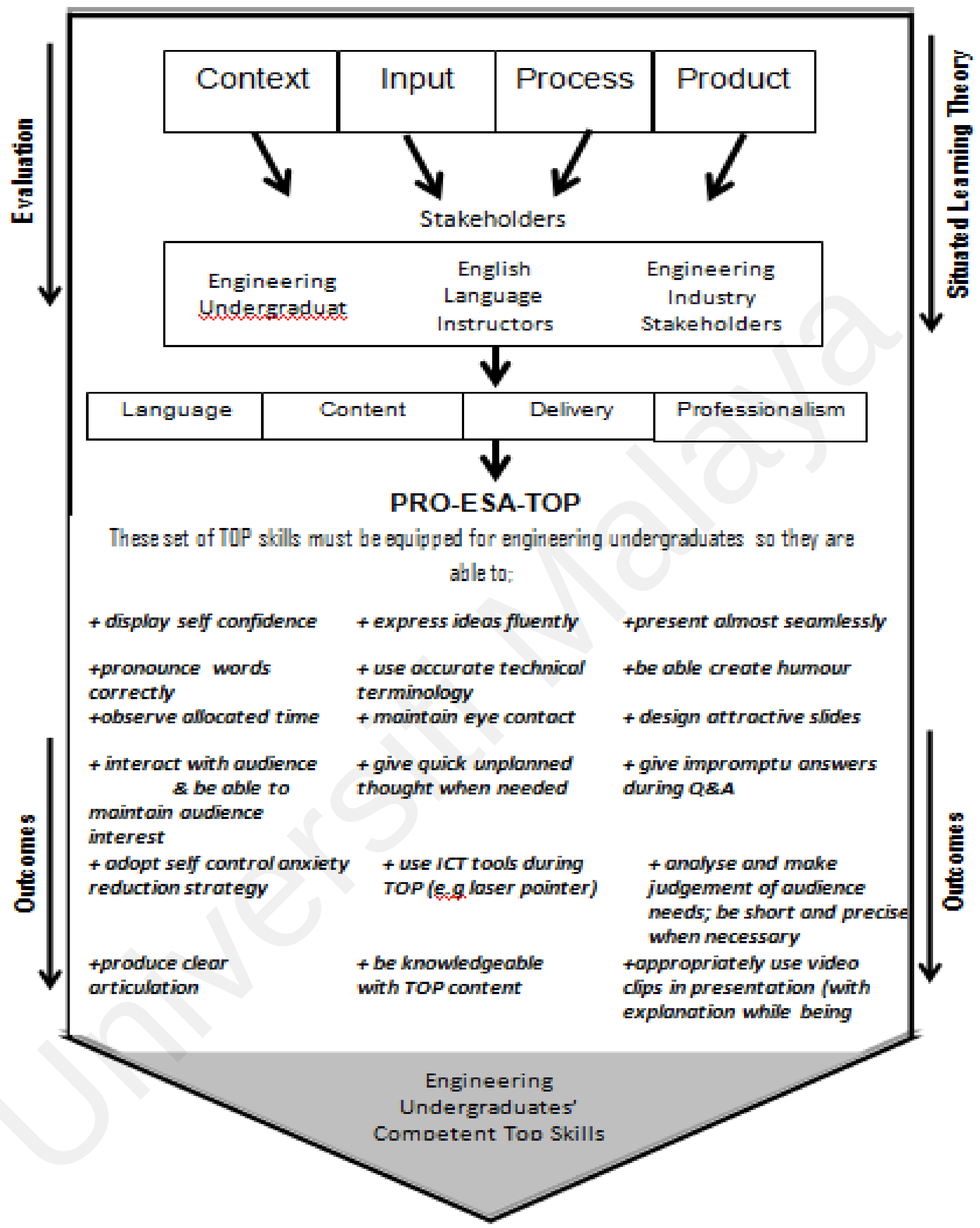


Figure 5.2 PRO-ESATOP Framework

It is proposed that PRO-ESA-TOP list of abilities framework may be used as target components to be achieved in the teaching of TOP skills for engineering undergraduates in English for Technical Communication course. The major findings in terms of set of competent skills needed in order to be an effective technical presenter are then matched with the current assessment components which are *content, language* and *delivery.* In doing so, it could improve teaching practices and would enhance engineering undergraduates' learning of TOP skills. The 'PRO-ESATOP' framework adds on to the body of knowledge about TOP within the English for Specific Academic Purposes (ESAP) (see Figure 1.6) domain under the ELT tree as discussed by Blue (1993) and expanded by Clapham (2000). For the purpose of illustration, Figure 1.6 is reproduced here with the inclusion of PRO-ESATOP framework derived from this study.

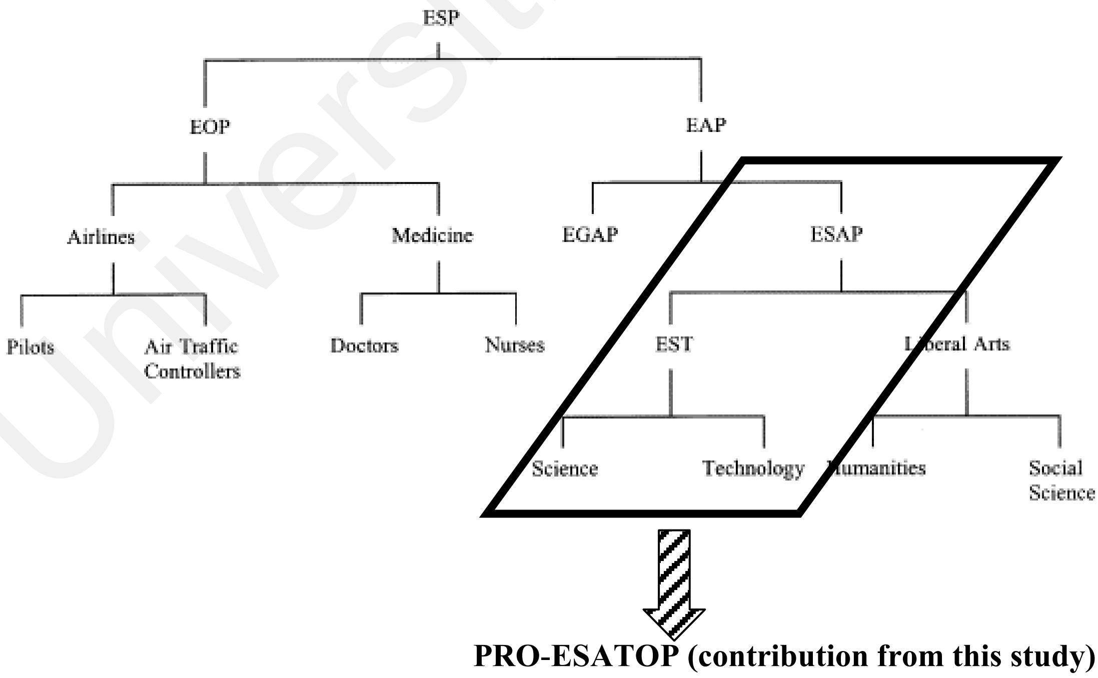


Figure 1.6 Categorization of ESAP to be divided into EST and liberal arts; and PRO-ESA-TOP derived from this study.

The third significant contribution from this study is the 'TOP Professionalism Model' (see Figure 5.3) and the adoption of PRO-ESATOP assessment rubric as shown in Figure 5.4. The TOP assessment sheet in Figure 5.4 was developed based on the PRO-ESATOP framework, and it was adopted as the TOP assessment rubric for UHL 2422 English for Technical Communication Course during Semester 1 2018/2019, Semester 2 2018/2019 and semester 1 2019/2020 academic session. Figure 5.3 shows a Model of TOP Professionalism which contains four overlapping components of content, language, delivery and professionalism. Previously, assessment criteria of engineering undergraduates' TOP only considered three components which were *language, content* and *delivery*. However, analysis of input from engineering industry stakeholders suggest that these are not adequate and the component of 'TOP Professionalism' will complement the existing three components. Other important features of the TOP professionalism Model proposed are the 'overlapping' elements of each component as shown in Figure 5.3. It is not possible to describe each component of language, content, delivery and professionalism independent from each other because each component 'shares' overlapping elements and to some extent need 'to be tied' to professionalism. For instance, the attribute *'able to display self-confidence'* belongs to overlapping areas of both 'Professionalism' and 'Delivery' components. Adding to that, the competent technical oral presenters must make sure all components must be well prepared so that they will be seen as highly 'professional' in their TOP delivery. The big outer circle of the diagram in Figure 5.3 shows that the 'professionalism' must be orchestrated throughout engineering undergraduates' presentations.

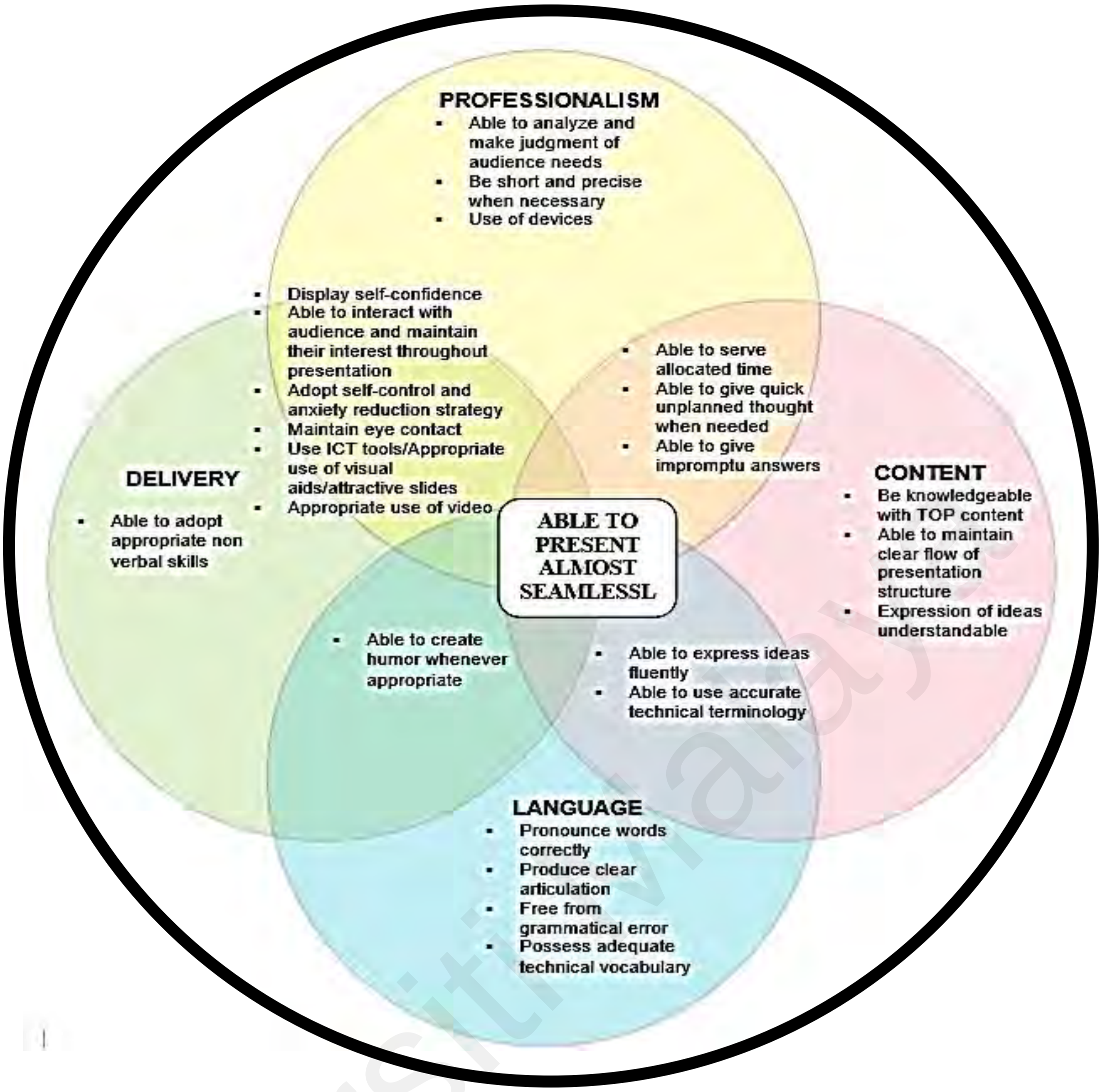


Figure 5.3: Model of TOP Professionalism depicting four circles of overlapping TOP components of *Language, Content, Delivery* and *Professionalism*

Figure 5.4 shows an evaluation form with a new component in TOP assessment rubric known as **"Professionalism"** which is highly valued by industry. Adding to that, although the elements of PRO-ESATOP include the typical components such as *delivery, content* and *language,* the sub-details under these components have been modified based on input from engineering industry stakeholders involved this study. The form was used in the TOP assessment during semester 1 and 2 of the 2018/19 academic sessions.

EVALUATION FORM FOR 2 STUDENTS

Persona:		**STUDENT 1**	**STUDENT 2**
Presentation context:			
Audience:			
Product:		**Start Time:** **End Time:**	**Start Time:** **End Time:**
Attended Consultation with Thorough Research:		**1 2 3 (to be filled by class instructor)**	
Content (18 marks)	**Introduction** • Self introduction • Purpose • Provide background/problem, definition, overall description of product/ Preview main parts **Body** • Unique part 1 (Main part/sub-part) (purpose & sources of description) • Unique part 2 (Main part/sub-part) (purpose & sources of description) • How it works/How to use **Conclusion** • Summary of presentation • Suitable closing	1 2 3 1 2 3 1 2 3 1 2 3 1 2 3	
	Introduction • Purpose of the presentation • Preview of main parts **Body** • Unique part 3 (Main part/sub-part) (purpose & sources of description) • Unique part 4 (Main part/sub-part) (purpose & sources of description) • How it works/How to use **Conclusion** • Summary of presentation • Benefits of the product • Suitable closing		1 2 3 1 2 3 1 2 3 1 2 3 1 2 3
Language Use (12 marks)	• Fluency and coherence • Language expressions • Grammatical range and accuracy • Pronunciation and articulation	1 2 3 1 2 3 1 2 3 1 2 3	1 2 3 1 2 3 1 2 3 1 2 3
Delivery (30 marks)	**Audience management** • Eye contact • Audience analysis (suitable attention-getter and examples) • Audience real-time interaction **Confidence** • Composure & gestures • Voice volume • Intonation and enthusiasm **Professionalism** • Appearance • Time management and teamwork • Effective Use of Visual Aids • Q&A	1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3	1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3
	TOTAL	/60	/60

Figure 5.4: TOP assessment rubric with the inclusion of PRO-ESATOP components *(Professionalism)* adopted in the UHL 2422 English for Technical Communication during Sem 1 and Sem 2 2018/19 academic sessions.

Pedagogical Implications

Based on discussion in the evaluation of context, input, process and product, several pedagogical implications are highlighted.

1. One of the major obstacles that hinder students in TOP learning is the issue of lack of self-confidence and high anxiety level. Research has found that presenting in front of people is the most threatening situation for many people (Tong, 2009; Rojo-Laurilla, 2007; Kavaliauskienė, 2006; Woodrow, 2006; King, 2002). Therefore, it is imperative for instructors to focus on building students' self-confidence in technical oral presentation as study indicated that practicing a series of oral presentation practice sessions eliminate communication anxiety (Rubin, Rubin & Jordan, 1997; Palpanadan, Ahmad & Ravana, 2019). Building students' self-confidence in TOP classrooms is vital as it may facilitate students' self-esteem development as a result of successful personal experience while experiences of failure have the opposite effects (Al Hebaish, 2012). Language learners who possess high self-confidence perform well in executing their TOP tasks and most likely believe themselves to be capable learners. Al Hebaish (2012) asserts that learners with higher level of self-confidence score high in their oral presentation tasks while learners who have lower self-confidence had lower scores. To some extent, learners' general self-confidence is the most important factor that determines their willingness to participate in classroom oral activities and this could also be a significant predictor of learners' academic achievement (Fook, Sidhu, Rani & Aziz, 2011).

2. Instructors could help support developing students' TOP skills even outside normal classroom hours. Prior to presenting in class, students must rehearse

delivering their technical oral presentation on their own. At this juncture, instructor can ask the students to practice delivering their technical oral presentation in front of the mirror. Another strategy is the instructor may ask the students to record their presentations by using their mobile phones, and upload it to the class *WhatsApp* group. In order to make the process efficient, instructor may advise the students to video record only 30 seconds of their presentation practice and upload it onto an English class group *WhatsApp.* Literature which describes students' use of Mobile instant messaging (MIM) devices for learning shows that such technology supports students' learning process (Mohd Radzuan, Mohd Ali, Mohamed and Yusof, 2016). In the context of this study, English class group *WhatsApp* is one example of the use of Mobile instant messaging (MIM) for learning purposes. Additionally, the use of communication technology such as *WhatsApp* can improve students' learning achievements (So, 2016) and display high potential in improving students' oral skills (Andújar-Vaca, & Cruz-Martínez, 2017).

Although the students are required to video-record and upload only 30 seconds of their clip to group *WhatsApp,* this strategy could be very beneficial for the students. First, students may ask their friends to help them in the recordings. At this juncture, sometimes the 'cameraman' who is also their peers would have suggested ways to improve certain presentation techniques such as improving delivery skills in terms of hand gesture. The group sharing of video clips in *WhatsApp* is helpful in the sense that it promotes peer learning. This occurs when a student views a 30 seconds video clip of their friends presenting, they will learn certain skills from their friends and would try to imitate such skills in their own presentations. In addition, self recording of students' own presentations and watching others' video clips can effectively promote reflection among them thus developing their technical oral presentation competency (Ma, Wang & Guan, 2019; Nikolic, Stirling & Ros, 2018). According to Tailab and Marsh (2020), video recording of students' presentation not only helped to raise awareness of their oral presentation skills development but also this learning activity made them realised the importance of presentation skills without provoking their anxiety. Along similar notion, Yamkate and Intratat (2012) discovered that lack of confidence and ineffective preparation are among the major hurdles affecting Thai students' oral presentation in English. They conducted a study using self assessment method by using video recording of students' presentation' and their own reflections of their strength and weaknesses in two recorded presentations. The video recordings were also used to facilitate students' evaluation of their oral presentation skills and to use their evaluation to improve their performance. The researcher discovered that students had positive attitudes towards video recording of their presentations, especially the video clips helped them to notice their weakness in non-verbal language skills. Overall, Yamkate and Intratat (2012 observed that the process of recording and assessing students' own presentations facilitate students' self-evaluation skills thus improving their presentation skills. Similarly, Tugrul (2012) conducted a study on the use of video recordings of project presentations with 82 undergraduate marketing students at a university in Turkey. The main aim of the study is to investigate students' perception on how incorporating technological too such as the use of video camera for recording as well as discussing in-class group project presentation influence students' oral presentation skills, communication and career related skills, learning motivations and their overall course evaluations. Tugrul (2012) reported that students perceived the integration of technology such as video-recorded group presentations into learning environment to be highly effective at enhancing their learning outcomes and thus enriching the classroom education practices.

In another setting, a group of researchers (Tazijan, Ab Rahim, Abdul Halim, Abdullah, Ismail & Cochrane) conducted a study on the effects on using Virtual-I Presenter (ViP) which was introduced in presentation skills class to help improve students' presentations skills. By adopting this technology, students were able to recreate the reality of presentations and had their practice sessions multiple times on their own self learning time. Students and instructors reported positive outcomes from the use of ViP technology, the ability of practice presentations multiple times seemed to help improve fluency, presentation content, and confidence. However, they discovered that language skills such as intonation and pronunciation could not be improved while practicing and could only be identified after feedback was obtained from lecturers. This shows that although technology such ViP may not be able to help in total improvement of students' presentation skills, practicing on their own with the help of technology helps to narrow the bridge the gap towards becoming efficient presenters.

Another group of researchers develop a prototype known as *Presentation Trainer* (Schneider, Börner, Rosmalen & Specht, 2014) that works as a public speaking instructor which tracks and analyse body posture, movements and voice of the presenter and able to provide instructional feedback on non verbal communication skills. Although this prototype is still at its nascent stage of development, the advent of this kind of technology may be useful in TOP practices in the near future.

3. One of the problems identified by engineering undergraduates in TOP learning is difficulty understanding and using technical terminology. One way to expand students' knowledge in technical terminology is by assigning a task for them to describe a product or an object. Instructors could encourage their students to search for information related to technical product from available online platform such as YouTube Channel. For instance, when tasked to describe a miter saw, students could watch video clips on how to use a miter saw. Students may view the same YouTube clips until they are fully able to understand and imitate the words uttered by the presenters in the video clips. Besides that, students could also learn more about presentation skills such as hand gesture, facial expressions, eye contact, voice quality, effective flows of presentation structure as well as learning opening and closing expressions in presentation. Also, students will be exposed to technical terminologies as well learning some techniques in describing technical products and relevant processes. For instance, Figure 5.5 shows a snapshot from a YouTube channel describing 'How to use a Ryobi Mitre saw'. For a better understanding of the explanation from the host as shown in the picture, student may turn on the subtitles and this feature is very useful for novice learners.

Being technical students, engineering undergraduates appreciate scrutinizing technical products rather than being asked to study abstract concepts and ideas. In this context, while the video clips context match students' interest, the language learning process and communication skills development would take place almost naturally in them.

Figure 5.5: Learning from You Tube "How to use Ryobi Mitre Saw" with English subtitles retrieved from *https://www.youtube.com/watch?v=LHRzfJtVwQw*

It is argued that the more students are exposed to native speakers' speaking via these video clips, the better the development of communication skills and presentation skills.

4. One of the findings of this study is students like to watch video clips of famous presenters like Steve Jobs and learn the presentation skills shown by these figures. Instructors may therefore ask the students to analyse the presentation skills of these figures and share their thoughts in class. By doing this, students will be exposed to authentic professional workplace presentation and to learn their traits and skills.

5. Besides that, students' use of Technology such as YouTube platform can also be used to enhance students learning. This could be done when students themselves video record their presentations and then post it to online public platform such as YouTube. By doing this non-native students would be able to get feedback from the viewers around the world especially from the native speakers.

6. As can be drawn from input given by engineering industry stakeholders, one vital element in engineering undergraduates' TOP skills development is to appear as a highly 'professional' technical oral presenter. Instructors must develop the engineering undergraduates' TOP skills to become a competent presenter just like a professional so that they will be highly confident and impressive when they join the workforce upon graduation. For English for Specific Academic Purposes (ESAP) instructors, this is not an easy task as they are required to have certain set of competencies in order to improve their students' language and communication skills (Khamis, Hussin & Mohd Nor, 2014; Kniazian & Khromchenko, 2019).

Recommendations for Future Research

Several future studies are recommended as the following;

1. This study puts forth a framework for teaching and learning of Technical Oral Presentation skills known as "PRO-ESA-TOP". The list of abilities set forth in the framework is not exhaustive but rather should be developed further and tested. More empirical study to test the rigor of such a framework by assessing each component of technical presentation skills – *Content, Language and Delivery* - is proposed.

2. The perspectives of stakeholders in this study can be extended in future study to include respondents from engineering companies including the Multinational companies (MNCs). For instance, are TOP skills perceived to be the same for companies which are not based in the English speaking countries? Currently, many giant corporations from Asia, such as from the People's Republic of China, take part in the investment activities in Malaysia. Future researchers may conduct new studies with these questions: How are TOP skills and abilities viewed in these corporations and what are their expectations of graduates' TOP skills? Findings from these types of study may expand our understanding of TOP needs for Asian-based firms and that could inform the current practice in the training of future English communication skills for engineering undergraduates.

2. A future evaluation study may be conducted to evaluate components of Technical Oral Presentation skills taught in related courses for engineering and technical students in public and private higher learning institutions and to get relevant feedback from stakeholders who employed engineering and technical graduates from these institutions. The findings from these evaluation studies would be necessary in providing information integral to TOP components for course improvement efforts for both public and private higher learning institutions in Malaysia. These may pave the ways towards establishing a theory of Technical Oral Presentation skills which would enhance current practice.

3. This evaluation study analysing Technical Oral Presentation components among engineering undergraduates may be replicated in different context, such as among diploma and students undergoing hands-on skills training. In light of a challenging

employment opportunity upon graduation due to demanding expectations from employers, such evaluation studies may seek to analyse the needs of TOP skills for future employment communication needs among diploma students and students undergoing hands-on skills training and to map that to the perspectives of the prospective employers.

4. The future study might explore the different needs of TOP skills according to different engineering faculties and field of studies. For instance, electrical engineering undergraduates TOP skills needs might be very specific to their field. Data about the types of TOP skills needed in order to be efficient TOP presenters in electrical engineering firms may be collected from specific electrical engineering workplace communication context. The specificity of evaluation studies according to field of engineering specialization may lead towards advancement of theory and practice in such specific context which would be very beneficial for undergraduates' TOP skills training.

5. An evaluation study which compiles specific technical jargons and terminologies to be used for engineering undergraduates' TOP training may be conducted. The study may begin with specific aim to form a database of technical terminologies which are commonly used in technical oral presentations. Data could be gathered from across different engineering field of specialization in the form of audio speech texts and video presentations. The findings from these studies would enrich current literature of TOP skills teaching and learning.

6. In this study, assessment rubric of Technical of Oral Presentation for product description mainly focus on three components; *Content, Language and Delivery.* A

future longitudinal study might explore these components with the intention to conduct a detailed evaluation study of the implementation of these rubrics and to analyse ways engineering undergraduates develop their TOP competencies over time in accordance to these frameworks.

7. As outlined in the notion of the Community of Practice (CoP) put forth by Etienne Wenger and Jean Lave (1991) in the Situated learning theory, important criteria for learning to take place effectively are the domain, the community and the practice. According to them, the Community of Practice (COP) as a process of social learning takes place in an environment where a group of people who share a concern or a passion for something they do learn how to make it better as they interact regularly. In light of this theory, a future study may extend the current theory by investigating engineering undergraduates' learning of TOP skills as they interact among their peers which occur as a process of social learning context as they share activities, help each other and share information pertinent to their TOP skills learning. The findings from such study may extend our understanding of social learning process in the context of TOP skills learning among engineering undergraduates within the notion of the Community of Practice (CoP).

8. As suggested by stakeholders in this study, one important element of effective TOP skills of a graduate is 'being seen as a professional'. Possessing and displaying 'professionalism' during delivery of Technical oral Presentation skills is deemed crucial in order to win audiences' attention. As such, a future study may investigate strategies in developing engineering undergraduates' professionalism in their Technical Oral Presentations.

9. Finally, a future study which seeks to compile authentic technical oral presentations context and topics from real engineering workplaces presentations would be beneficial for English technical communication course administrators and instructors. The findings will be helpful in developing a hands-on ESP curriculum that fulfils the needs of the engineering industries and as a feeder source to the universities on the repertoire of changes in technical presentations in the engineering workplaces. Borisova, Nikitina, Shparberg, Borisov and Poletaeva (2019) suggest that it very important to include and develop students' presentation skills in ESP courses based on the fact that they do not have other courses which focus on these skills throughout their study.

Conclusion

This study was conducted with the view to evaluating the implementation of Technical Oral Presentation components within English for Technical Communication course. By using the CIPP evaluation model, aspects of Technical oral presentation components were scrutinized under Context, Input, Process and Product evaluation involving engineering undergraduates, English language instructors and engineering industry stakeholders. The findings and the implication of the study are presented as delineated in the components of the CIPP Model (Stufflebeam & Shinkfield, 2007). The findings illustrate the need for improvement in strategy in the aspect of context, input, process and product so that the process of equipping engineering undergraduates with vital TOP skills will be effectively materialized.

The current study has also contributed to the literature of English Specific Academic Purposes (ESAP) in Malaysia in terms of evaluations of Technical Oral Presentations skills components among ESL engineering undergraduates. The findings show that engineering undergraduates faced several difficulties which hinder their ability to deliver TOP effectively. The study has provided understanding of challenges faced in the training of engineering undergraduates' Technical Oral Presentation skills. The stakeholders in this study also make suggestions for improvement effort which inform the current practices. This study proposes a new framework of teaching and learning of Technical Oral Presentation skills known as 'PRO-ESATOP" framework (Professional English for Specific Purposes Technical Oral Presentations skills). PRO-ESATOP addresses the gap between industry needs and university English for Specific Academic Purposes courses teaching syllabus in terms of providing a more compatible university-industry Technical Oral Presentations (TOP) assessment criteria. These TOP assessment are derived from feedback obtained from stakeholders namely professional engineers and practitioners, educators as well as from UMP engineering undergraduates.

The current study also reveals expectations from the engineering stakeholders who were involved in the study towards engineering undergraduates' TOP delivery. More importantly, a new component "PROFESSIONALISM", which is highly valued by the industry, and not in place previously, has been added in Assessment rubric 1A for semester 1, 2018/2019, semester 2, 2018/2019 and Semester 1 2019/2020, English for Technical Communication course.

Possessing and displaying strong ‘professionalism’ during delivery of TOP is very much sought after by these engineering undergraduates. By understanding engineering stakeholders’ expectations and factors contributing towards achieving a level of a ‘professional’ TOP presenter, it is hoped that this study will help improve the instruction and teaching of technical oral presentations to engineering students in English for Specific Academic Purpose context.

Taking into account that higher learning institutions are feeders to industry in Malaysia, information gathered from engineering industry stakeholders in this study has shed some light on the level of expectations and demands from engineering undergraduates. Engineering industry stakeholders do expect high level of English oral communication skills particularly technical oral presentation skills from engineering undergraduates who are going to enter the workforce upon graduation. The in-depth evaluation of Technical oral presentation (TOP) components conducted in this study is a vital effort to inform the current practices and to make improvement strategies in preparing engineering undergraduates to become global graduate engineers who are highly competent in engineering workplace communication context and Technical oral Presentation skills. In line with this notion, technical oral presentations, which are part of effective English communication skills needed for professional engineers, are now given greater attention in engineering graduates’ preparation for global workplaces (Quinto & Macayan, 2019).

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