CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter reviews several studies related to the topic, specifically emphasizing on needs analysis and English for Science and technology. It also discusses some available literature on ESP and EAP, their definitions, development and importance.

2.1 English for Specific Purposes (ESP)

According to Hutchinson and Waters (1987: 7), “if language varies from one situation of use to another, it should be possible to determine the features of specific situations and then make these features the basis of the learners’ course”. In other words, English for Specific Purposes (ESP) refers to English courses that should meet the learners’ needs and interests. They claim that ESP must be seen as an approach, not as a product. Learners were seen to have different needs and interests, which would influence their motivation to learn and the efficiency of their learning.
Figure 1.0 The English Language Teaching (ELT) Tree by Hutchinson and Waters (1987:17)
Based on the ELT tree by Hutchinson and Waters (1987: 17), ESP could be divided into two main types:

i) EAP: English for Academic Purposes

ii) EOP/EVP/VESL: English for Occupational Purposes/ English for Vocational Purposes/ Vocational English as a Second Language.

At the same time, ESP courses could also be divided into three categories:

i) EST (English for Science and Technology)

ii) EBE (English for Business and Economics)

iii) ESS (English for the Social Sciences)

EAP is for those who need English to succeed academically while EOP/EVP/VESL is for those who need English to succeed in their career. Despite the differences of purposes, they are all primarily concerned with communication and learning.

Strevens (1988), states that one main character of ESP is that it is designed with the students' needs in mind. This tallies with the emphasis claimed by Hutchinson & Waters (1987:18-19) that ESP is an approach to language teaching in which all decision as to content and method are based on the learners’ reason for learning’. Therefore, ESP is used to describe the approach of teaching and
learning any skills of the English language that is deemed necessary and important to students.

Hutchinson & Waters (1987) also state that ESP became known when people realize that too much emphasis and focus had been given to the teaching method rather than to the learners themselves. They also claim that the fundamental basis of ESP is that it should teach what the students assume as important. So, it is vital to conduct the needs analysis in order to design a course that can precisely meet the learners’ needs.

2.1.1 The Origins of ESP

Hutchinson and Waters (1987:6-8) stated that the emergence of ESP is due to three main factors, namely ‘The demands of the Brave New World’, ‘Revolution in Linguistics’ and ‘The Focus on the Learner’. These three reasons have caused ESP to develop rapidly throughout the world.

Apparently, the end of World War II and the Oil Crisis in the 1970s led to the demands of the Brave New World. As the World War II came to an end, the economy started to flourish with much development in the field of Science and Technology. At the same time, The United States started to control the international trade and business and thus English became the lingua franca at the
international level (Hutchinson & Waters, 1987:6-8). Undeniably, English did also become the medium of communication in business and trading.

According to them, another reason for the development of ESP is the revolution in linguistics. Conventionally, the aim of teaching English then was to describe the rules of English usage, which is the rule of grammar. However, the revolution in linguistics caused the focus to be put on the ways in which English is essentially used in authentic communication. Hence, people began to realize that the teaching of language should cater to the needs of the learners and more learner-centred approaches emerged. Swales (1978), claims that in the late 1960s and early 1970s, most of the linguistics work was in the area of English for Science and Technology. Even for some time, ESP and EST were regarded as almost identical. This clearly shows the importance of EST.

Finally, the third reason for the development of ESP is the focus on the learner. This is due to the new developments in the educational psychology that focuses on the learners and their attitudes to learning. People realized that learners have different needs and interest that might affect their motivation to learn. Thus, more courses were set up based on the learners’ needs in order to make learning better and faster (Hutchinson and Waters, 1987).

2.1.2 The Development of ESP

Since the introduction in 1960s, ESP has undergone development at different speeds in different countries. For the purpose of this study, the
development of ESP has been looked at briefly based on Hutchinson and Waters' (1987) views.

2.1.2.1 Register Analysis (1960s and 1970s)

In the 1960s and early 1970s, English used for specific purposes represented a specific register. For that reason, the aim of the analysis was to recognize the grammatical and lexical features of the registers. These linguistic features will then be adapted into their teaching materials with the intention of producing a syllabus focusing on the language forms that the students would meet in their Science studies. However, register analysis proved that there is not much difference between Scientific and general English.

Register analysis had paid attention on sentence grammar, but now the concentration moved to understanding how sentences were joined in discourse to construct meanings. Thus, the researchers in this area aimed to discover the organizational patterns in texts and to indicate the linguistic means by which these patterns are signaled.

2.1.2.2 Target Situation Analysis (1980s until today)

Target Situation Analysis is also known as 'Needs Analysis'. At this stage, language analysis is closely related to the learners' reasons for learning. The
purpose of ESP here is to enable learners to function adequately in a target situation that is the situation in which the learners will use the language they are learning (Hutchinson & Waters, 1987). Usually, the target situation will be identified and the linguistic features of the situation are analyzed. Then, the identified features will be used to form the syllabus of the ESP course. This analysis also proved to be very systematic and focused on the learners’ needs.

2.1.2.3 Skills and Strategies

The next approach of ESP does not only look at the language itself but the thinking processes that lie beneath the language use. These processes include the skills and strategies being used in learning a language. According to Hutchinson and Waters (1987), this approach focuses on reading or listening strategies. The learners are also to reflect on and analyze how meaning is produced in and retrieved from written or spoken discourse.

2.1.2.4 A Learning-centred Approach

In this approach, the main concern is on the learning of the language focusing on the processes of language learning. We cannot assume that people learn a language when they use it. Here, the learners and their needs are given more importance compared to the teacher or the teachers’ needs. The learners can choose their own way of learning at their own pace.
In identifying the language needs, it is important to study the relationship between the learner, the objectives, resources, the curriculum and the assessment. This is best shown in the diagram below.

Figure I.1 An approach centred on the learner by Richterich & Chancerel (1980:4).
Based on the diagram, it is apparent that the learner occupies the central position. Everything starts from him and everything goes back to him. His learning objectives are defined depending on his resources, curriculum and the types of assessments (Richterich and Chancerel, 1980:4-6). According to them, the act of learning rests with the person who learns. However, the learner will have to go through the teaching establishment, utilizing institutions and the society. We must ascertain as many of the related distinctiveness of all the partners to the learning process as we can, with their different experience, age, intelligence, learning styles and expectations. The teachers on the other hand, must have the professional skill and institutional facilities to adapt their teaching accordingly.

2.2 English for Academic Purposes (EAP)

The field of English for Academic Purposes has developed rapidly in the past 25 years to become a major force in English language teaching and research (Hyland & Hamp-Lyons, 2002; Turner, 2004). They define EAP quite simply as teaching English with the aim of facilitating learners' study or research in that language. Whereas, Robinson (1991) defines EAP to be the course in which students learn English in order to succeed in their academic careers. Thus, even though it is a part of ESP, EAP specifically refers to an approach where the students are exposed to the language skills that will help them to excel in their academic, especially in the higher learning institutions.
According to Gillet (1996), EAP is designed with the intention of meeting the learners' needs and requirements. It focuses on the methods of learning English effectively and the fields chosen by the students determine the language focus. EAP refers to the language research and instructions that focuses on the specific communicative needs and practices of particular academic groups.

Hyland and Hamp-Lyons (2002) claim that children entering schools can be helped to learn more effectively if they are taught specific academic skills and language, as well as the language needed for social communication. However, for the purpose of this study, the development of EAP is not discussed, as the topic is perceived to be related more to ESP.

2.3 **English for Science and Technology**

Previously, the reasons for learning English have never been questioned. However, since English became the international language of technology and commerce, people started to learn it for all kinds of reasons: businessman to sell his product, engineers who wanted to finish their projects and doctors who wanted upgrade themselves academically. Consequently, English became world’s number one lingua franca, especially in the field of science and technology (Dudley-Evans & St. John, 1998: Samraj, 2002).
At present, students are taught English in schools to enable them to use the language in everyday life to further their studies and for work purposes. Moreover, there is great emphasis on the integration of knowledge and in the teaching of science in line with the general objectives of the Integrated Curriculum for secondary schools. In addition, with globalization, students not only need to be proficient enough to use English as a medium of communication, but also to access knowledge of ICT on the internet. Thus, English for Science and Technology has been introduced as an elective subject at the upper secondary school level (Curriculum Specifications, EST Form 4 and 5, 2003).

Based on the Curriculum Specifications, English for Science and Technology aims to provide students with the language access and understand materials on Science and Technology and to express ideas and concepts in English. As emphasis is placed on accessing content, the curriculum is organized in a manner that reflects the way ideas and information on EST are obtained and made known to others in everyday life.

2.3.1 Using ICT in Teaching and Learning ESL

Many researches had been conducted on the use of ICT in the ESL classroom. According to Mansor (2007), the technical encroachments of information technology conveys impact on the learning of English language as it seems to increase students' enthusiasm, which leads to increased practice and proficiency. Therefore, Malaysia has embarked on the use of Internet and
information technology in the educational system in order to generate a workforce that is educated, skilled in new technologies and able to face global challenges.

Mansor (2007) further adds that since technology is increasingly invading our lives, there are urgent needs to incorporate technologies into classrooms. She attempted to explore a strategy of implementing email in ESL writing classroom involving a few stages such as generating ideas, focusing, structuring, drafting, reviewing and evaluating. She found the strategy to be very practical. It did not only help the students to enhance their learning, but it also helped to increase students’ language proficiency, promote positive attitude and improve students’ performance in the writing classroom.

Similarly, another study was carried out by McDonald (2009), who used email as a learning tool in the classroom. The students e-mail summaries of online radio broadcasts to their instructors in the target language. The instructor then corrects and returns them with error feedback via e-mail. Apparently, the outcome was improved skills in critical thinking, oral comprehension, reading and writing. Besides that, the use of e-mail increased the global awareness of the students as electronic communications help learners develop an appreciation for Geography, culture and language. The students also formed friendships with their e-mail partners.

Another study was done by Morgan (2008). Having realized that the digital age challenges teachers to use technology in ways that facilitate language learning, he used ‘Bits’ (binary digits) productively in the ESL classroom. He
claims that the teachers should know how to equip the students with the skills they need. At the same time, the students are empowered when teachers harness new technology in order to promote language learning.

However, Morgan (2008) asserts that the use of technology can also be unproductive at times. It is also not easy to overload an ESL class with electronic information. Effort, time and money can be wasted in technology. Thus, the teachers must be very alert in using technology in class. This idea is supported by Tseng (2008) who claims that technology could pose a danger in the classroom or at home for the students. In his study to find the difficulties that EFL learners have with reading text on the web, he found out that students may face problems such as eyestrain and blurred vision.

Nevertheless, the importance of ICT in the ESL classroom is never doubted. Kentera (2007) states that schools are fortunate to have computers in the classroom as ESL classes and computers need to be interwoven. According to him, the students would not only be satisfied for learning English, but computers as well. He listed a few reasons why teachers should use computers in class. Among them are to make the lesson more interesting, to expand the vocabulary, and to help the students adapt to real life situations.

2.4 Needs Analysis

Needs Analysis is the process of finding out what to teach and how to teach it (Hutchinson & Waters, 1987:53-54). It is a key tool in course design,
which looks at the environment in which a course will be conducted. According to them, Needs Analysis involves professional information about the learners and the tasks or activities that they will be using in the learning process. It also involves factors, which may affect the way the learners learn such as previous learning experiences and cultural information.

Needs analysis has been a key instrument in course design in ESP and EAP (Hyland & Hamp-Lyons, 2002). However, it would be appropriate to discuss some issues in needs analysis prior to further discussion. The initial focus of needs analysis was apparently syllabus specification. But, Hutchinson (1987) extends the definition of needs from the target situation that Munby (1978) had focused onto the learning needs of the students.

Hyland and Hamp-Lyons (2002) emphasize that the competencies, strengths and weaknesses that the students have prior to the beginning of a course of study is extremely important. On the other hand, Allwright (1982) pioneered a focus on learners’ wants and lacks and how these may be accommodated when implementing language programmes. Dudley-Evans and St John (1998) contend that the analyst should identify the importance of learners’ cognitive styles and learning preferences besides focusing on the learners’ needs and wants.

There are a number of studies done on the importance of ‘Needs Analysis’ in analyzing students’ needs especially at the university level and very
little at the school level, with most of them aimed at redesigning a new course. Among them, an interesting study was carried out by Diallo (2007), in University of Maryland Baltimore County (UMBC). His research aimed at identifying the English needs of science and technology students at Cheikh Anta Diop University in Dakar. The researcher analyzed the needs of the students in the school of science and technology, also known as Faculte des Sciences et Techniques (FT). The subjects were the third and fourth year students as well as their specialist and English professors.

The analysis of the questionnaires, interviews and course contents revealed that the students at this point in their education within the school, as well as the science and technology faculty believed that the content of the English courses needed to be allied with the necessities for English use in their science and technology courses. They believed that the students needed a different type of English instruction than the one currently available. At the same time, there was also a need for extra curricular activities that will help the students to use the language in the real world situation. Finally, the study concluded with the recommendation for a redesigned English curriculum with the focus being on the reading skills.

In 2004, a needs analysis was carried out by Tajino, James and Kijima, in an attempt to accommodate disparate elements within a decision making process. They intended to discuss the use of soft systems methodology as it might apply to
EAP course design. They found that the methodology could engender meaningful collaboration between participants involved in a course design. They identified that besides focusing on the learners’ needs and wants, their current skills, and their competencies and lacks should also be given due respect.

At the same time, Kol (2002) used needs analysis in the process of developing an English course for mathematics and computer science students at Tel Aviv University. The students used Hebrew for all academic purposes such as to do their assignments, but study their course materials in English. The students were given selected materials and they had to use certain strategies to complete their assignments. For these strategies, the teachers need not to be specifically skilled in science and technology, but rather be open to the content of the subject. This complements Hutchinson and Waters (1987) that the teachers must be interested in the subject in order to maintain the students’ interest.

The only works on Needs Analysis that were referred for this study in the Malaysian contexts are done by Renganathan (1996), Chow (1996), Vadivelu (2007)). A case study done by Renganathan (1996) in Cheras Polytechnic showed that the students particularly needed writing, reading and note-taking skills in order to excel, whereas the instructors at this polytechnic were found to be lacking in proficiency of English. Thus, the study pointed to a need for an ESP programme suitable for them.
In another case, Chow (1996) looked at the English language needs of 100 Science Matriculation students in the National University of Malaysia. He found that their receptive skills were better than their productive skills. The students had problems in understanding meanings of words, technical and scientific terms and descriptions, and difficulty in writing laboratory and scientific reports. Thus, they need to improve their reading and writing skills.

Besides that, Vadivelu (2007) examined the language needs of a group of secondary school teachers teaching Science and Mathematics in English, in particular their perceptions of their language needs. The findings indicate that the teachers perceived that they needed to improve their speaking skills and English grammar. The same methodology was occupied by Vadivelu where she obtained the information from the questionnaires. They need to use speaking skills for various reasons such as talking to the doctor, talking to the patients and other reasons. She recommended that more studies should be carried out for a more comprehensive picture of these needs and the strategies that can be used to achieve the needs.

2.5 Language Learning Strategies

Having said that the learning process is just as important as the teaching process, it is vital to look at the methods or strategies that will facilitate this learning process. These strategies could be learning strategies or teaching strategies: both having equal part in enhancing the learning of the student. Grenfell and Harris (1999) state that improved learning comes from improved
teaching, which in turn is the result of better methodology and understanding of the teacher. According to them, how we teach and how we learn languages is often informed by the direct experience of teachers and learners. The strategies being used are affected by too many variables such as age, culture, context, personal preferences and individual learning differences. What works in one time and place might not work elsewhere.

Anthony (1963) gives clear definitions for method, approach and techniques. Method refers to an explicit plan for the presentation of materials to learners. Approach is straight forward and follows the principles underlying the form of teaching. Lastly, technique refers to the actual classroom activities used in implementing the approach or method. In keeping with many teaching and learning program, language is divided into four basic skills: reading, writing, listening and speaking. Whereas Strategy is defined as the special thoughts and behaviors that individuals use to help them comprehend, learn or retain new information (O’ Malley and Chamot, 1990). Meanwhile Oxford (1990) states that strategies are steps taken by students to enhance their own learning.

However, we should realize that learners will not have these strategies in as set as they develop their linguistic competence. O’ Malley and Chamot (1990) also stress that a successful learner is a frequent user of a wide range of strategies. As Cohen (2007) puts it appropriately, strategies can be classified as conscious mental activity that must have the action as well as a goal and a learning situation. He has listed a few purposes of language learner strategies such as to enhance
learning, to perform specified tasks, to solve specific problems and to make learning easier, faster and more enjoyable.

On the other hand, Oxford and Schramm (2007) emphasize that language learner strategies is a specific plan, action, step or technique that individual learner use with some degree of consciousness to improve their progress in developing skills. Such strategies can facilitate internalization, storage, retrieval or use of the new language is tools for greater learner autonomy.

2.6 The language Skills

2.6.1 Reading and writing skills

Reading is a receptive skill whereas writing is a productive skill. However, they are related to each other. As we read, we make hypotheses about what the writer intends to say. Therefore, reading is a creative process as it requires the reader to read, absorb the information and interact with writer in order to achieve comprehension. According to Nuttal (1982), there are sub-skills of reading that the learners have to know. They are: skimming, scanning, predicting and summarizing. These skills are very important to learn reading appropriately. Meanwhile, writing needs deep thinking, planning, and appropriate vocabulary in order to produce a written piece.

2.6.2 Listening and speaking skills

Listening is a receptive skill which requires input. The act of absorbing the information and the process of comprehending the meaning of the information is
listening (Nuttal, 1982). Speaking is apparently a productive skill. Listening refers to the process when information is provided to others. However, these two skills are also inter-related and needed badly for the purpose of language learning.

2.7 Conclusion

In conclusion, English plays a vital role as the lingua franca at the international level. The language teachers are also aware that the second language learners do not learn English like learning the first language. Thus, the information obtained from the students and teachers will be used as a guideline in planning the strategies.