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The Effect of ESP Program on the Engineering Students' Proficiency at the University of Tabuk

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Abstract

This study aims to assess an ESP program for engineering students in the University of Tabuk that caters for the needs in the second semester 1432/1433AH and subsequently to assess its effect on students ' achievement in their field. More specifically, it addressed the following question:

1) What is the effect of the engineering ESP program on the students' achievement in English?

The sample of the study consists of 50 students of two sections from the engineering faculty in the University of Tabuk. An experimental group was taught the proposed engineering ESP program while the control group was taught the ordinary course in the University of Tabuk.

Compared to the control group, the students in the experimental group made significantly higher progress in general on all components of the English proficiency test. The differences between the mean scores of the two groups on the posttest were statistically significant for every component of English language.

Based on the findings of the study, the University of Tabuk is recommended to give priority to ESP courses to improve the student's level in English language and to allocate more funds for these programs.

Key words: ESP, EOP, EAP, EST.

1. Introduction

Teaching and learning foreign language programs are mostly related to English as an international language. English has become the most important language of communication in the world. Teaching English as a foreign language has a long history in many countries and has spread to almost all Arab countries. English is important nowadays because of its international character and because of its widespread use as a means of communication and as a vehicle which facilities further progress in other subjects. Students' proficiency in English has not been encouraging, as it neither corresponds to their needs or aspirations, nor justifies the amount of money being spent on teaching English in the Kingdom of Saudi Arabia.

English is used as the medium of instructions in some schools and faculties such as those of science, Engineering, Agriculture, Medicine and Nursing. Because English is important, it is taught in schools, institutes, community colleges and universities as a compulsory course. Teaching English as a foreign language in Saudi Arabia is still inadequate. Some decisions have been taken in this field but integrating ESP should at some major sectors, notably engineering and the petrochemical field.

The students that come to the second year college are 19-20 years of age. They have done their first year at the preparatory year. After nine years of primary education they have done and higher secondary level (tenth, eleventh and twelfth years) at school. The majority comes from Arabic language medium schools.

So, they have had six years of English at intermediate and secondary grades. Those who come from these schools (most of them are weak in English). In principle, therefore, they come to first year college with weak knowledge of the structure of English and they are supposed to understand and express themselves in workable English. But in reality, that is not the case. Most students 'do' their English with the main aim to pass their examinations and they are able to do so with the help of bazaar notes (that are published every year before the examinations and are available in the bookshops). Even most teaching is geared to prepare the students for the examinations rather than to enable them to learn the language.

Most students, therefore, when they come to college, suddenly realize that they need English if they wish to go for engineering or medicine, at least as a class language. They are shocked when they are faced with lecture-method teaching of English in the college classrooms.

In short, there is always a big gap in reality between the real level proficiency of the first year college students of General English and the take-off point in the teaching of English at college level that invariably results in cumulative language deficit.

So, this study is significant because it is an immediate response to the urgent needs of the ESP field in the faculty of Engineering in the University of Tabuk and it is an attempt to bridge the gab between the real level of the those students in English and the needed students' level.

2. Literature review.

English for Specific Purposes has its basis in an investigation of the purposes of the learner and the sets of communicative needs arising from them. These needs will then act as a guide to the design course materials. The kind of English to be taught should be based on the interests and needs of the students.

Brumfit (Robison 1980) asks whether new terms mean new things and suggests that ESP is not necessarily a new approach but a new emphasis in teaching, where the new emphasis is on the learner rather than on the teacher. We may say that an ESP course is purposeful and is aimed at the successful performance of occupational or educational roles.

We can trace the development of ESP to the sixties or early seventies of the twentieth century. ESP is still a relatively new area in the long history of language instruction. The first mention of ESP as something stable in the field of language teaching can be traced back to the 1960s (Swales 1985). Strevens (1978a:190-191) labels language courses of the type "German for Science Students" and "Travelers Language Course" as the first form of ESP, but he does not give specific dates. Hutchinson (1987) asserts that learners have different needs and interests, which would have an important influence on their motivation to learn and ultimately on the effectiveness of courses in which "relevance" to the learners needs and interests was paramount. Thus, according to Hutchinson and Waters (1987) the best way to achieve this is to use texts from the learners' area of specialization.

Munby (1978) became a major advocate and pioneer of what may now be called "communicative syllabus design" and materials production.

There are two main divisions which help to distinguish ESP situations. English for occupational purposes (henceforth, EAP) EOP is taught in a situation in which learners need to use English as a part of their work. Instances of EOP are students who would like to be nurses in hospitals or technicians servicing equipment. The students need English in the former case to speak with and respond to patients and other staff, and, in the latter, to read technical manuals. On the other hand, EAP is taught generally within educational institutions to students who need English in their studies. For example, English for science and technology (henceforth, EST) is important; much of the demand for ESP has come from science and technology students who need English for a number of purposes connected with their specializations. It is natural, therefore, that should be an important aspect of ESP programs.

The term ESP presupposes a stock of vocabulary items, grammatical forms, and functions which are common to the study of science and technology. On the other hand, secretaries have different language needs form scientists, technologists, physicians, nurses, mechanics, lawyers, etc.

In general, we may find various approaches to course design based on the types of courses, the target situation, the target population, and the purpose of the course. However, there are three main approaches that have influenced ESP in some way: (a) the needs analysis approach, (b) the learner-centered approach, and (c) the learning-centered approach.

Nevertheless, in spite of the previous academic and technical facts about the positive role of the importance of ESP material in TEFL, there are still no ESP courses in the faculty of engineering in the University of Tabuk in Saudi Arabia. To be more precise, this study is an effort in this direction, in the sense that it is attempting to develop an engineering ESP program to help engineering students to improve their language proficiency.

Curriculum specialists believe that the breakdown of curriculum into components and sub-processes is of vital importance since it simplifies and organizes a process as complex as curriculum design (Hutchinson, Waters, 1987, Nunan, 1985). The first component in such a procedure is the needs assessment that is, obtaining data, followed by needs analyses that are, assigning value to those data (Graves 1996). Therefore, the first issue to elaborate on is the needs of the students. If needs are clear, the learning aims can be expressed more easily and the language course can become motivating. If the learners' needs are not taken into account, the course will be based on unstable or irrelevant material, will disillusion the students with the value of instruction or their capacity to learn the language, and will lead to low motivation (Mackay, Mountfor, 1978). To put it simply, the

needs assessment provides the researcher with the base on which to build new knowledge. By using what the students know, the researcher can explain, illustrate, and conceptualize the knowledge to be conveyed (swale, 1985).

To many people, needs analysis is limited to ESP, to the point that it becomes nearly synonymous with ESP. As a matter of fact, needs analysis is found outside ESP. In other words, any educational course should be based on needs analysis to guarantee success. Needs analysis is usually performed first; then data analysis is used to provide the particular language skills that students will use and the activities students will eventually complete.

Munby's *Communicative Syllabus Design* (1978) is a famous work dealing with needs analysis for English language teaching. Munby presented a series of procedures to identify the expected needs in English. The first called the "Communicative Needs Processor" which consists of a series of questions related to the variables in communication, such as the subject matter, the participants, and means of communication. Such variables help pinpoint the specific needs of the learners in the target language. The other is "a profile of needs" which highlights students' needs in the target language; hence, the program designer has only to take these needs into consideration when specifying the elements of the proposed ESP program.

Hemissi (1981) conducted a study on ESP which aimed at finding ways to improve the English syllabus of higher education institutions in Tunisia. He used two questionnaires, one for the students and the other for the teachers. He also interviewed administrators and professor. The results of the study showed that students hardly used English outside the classroom and rarely prepared their English lessons at home. The teachers also didn't assign English references for their students to read, and most of them over-emphasized reading skills. Another finding was that students preferred to use English instead of French for the following reason: English is the language of most of the scientific subjects and a number of post graduate students seek higher education in countries like the USA, U.K or Canada.

Kandeel (2003) conducted a study on ESP (English for specific purposes) at UNRWA vocational centers. The project began with an analysis of needs for ESP in both the Jordanian and United Arab Emirates labor markets. From that analysis came the unexpected observation that it is most often not the lack of technical English that is holding the graduates back, but rather their limited communicative abilities and their inadequate linguistic competence necessary for intercultural communication. So, ESP program does not mean providing students with a number of relevant words and terms in their fields and specializations but according to Robinson (1980) an ESP course is purposeful and is aimed at the successful performance of occupational or educational roles

After establishing the core needs, 11 English instructors at UNRWA centers were invited to join the project. With crucial support of the senior mechanical trade instructors, they worked with two American ESP specialists in seminars in syllabus design, materials development, and communicative methodologies and techniques.

Albakrawi (2005) designed a computerized ESP program for secondary hotel students in Jordan, this program was designed on the needs of the hotel students in Jordan. The researcher identified the needs of the hotel students. Then, he classified these needs from English language. Based on these needs, he designed the computerized ESP program. The researcher tried to assess the effect of this program. The sample of the study consisted of six sections from the different secondary hotel schools in Jordan. He developed three instruments to collect data, the first was addressed to the secondary hotel students, the second was addressed to the teachers of those students and the third was addressed to some hotel managers and labors in different posts to collect data from different views. The findings of the study revealed that the program had a measurable effect on the English proficiency of the experimental group.

In summary, researchers are interested mainly in the theoretical principles of ESP syllabus and course design and determining the effectiveness of ESP programs in teaching English. However, most researchers are in agreement as to the structuring of syllabi and programs which address ESP students' needs.

3. Data and Methodology

The purpose of the study is to investigate the effectiveness of the proposed engineering ESP program on the students' English proficiency in the Faculty Engineering in the University of Tabuk.

3.1 The Population

The population of this study consisted of all students in the Faculty of Engineering in the University of Tabuk for the second semester, academic year 1432/1433 Ah. These students are between nineteen and twenty years old. It is assumed that they have had similar opportunities for learning English because the centralized

nature of the education system in Saudi Arabia. The total number of students in the population in the second year is 224.

3.2 The Sample

The sample for the study consisted of two groups; the first is the control group consisted of 24 male students. The second group is the experimental group consisted of 26 students from the second year; whom comprised the experimental group and studied via the engineering ESP program, while the rest comprised the control group and studied via ordinary program.

3.3 The variables of the study

The variables of the study were as follows:

3.3.1. Independent variable: The treatment, which consist of the proposed ESP program on the students of Engineering Faculty in the University of Tabuk .

3.3.2. Dependent variable: The students' English proficiency in the following engineering English components: reading comprehension, vocabulary, and structure, listening, speaking, and writing skills.

3.4 Program content:

This part to be addressed was the content of the program . In other words, what the program should include:

In practice, the development of a program follows the same procedures as the development of a curriculum. The only difference is that the curriculum is designed by specialists in the field , while the course or program may be designed by the teachers or instructors. Decision-making plays an important role for curriculum and course development, the process of which is illustrated in the following steps:

- Needs survey, including experience of the teachers and students views.
- Needs identification should be done by the decision- makers.
- Needs assessment, including formal and informal instrument and tools.
- Specific, measurable, and achievable goals and objectives.
- Collecting relevant materials.
- Deciding on suitable exercises and topics.
- Organizing the material according to the students' needs and course time frame.
- Planning effective classroom activities to adult students to achieve goals and objectives.
- Opportunities for independent self study of class.
- Administrating and writing tests.

During the whole process, decision making and assessment continuously take place, so that modifications may be made as needed. For the engineering English program, a combination of context conceptualization processes was used: the traditional approach was used closely related to the students' needs. For example, analysis of the collected data indicated that grammar was identified as a problem by some of the students of the sample.

However, general grammar might not be helpful, as special attention must be given to The function the structure has in the text it was taken from. For example the sentence: "A bridge is a construction which is necessary and useful for transportation" can be analyzed as a sentence composed of a main and a subordinate clause, but from a functional point, it performs the act of a definition. A specialist uses a plethora of definitions, classifications and so on. The student must not only be able to recognize the functions but also to produce the appropriate grammatical form to express the function (Kennedy and Bolitho, 1984).

The grammatical structure inventory produced for the English for engineering purposes included the following:

- Derivatives.
- Prefixes and suffixes.
- Comparisons.
- Cause and effect sentences.
- Putting the verbs in the correct tense (emphasis on passive voice).
- Substitution tables (make up sentences using the table and selecting the correcting grammatical form).
- Filling in bancs with words from the text
- Making up one's own sentences, using the constructions given

- Synonyms and antonyms
- Joining phrases to form sentences

Communicative situations were involved, since they added a different dimension to language learning. Introduction of simulation games and problem solving techniques seemed appropriate and interest to the students.

The four skills approach was also used, as well as tasks and activities related to the engineering (e.g., asking for information on engineering components). More specifically, tasks aimed at activities, which would enable students to deal with situations related to their future employment.

Discussion and Findings 4.

The main purpose of this study is to investigate whether or not second -year students would develop higher English proficiency via the proposed engineering ESP program than via non ESP program. The following components of English proficiency were investigated: reading comprehension, vocabulary, structure, listening comprehension, speaking, and writing.

The result of t-test showed that there was statistically significant difference at (0.05) level between the mean scores of the experimental group. The mean score of the students of the experimental group on the posttest was (72.23) which was much higher than that of the control group (56.92) .This difference was found to be statistically significant(α<0.05). Table 1 also showed that the experimental group achieved adequacy levels on the posttest higher than those of the control group.

(Table 1)

Results of the pretest and post test of the control group and the experimental group.

Group	No. of students	Over 50	Pre-test	Over 50	Post-test
Control	24	1	4.2%	16	66.7%
Experimental	26	1	3.85%	24	92.3%

The high mean score and component scores for the experimental group are apparently due to the proposed engineering ESP program which emphasized most of the educational, psychological principles of teaching and learning, the students' needs and interest and focused on topics and themes. Most if not all researchers and scholars consider students' needs and interests as the basis for enhancing proficiency levels. The findings of the present study agree with those of Graham (1980) who conducted a study on the graduate students of pharmacy at the University of Maryland who were non-native speakers of English language. The aim of his study was to increase the students' proficiency in English. The result showed statistically significant improvement in all categories which the structured course had. The higher mean scores for the experimental group may be explained by the ESP material, which emphasized a wide range of topics and themes specifically related to their needs and interests.

The learners' needs and interests are taken into consideration via ESP more than in the case with General English. Therefore, within the context of this concentration, ESP can be seen as responding to the new educational requirements (Strevens, 1977; and Widdowson, 1982). The researcher noticed that the students in the experimental group were also observed taking better care of related engineering English books, papers forms during experiment. They tended to use English outside the classroom and to prepare their lessons to a greater degree. This phenomenon is consistent with the findings of Van-Naerssen (1991), who gains. Students also saw the ESP course as an added opportunity, and they perceived its activities more positively and with more interest. Likewise, students in the experimental group were interested because the topics and themes in their material were in line with their needs and interests.

It is worth mentioning that the majority of the experimental group in the present study passed the post-test. In other words, 24 out of 26 students in the experimental group scored over 50, whereas only 16 out of 24 students in the control group passed because their points were under the passing score. This finding is consistent with the finding of Vivan (1984) who aimed at providing students with all the language skills which were related to their specialization. Courses based on student's needs and interests motivate and encourage them to learn and build self-confidence and positive attitudes toward the learning process (Robinson, 1980; Hutchinson, 1987; and McDonald, 1982).

This motivation was observed during the course of the experiment. Even weaker students showed more

enthusiasm and took part in most of the activities of the experiment. Both the experimental and control groups enjoyed the experiment, but the experimental group enjoyed it to a greater extent and hoped it would not end. The students felt that there had been topics and themes that deserved to be discussed and learned; especially those presented in the proposed engineering ESP program that made learning interesting and increased the level of motivation. This finding is consistent with Kennedy (1985), who showed that undergraduate business students were more motivated and interested by course designs which built self-confidence and positive attitudes. Most students preferred the new techniques and methods of teaching / learning and materials used in the designed course and wanted to continue the same method for the second semester. Unlike their counterparts, the subject in the control group had a modest improvement in different language skills (vocabulary, structure, reading, listening, speaking and writing) on the posttest (see Table 2). This might be attributed to the ignorance of using ESP as a motivating tool; gives a chance for individualized learning; and makes positive attitudes towards teaching / learning process. These findings are consistent with those suggested by Robinson (1980) and Kim (1992).

(Table 2)

Mean Scores and Standard deviations of the Two Groups on the Pre-test.

Group	Number	Mean	Std. Deviation	t	df	Sig.
Control	24	33.04	6.96	1.098	48	0.278
Experimental	26	30.69	8.07			

Psychologically speaking, higher students' motivation, self-confidence, and positive attitudes towards the teaching/learning process led to greater interaction with the teacher. This phenomenon might in turn motivate the teacher and further cause more positive interaction with his or her students.

To conclude, we may say that this high level of interaction between the students and their teacher and vise versa led to an effective process of teaching / learning and caused this significant improvement as a result.

The posttest results revealed that the students had done well on the English proficiency test. This could be indicative of the fact that English proficiency has a strong relationship to ESP achievement; this may be justified by the assumption that students exploited what they had acquired in the engineering ESP material to be used in English. Therefore, it could be reasonably assumed that engineering ESP programs were able to utilize their English knowledge of English in real-life situations, to communicate with their classmates in English, and to participate in class achieved the desired terminal behavior expected of them, namely to use structures and the vocabulary not because they were items in the syllabus, but because they wanted to express them in real-life situations (Littlewoods, 1981).

The ESP students were consistently aware of the purpose of their material because this material was more relevant to them. On the other hand, the students of the general English material had less motivation; they often asked why they should learn such English irrelevant to their needs, interests, and future wants and demands (Pergell, 1985). This issue was vital to the whole process of teaching English; there was little motivation or justification for adult students to learn English as a result. Their experience, objectives, and inclinations were different from what they were learning (Richterich and Chancerel, 1980). Thus, the psychological factor motivation and expectancy positively affected the success of ESP students (McDonald, 1984).

Table 1 showed that the students of the experimental group also achieved higher mean and component scores than the students of the control group on each of the six components of English proficiency. These differences between their mean scores were statistically significant at a level of $\alpha = 0.05$.

The high mean and component scores of the experimental group are likely due to the proposed engineering ESP material. This is consistent with the findings of van-Naerssen (1991), in which positive ESP course results included development of useful classroom communication skills, practice in content oral skills, and development of reading and writing skills. On the other hand, the low mean scores and adequacy levels of the control group could be due to the non ESP program.

5. Conclusions

1. This study will be an immediate response to the urgent needs of the ESP field in engineering faculty in the University of Tabuk.

2. It is in the line with modern trends in teaching English as a foreign language.

3. Compared to the control group, the students in the experimental made significantly higher progress in general on all components of the English proficiency test.

4. The differences between the mean scores of the two groups on the posttest were statistically significant for every component of English language.

5. The high level of interaction between the students and their teacher and vise versa led to an effective process of teaching / learning and caused this significant improvement as a result.

6. The different faculties in the University of Tabuk should further adopt ESP courses as long as English is continued to be used for academic purposes.

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