

Evaluating Engineering Major ESP Courses in Iranian Universities: Stakeholders' Views on Course Effectiveness

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Abstract

Investigating stakeholders' perceptions about course success has been signified as a useful method in program evaluation. This study evaluated English for Specific Purposes (ESP) programs in engineering departments at Iranian state universities by examining stakeholders' views. Engineering students (N=100) and ESP practitioners (N=8) participated in interviews, and non-participant observations were carried out to better understand the learning and teaching contexts. Content analysis of the interviews showed that some obstacles such as 1) low GE proficiency of students and heterogeneous classes, 2) limited time, 3) ministry decision for making the course elective, 4) students' low motivation, 5) teachers' low motivation, 6) inappropriate materials and teaching methods hindered course usefulness and effectiveness from the perspective of the participants. The findings urged the importance of comprehensive needs analysis to resolve the controversies among stakeholders about course objectives and contents and eliminate the mismatches between course objectives and students' expectations.

Keywords: Course Evaluation, ESP, Course Effectiveness, Engineering Major, Iranian Universities

1. Introduction

Due to the globalization of education, students need discipline-specific English knowledge to have access to academic resources in journals, conferences, or the internet in order to be informed of the latest progress in their field and make their accomplishment known to the world (Kennedy, 2001). Accordingly, designing effective ESP courses in different academic fields to promote students' discipline-specific English knowledge is paramount. Evaluating ESP courses is an influential measure to assure their effectiveness. In language program evaluation, different components of the learning context are examined to satisfy different goals (Norris, 2016), such as ensuring the program's quality or modifying its elements to improve it. It can also show how effective the instruction is (Kiely, 2009).

Master (2005) suggested looking into factors that lead to course success or failure and exploring required measures to improve course effectiveness as an important area of research in ESP. Students' judgment about the quality of their learning experience and their attitude toward this experience were considered important factors in program evaluation (Kiely, 2009). Fenton-Smith, Humphreys and Walkinshaw (2018) introduced students' *satisfaction* with their language learning experience as an important criterion to measure program effectiveness. Kiely (2009) maintained that "the learning experience that is satisfying in a holistic way has the potential to engage, motivate, generate effort, and lead to the desired outcome" (p. 107-108).

In Iran, the Ministry of Science, Research and Technology has assigned a two-credit English for Specific Purposes course for undergraduate level in different majors. According to degree plans, ESP courses in engineering fields are mostly elective, yet it is a required course in some majors. The plans generally do not determine a specific time when the course must be offered. Developing reading, translation skills and technical vocabularies are set as the main objectives of the course (Jafari Pazoki & Alemi, 2019). Previous studies on ESP program challenges in Iran confirmed students' low motivation and dissatisfaction, using outdated and teacher-centered instructional methods, and inappropriate teaching material as important issues in ESP programs (Atai & Shoja, 2011; Soodmand

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Afshar & Movassagh, 2016). Atai (2002) reported lack of comprehensive needs analysis as a major shortcoming that resulted in inappropriate ESP course design.

None of these studies focused exclusively on engineering majors and they provide no information about course usefulness and efficacy. This study focused on technical or engineering English which is the branch of English for Science and Technology (EST) and is the combination of both English for Academic Purposes (EAP) and English for Occupational Purposes (EOP) (Hutchinson & Waters, 1987). In this study, ESP course effectiveness was examined in nine different engineering fields (Electrical Eng. Mechanical Eng., Civil Eng. Computer Eng., Industrial Eng., Metallurgy Eng., Medical Eng., Chemical Eng. and Textile Eng.) in three Iranian state universities. ESP course evaluation was done through investigating stakeholders' views and comments on *satisfaction, course usefulness and relevance, interest and attitude toward the course, teaching and learning practices, and factors involved in the learning context* based on the following research question:

Research Question: How effective are ESP courses in the view of Iranian engineering students and ESP practitioners?

Stakeholders in this study consist of engineering students, ESP instructors, ESP material authors, and program supervisors and decision-making authorities. The finding consequently could help improve ESP course effectiveness. Kiely (2009) introduced three usages for evaluation results: developing language education theories, making policies and developing new classroom procedures or curriculum. This study mainly aimed at suggesting modifications in the ESP course design to make it more effective.

2. Literature Review

In the ESP approach to learning, language is learned to achieve a specific real-world objective and if the course does not provide the learners with the competencies required to achieve the real-world goals, the course effectiveness would be jeopardized (Basturkmen, 2010). Given that, *course usefulness* and *relevance* are important factors that make an ESP course effective. Identifying engineering students' needs, especially in an academic context provides a barometer to measure the relevance of the ESP course's objective to students' actual needs. Parkinson (2013) identified the English language needs of the engineering discipline and explained that in an academic context, reading textbooks and research articles are the primary reading tasks for undergraduates majoring in engineering. Besides, necessary writing tasks include writing laboratory and design reports, summaries, reactions, case studies and library research papers. Furthermore, designing presentations or academic lectures are students' primary needs in an academic context, yet some of the mentioned needs can also be considered as demands for engineering working situations (Parkinson, 2013).

In another needs analysis study in occupational setting, Spence and Liu (2013) investigated communicative competence required by engineers at work in Asia-Pacific countries. They identified some reading and writing communicative events such as writing or reading e-mails, reports, and memos along with listening and speaking events including meetings, teleconferences as occupational needs that engineers might encounter in working situations.

Ferris and Tagg (1996) conducted a survey study from a large group of subject matter teachers across four universities in the US on the most important academic listening and speaking skills required by the students across a wide gamut of disciplines, including engineering majors. According to the results, note-taking, asking questions, and speaking during office hours were the most important speaking and listening needs of students in an English medium university. They identified basic oral and aural academic needs of students, including class participation, small group works, oral presentation, discussion and debates, interaction with native speaker experts, note-taking and asking questions. As oral presentation is considered as one of the major speaking needs of the students, they need to be trained for this purpose in their ESP program.

Atai and Shoja (2011) reported that undergraduate students prioritize the skills they need to develop in the following order: 1) using the internet to do research, 2) reading and comprehending subject-specific texts, 3) writing scientific articles, 4) understanding subject-specific teachers' English

slides, 5) knowledge of general vocabulary, 6) writing E-mails to teachers and field experts, 7) translating subject-specific texts, 8) pronunciation, 9) knowledge of grammar, and 10) preparing slides in English language. Moreover, ESP instructors and subject teachers confirmed the same needs and added some others, such as participating in international events and using technical as well as general dictionaries. Furthermore, Atai and Shoja (2011) confirmed that reading was the foremost skill required in the subject classes because professors mainly used original English textbooks, English journal articles and websites. They also pointed out that technical, semi-technical, and general vocabularies are significant in students' academic performance.

In addition to actual academic and professional needs, Students' *interest* and their positive *attitude toward the course* are paramount determinants of a course's success. Dornyei and Cheng (2007) introduced proper teacher practices, appreciating students' efforts, improving students' confidence, fostering a positive learning atmosphere, using interesting tasks and clear instruction and raising students' awareness about course values as factors that create interest and positive attitude in students. Moreover, *Teaching and learning practices*, teachers' activities and knowledge and teaching methodology were found to be crucial *factors that affect students' learning* achievement in English courses in tertiary context (Binalet & Guerra, 2014).

The fact that ESP instructor is a subject specialist or English language teaching specialist can lead to disparate teachers' practices and beliefs. Subject specialists focus on the content and specialized knowledge in their classes, and therefore translation practices, meaning and content discussions and specialized terminology instruction are the dominant class activities. On the other hand, language specialists have more emphasis on developing skills and take a more strategy-based approach to language teaching (Atai & Fatahi-Majd, 2014).

Atai and Fatahi-Majd (2014) investigated the cognition and practices of language versus subject specialists as ESP teachers in the Iranian higher education system for teaching reading comprehension. They reported that both groups' practices did not comply with what scholars had suggested for ESP teaching methodology. The study revealed that language specialists were more homogeneous regarding their teaching practices and methodology, whereas subject specialists did not have similar approaches to teaching reading comprehension. They reported that while language specialists put more emphasis on reading strategies, subject specialists asked students to read the text out loud to check their pronunciation and had more focus on vocabulary instruction. Moreover, translation and asking comprehension questions and checking and discussing the meaning of technical terms were reported as other common classroom activities among subject specialists. They criticized the lack of clear understanding of reading comprehension skills and strategies by subject specialists and their too much focus on specialized terms and content. On the other hand, language specialists believed that specialized terms must be acquired gradually in subject classes and teaching reading strategies is essential. Atai and Fatahi-Majd (2014) asserted that for language specialists, there was no distinction between the methodology for teaching EGP and ESP. They reported that language specialists did not focus on academic discourse and genre instruction as was expected and they attributed this to their lack of knowledge in these areas.

Besides, students' attitude toward course materials could predict their engagement and success (Rahimi & Hassani, 2011). Outdated and boring topics and dull tasks and activities in textbooks are important sources of demotivation among students, leading to low learning achievement (Soodmand Afshar & Movassagh, 2016). Furthermore, Martinovic and Poljakovic (2010) reported self-efficacy and proficiency level as two responsible factors in forming students' views toward the course. Self-efficacy, which refers to people's judgment of their capabilities to carry out certain tasks, is important for teachers as well as students because it can affect their confidence and promote their effectiveness and success (Wheatley, 2005). Given that, the efficacy doubt of ESP teachers was examined by Atai and Karrabi (2015). The findings revealed that ESP teachers usually doubt the effectiveness of their teaching and the teaching method they used. They reported that low self-efficacy among ESP teachers caused doubt about their ability to employ technology in their classes and prevented them from questioning the curriculum or the teaching material, enhancing learners' contribution to the course, and more importantly, satisfying students' needs promote their autonomy.

3. Methodology

In this exploratory qualitative study, semi-structured interviews were used to collect data. Kiely (2009) proposed gathering data through interviews as a method for obtaining information on students' perceptions about the quality of their learning experience. As he explained, this information provides precious insight into students' "concerns, wants, expectations and investment" in their learning activity (p.108). Kiely also considered this method of program evaluation as beneficial because it engages students in reflecting on the quality of instruction and the components of the learning context, which was suggested as a useful activity for English language learners.

3.1. Participants

Two groups of participants took part in this study: Iranian engineering students (N=100) and ESP practitioners (N=8). Convenient sampling was used to recruit students from 9 different engineering majors in three Iranian state universities, namely Sharif University of Technology, University of Tehran and Amirkabir University of Technology, were randomly chosen to participate. The scope of this study was limited to engineering fields, and the sampling was done in the engineering departments of three top Iranian state universities. The recruitment criteria were being an engineering student in a department where ESP course was offered as a required or elective course. Participants were recruited from those who have not passed the course yet, or were taking the course at the time of the interview or already took the course in previous semesters.

Tomlinson (2003) suggested evaluating course material in three stages: pre-use, whilst-use and post-use. Based on this model of evaluation, course evaluation in this study was conducted in three phases: pre-study, whilst-study and post-study. Pre-study evaluation helped estimate the course's possible success from the perspective of students before their enrollment. Whilst-study evaluation measured course effectiveness based on students' feedback whilst studying the course. Post-study evaluation aimed at assessing the actual impact of the course when students have already passed it. Accordingly, participants were chosen in three groups:

- a. Group 1: Students at lower educational level-mostly second year who did not pass the ESP course (N= 39).
- b. Group 2: Students who were taking the ESP course at the same time they took part in the study. These students were mainly from the fourth year and very few students who took the ESP course in the third or second year (N=38).
- c. Group 3: Students in this group were in the last semester of their undergraduate study or early graduate study and had already passed the ESP course in their previous semesters (N=23).

Since students in the target engineering departments did not take the course in a specific semester, it was impossible to control students' levels (especially in the third group of the participants). Purposive sampling was used to choose eight ESP practitioners to take part in the study. Accordingly, participants that could best help understand the concepts and variables under investigation were chosen. The central criterion for choosing the participants was being active in ESP field as an instructor, materials developer, supervisor, course or syllabus designer, or program decision-maker. The rationale behind the number of participants in interviews was the saturation approach, proposed by Charmaz (as cited in Creswell, 2013) which suggested stopping collecting qualitative data when no fresh data including new ideas and themes emerged. Both the first and second authors of this study decided on the data saturation based on analyzing the collected data after each interview. In addition, non-participant observations were conducted in 7 ESP classes to grasp a more comprehensive understanding of the classroom procedures and to acquire the first-hand experience of the elements of the learning context.

3.2. Instruments

Two sets of open-ended questions were developed to elicit students' and ESP practitioners' (Appendix A) views. The questions were composed based on the purpose of the study and by consulting the related literature and the first author of this study who was an ESP instructor and ESP material

developer in engineering fields. Students' interview questions were developed to investigate views about course usefulness in developing ESP skills, its relevance to students' needs and students' satisfaction and attitude towards the elements of the learning context and the factors that affect their learning. ESP practitioners' interview questions sought answers about the challenges that affect course usefulness and elements which affect students learning in ESP courses. In order to collect data through non-participant observation, an observation checklist that has previously been developed and used by Jafari Pazoki and Alemi (2019) was used to evaluate the factors involved in learning and teaching context that could affect students' perceptions about ESP course (Appendix B).

3.3 Procedures

Interviews with students were conducted in pairs to make the interview atmosphere less threatening and the data gathering more efficient. The interviews were conducted in a flexible way and in an interactive manner to elicit lengthy answers and to encourage new themes to emerge. Each interview took 15 minutes on average. In order to interview ESP practitioners, appointment requests were sent to the potential interviewees and meetings were scheduled. Each interview was conducted in a one-on-one manner and took 40 minutes on average.

All the interviews were in Persian, the native language of the interviewees, so that the interviewees could respond conveniently. Content analysis was used to make meaning of the data. Interviews were audio-recorded and transcribed and after scrutinizing, high-frequency viewpoints were extracted as text segments and labeled with appropriate codes. Codes were examined and carefully grouped into main themes, which revealed the factors that affected participants' views about the course. The frequency and the percentage of the codified themes were calculated for reporting. Some significant sentences and phrases were selected and grouped into the thematic categories, and the best quotes were chosen to be presented as excerpts.

In addition, seven ESP classes in three Iranian state universities were randomly selected for non-participant observation. Classrooms were observed with the instructor's permission, who were briefed about the purpose of the research. An observation checklist was completed that included factors to evaluate the ESP courses in terms of teaching methods, contents, materials, major classroom activities, and interactions. During observations, field notes were recorded describing the elements in the learning context, such as classroom events, activities, and interactions. The observation data were used to interpret students' views about their learning experience.

4. Results and Discussion

Student participants were asked to comment on course usefulness. Of the total 100 students, 54% considered the course not useful while 37% believed it was useful and the others were neutral about this issue. In order to put a valid interpretation of students' views, they were asked to elaborate on their reasons for considering the course as not useful. About 30% of the respondents complained that the course had not offered them any new knowledge. They believed that they could learn technical English automatically by reading their sources in English and many of the technical terms had already been acquired because professors explained them in their lectures or they learned them while reading their sources in English. Therefore, many students refused to take it when the ESP course was offered as an elective course. One student explained:

"I am not going to take the course. I asked students at higher levels who had passed the course. I've learned that it is not useful. I think it is important to learn technical English, but I don't believe that I will learn technical English in one semester and in a 2-credit course. My friends advised me to study my sourcebooks in English. So I will learn the reading skills and the technical vocabularies. I think I can manage to learn technical English without taking the ESP course."

Students were asked to elaborate on how effective they consider ESP course in acquiring different ESP skills, namely, writing and speaking scientifically and understanding oral and written technical text in their field of study. Almost 80% of the students believed that they could learn ESP reading skills without taking the course and that it was not necessary for learning technical terms. Students criticized the course for too much focus on reading skills and they did not consider the course effective for learning speaking or listening. One student explained:

"Learning just a bunch of new technical vocabularies is of no use. If I encounter a new technical term, I can simply refer to a dictionary to check its meaning. We need to develop our English academic communicative skills especially writing and speaking, which are the most difficult skills for us."

On the other hand, students did not consider developing writing skills as easy as reading skills so that they can acquire them without taking the course. One student stated:

"I wish we had worked on writing articles. For example, how to write an abstract or the introduction part for a research paper. Writing and speaking are the main problems that were ignored in the syllabus. Moreover, we need to learn to speak academically to present in conferences and take part in scientific debates."

These comments unveiled discrepancies between students' wants and actual course contents and objectives. Non-participant observation helped to achieve a deeper insight into this issue. Based on the observations, many aspects of the teaching method in ESP courses were close to the Grammar Translation Method which advocates using the first language as the medium of instruction, reading the passages line by line and translating the sentences into student's native language and focusing on key vocabularies and concepts mainly by giving the L1 equivalent (Richard & Rodgers, 2014). Alimorad (2019) endorsed that the method for teaching ESP reading in Iranian universities is not based on current theories and attributed the application of such an approach to the limitations imposed by the learning context such as students' low motivation. Furthermore, reading was used as a means for teaching technical vocabulary. In few cases summarizing was used as a post-reading activity and as a speaking or writing task rather than an exercise for developing reading comprehension strategies.

Moreover, ESP classes in engineering fields were characterized by a high amount of teacher's talk and one-sided explanations and students' participation was limited to answering questions. In most observed classes, no cooperative practices happened and classroom activities were not engaging. On the other hand, cooperative language learning is believed to be more effective and results in better learning by encouraging higher-order thinking, creating a positive attitude toward learning, enhancing intrinsic motivation, improving the positive social relationship and supportive learning atmosphere, and improving students' self-esteem (Dornyei, 1997; Ning and Hornby, 2014; Oxford, 1997; Pan and Wu, 2013)

Pan and Wu (2013) approved that students who experienced cooperative learning during their reading comprehension instruction enjoyed opportunities to explore the text more deeply through interacting with their peers and engaging in group discussions. Moreover, they found their learning experience more interesting and in such a positive learning atmosphere, they were more dedicated to spending more time engaging in their learning activity. In contrast, in this study, interviews revealed that being taught with an old-fashioned teacher-centered method, students believed that they could develop reading skills on their own because this approach to teaching reading did not facilitate students' academic reading skills. This fact reflected the importance of equipping students with reading strategies which has also been supported by Jafari Pazoki and Alemi (2019). They attributed employing inappropriate and outdated teaching methods to the fact that most ESP instructors in engineering fields were subject specialists who were not trained about language teaching methods. Accordingly, they urged more cooperation between applied linguists and content specialists to eliminate the problem.

On the other hand, Petraki and Khat (2020) pointed out that the lack of collaborative spirit among content specialists and language specialists is a challenge. They attributed this reluctance in cooperation to the two groups' different fields of expertise which leads to power conflicts among them. They argued that good leadership that provides clear guidance and encourages effective teamwork and creates trust was a key for promoting cooperation between content and language specialists. The factors that supported collaborations between subject and language specialists were divided by Zappa-Hollman (2018) into two categories of institutional and logistic factors and personality factors. In terms of institutional and logistic factors, the physical proximity of the working space will provide opportunities to observe each other's classes and be in close contact to have regular meetings. In addition, since promoting cooperation between the two groups is tantamount to

additional workload, institutional recognition in support of the excessive effort involved in collaborations is another essential circumstance that reinforces positive relationship between the two parties. With regard to personality factors, features such as having an inquisitive orientation and enthusiasm and openness to learn and trying new teaching approaches and strategies as well as good communication skills are other criteria that are required for effective cooperation. Equality in the relationship, having mutual respectful attitude and valuing the expertise and knowledge and contribution of each expert establishes a symmetrical footing for optimal cooperation (Zappa-Hollman, 2018).

In contrast to students' views about course objectives, ESP practitioners emphasized that reading is the most needed skill for students at the undergraduate level to read their sources in English while speaking and writing are mostly needed at the graduate level or future occupational setting. One practitioner noted:

"The main objective in the course is to improve students' reading comprehension skills. Developing writing skills is the main concern of graduate students. It is impossible to teach all four skills in a two-unit course. Therefore, we must focus on a single skill. Nevertheless, we'd better work on other skills sometimes to add variety and avoid boredom."

These findings supported Hirvela's (2013) report that some needs analysis studies indicated that students regarded reading skills as the least challenging among other skills. However, he confirmed the significance of reading as the most used skill in academic and occupational settings and placed emphasis on using an appropriate approach to teach reading which focuses on developing reading strategies and draws on purposeful reading. ESP practitioners complained that lack of needs analysis in designing courses has caused many challenges such as unintegrated teaching approaches and using inappropriate methodology and contents by ESP teachers. One practitioner explained:

"In the absence of a thorough needs analysis, ESP teachers choose to focus on different skills based on their intuition. ... Needs analysis should be done to identify the language functions that students need and use in real-world situations and these language functions must be taught through interactive and authentic classroom activities."

A practitioner pointed out the changes in students' ESP needs in recent years and how it has been increased due to the considerable rise in communication among the members of global scientific communities. Moreover, she pointed to the availability of a wealth of information and scientific sources on the World Wide Web, which an engineer needs to have access to, and emphasized the need for modification in the course syllabi. These remarks confirmed Long (2005) statements about the dynamic nature of needs and that needs analysis must be renewed continuously and that the ideas of all insiders about needs should be taken into account. In addition, most students (60%) complained that the skills and contents taught in the course are not in compliance with their needs. One participant stated:

"I wish the course contents were more novel and challenging, but the topics were very boring and banal."

Moreover, 60% of the students were not satisfied with the contents of the course materials. Here are a few comments made by students:

"The coursebook contains texts which are boring and dated, but we need updated and profound topics and more challenging and interesting contents"

"The texts in the book were replete with difficult academic words and structures which are not very common in the authentic texts and sources that we have studied in our subject classes. Authentic texts are fluent, and they don't use complicated structures."

"The course was not useful. This course would be useful for someone who is not familiar with engineering concepts and terminology. The contents were rudimentary rubrics in our major."

The comments revealed that students criticized the contents of the course materials because they were not authentic. On the other hand, Tsou and Chen (2014) emphasized that material and task authenticity was an important element to evaluate a course as effective.

It is assumed that ESP courses are offered when students do not have enough background knowledge in their disciplines; therefore, introductory texts of different disciplines can make a good reading material for ESP courses. Such texts help students build up the required schema and introduce the discourse pattern, lexico-grammatical features, and text structure in that specific discipline (Love, as cited in Hirvela, 2013). Besides, it would be very problematic when students encounter a discipline-specific English text that they have no background knowledge about its content (Hirvela, 2013) because student's content knowledge has been proved to be a determining factor for successful performance in understanding ESP reading (Estaji & Meihami, 2016). As a result, ESP courses should not be offered early at the undergraduate level. While using less specialized and introductory texts seems to be a solution to this problem, Hyland (as cited in Hirvela, 2013) argued that relying solely on introductory textbooks would be problematic because they do not familiarize students with all types of text structure used in other genres within a specific discipline such as journal articles. Moreover, taking the course in the last year and encountering such rudimentary topics could be very demotivating and tiring for higher-level students who have good and updated subject matter knowledge.

More close analysis of students' responses revealed that educational level affected students' ideas about course effectiveness. Of those who commented on course effectiveness, 39 students were in their first and second years. In this group, 64% said that the course is useful and effective and 36% believed that the course is ineffective. On the other hand, 42 respondents were in their fourth and fifth years. From this group, 16% believed that the course was useful and 83% believed that the course was not effective. The dissatisfaction among students at higher levels was mostly due to the discrepancies between students' needs at this level and the course contents. Students' ideas were different about what they wanted to learn in ESP courses based on their educational level. Students at higher educational levels ordered the skill they expected to be covered in ESP courses as: writing (41.5%), reading (20.7%), speaking (20.7%), and listening (5.6%) and 11% wanted technical vocabulary to be taught in the course. On the other hand, students at the lower educational level mentioned the skills in the following order: reading (30%), speaking (26%), writing (18%) and listening (4%), and 22% agreed that technical vocabulary is required to be taught.

One practitioner believed that usually the course is taken in the last semester because both departments and students do not take it seriously. Observations in this study revealed that the majority of engineering departments had no regulation to determine the time for taking the course and students had a tendency to delay taking the course up to the last year of their undergraduate study. The findings in this study supported the importance of the time students take the course. Former studies also affirmed that while students showed a high level of ideal self and instrumentality promotion motivations in all educational levels, they have a stronger motivation for improving their ESP knowledge to meet their obligation and degree requirements at lower academic levels (Jafari Pazoki & Alemi, 2019).

Responses revealed that 84.5% of the participants confirm the effect of GE proficiency on their learning. Students with lower GE proficiency considered the course as less useful. One student explained how low proficiency had affected her ESP learning:

"I know a lot of technical terms, yet I don't understand technical texts. It shows that the problem is my GE proficiency. If I had good general reading skills, I could read all types of texts. Sometimes my problem is that I don't understand the grammatical structure or I don't know a vocabulary. I wish we worked on GE skills and essential vocabularies or some key grammatical lessons which improve our comprehension of the texts."

In some responses, students questioned course usefulness for those who have low GE proficiency. One student stated:

"I think if I had a good proficiency level in English, I would learn technical English very easily because technical English is only learning technical terms and I can learn it by myself."

ESP professors also supported good GE knowledge for effective learning in the course. One professor stated that:

"...in the engineering departments that the course is offered as optional, students with low English level never risk taking the course because they don't want to get a low mark in an elective course. On the other hand, when the course is required, students with low GE find the course difficult and not useful."

Nevertheless, students with good GE believed that the course did not offer them any new knowledge. Students with low English proficiency refuse to take the course when it is elective and those with good GE knowledge take the course in their last semester because they considered it an easy and least demanding course that can earn them a good mark. Heterogeneous classes and students' different general English levels were the other frequent complaints that made the course ineffective from students' perspectives.

The problems that ESP practitioners face can be a key to understand some reasons behind the course ineffectiveness. Consequently, ESP practitioners were asked to comment on the challenges in ESP programs. Students' low language proficiency, heterogeneous classes and limited time in a two-unit course as well as low motivation of students were the most frequent responses to this question. One interviewee attributed this lack of motivation to the fact that students do not take non-specialized courses very seriously. Lack of motivation in ESP courses in engineering fields has been attributed to students' negative view toward the elements of their learning experience such as course contents, materials, teaching methods and also ignoring students' needs based on their long term goals (Jafari Pazoki & Alemi, 2019). ESP teachers also had low motivation. One participant explained the reason behind teachers' low motivation:

"Teaching this course requires expertise in two fields: language knowledge and language teaching expertise and content knowledge, yet ESP teachers are paid less. Teaching ESP courses is not valued and appreciated and teachers consider it as having a lower status. Therefore, experienced and highly skilled subject teachers or language specialists are reluctant to teach the course."

Two practitioners stated that despite the importance of ESP knowledge for engineering students, the Ministry of Science and Technology announced the course as elective and this measure added to the problem. They believed that if the course were compulsory, both students and departments would take the course more seriously.

5. Conclusion

The results of a program evaluation should provide a clear idea about the current function of the program and it should also indicate how shortcomings can be modified (Kiely, 2009). In this study, the elements of satisfaction, course usefulness and relevance, interest and attitude toward teaching and learning practices and other factors that affect students' learning constituted a framework to evaluate ESP courses in engineering from the perspectives of the stakeholders.

In terms of satisfaction and usefulness, the majority of the participants expressed negative views because they considered ESP course ineffective for developing reading comprehension skills and enhancing technical vocabulary knowledge. Students' dissatisfaction mainly stemmed from inappropriate and old-fashioned teaching methods and the fact that students' wants to develop writing and speaking skills had been disregarded in the course objectives. Regarding the element of interest, inauthentic and boring course contents and materials and improper teaching approaches impeded students' interest in the course. Moreover, discrepancies between students' wants and needs and actual course objectives and course contents jeopardize course relevance. In addition, students' dissatisfaction with the course outcome and their achievements in the four language skills revealed that their expectations were not fulfilled.

The participants acknowledged that some problems including heterogeneous classes, students' low GE competency, inadequate instruction time, inappropriate teaching methods, improper course

contents and materials, lack of well-designed and need-based syllabus, ministry decision for making the course elective and the students' and teacher's low motivation challenged course success. Based on the findings, lack of needs analysis compromised course relevance. Therefore, conducting comprehensive needs analysis would help to eliminate mismatches between students' wants and needs and the present course objectives and contents and to resolve controversies among stakeholders about students' needs. Furthermore, the current syllabi for ESP courses which focuses on reading skill did not match students' expectations and their goals for taking the course, especially for higher-level students. Consequently, appropriate methods should be used for teaching reading comprehension and other skills should be included in the course based on students' needs to improve students' satisfaction and sense of achievement.

Teacher training courses and cooperation between applied linguists and subject specialists improve the quality of instruction and more units and time should be allocated to ESP instruction. It is advisable to offer another course with a focus on productive skills late in the undergraduate study because these skills are mostly demanded at the graduate level. Furthermore, interesting, authentic and updated materials, interesting classroom procedures and authentic learning and teaching tasks can improve students' interest.

Inappropriate time for attending the course brought about stronger dissatisfaction. The best time to offer the course is the second year when students establish a required background knowledge to comprehend discipline-specific texts in English. Since the focus of ESP course is on reading skill which is mainly required early at the undergraduate level for reading English sources, postponing the course to last semester have a negative effect on students' motivation and consequently course effectiveness. In order to alleviate the problems related to heterogeneous classes, general English courses should be offered to help students with low proficiency improve their GE knowledge to an appropriate level as a prerequisite to enroll in ESP courses. Moreover, making the course mandatory will place a higher value on the course from the students' and departments' perspectives.

One of the limitations of this study was that the same number of participants from all four academic levels (freshman, sophomore, junior and senior) couldn't be recruited because students generally take ESP courses when they are seniors. In addition, in the context of this study, most of the courses were taught by subject specialists, and very limited number of language specialists were teaching engineering ESP courses which can be considered as another limitation of this study. For further research on ESP course effectiveness, we suggest designing experimental studies to evaluate course effectiveness. For example, students' learning can be evaluated based on pre-test and post-tests with manipulation of some effective factors in the learning context. In addition, students' performance who took the course at lower levels can be compared with that of students who take the course at higher levels to understand how they are different in their learning outcome.

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Appendix A: Interview Questions

Students' Interview questions

- Q1 Do you consider ESP course useful and effective? why?
- Q2 What problems in ESP course hinder your learning?
- Q3 Would you take ESP course if it was optional?
- Q4 Did ESP course help you improve your academic reading skill?
- Q5 Is ESP course necessary to learn technical terminology?
- Q6 Did ESP course help you improve your academic writing skill?
- Q7 Did ESP course help you acquire academic speaking skill?
- Q8 Did ESP course help you acquire academic listening comprehension skill?
- Q9 Is ESP course necessary to learn technical English generally?
- Q10 Did your General English level affect your learning in ESP course?
- Q11 Did ESP course cover the skills and content which were relevant to your actual needs?
- Q12 Do you like the atmosphere of your ESP class?
- Q13 Did the instructor use a useful and practical lesson plan?
- Q14 Did you like the topics and contents presented in the class?
- Q15 Do you think that the ESP instructor used appropriate method to teach technical English?
- Q16 Do you think the materials used in the class was useful and it includes appropriate topics?

Practitioners' interview questions

- Q17 What are the challenges of teaching an ESP course?
- Q18 What are the ESP needs of engineering students?
- Q19 Does ESP course address students' needs effectively?
- Q20 What skills and subskills are necessary to be taught in ESP courses?
- Q21 What is the best time for offering ESP course? why?
- Q22 How do you evaluate students' motivation in ESP courses?
- Q23 Should ESP course be mandatory or elective?
- Q24 What strategies do you suggest to make ESP course more effective?

Appendix B ; ESP Classroom Observation Checklist

- 1 Who teaches the course? (subject specialist or language specialist)
 - 2 What language is used for instruction?
 - 3 Does teacher use appropriate and predetermined lesson plan?
 - 4 What types of material are used?
 - 5 What language skills and subskills are focused?
 - 6 What teaching methods are used?
 - 7 What type of communicative activities are done?
 - 8 What tasks and activities promote authentic language use? What types of authentic tasks are employed?
 - 9 What is the role of technology in class?
 - 10 What are dominant classroom interactions?
 - 11 What types of teaching and learning activities are used?
 - 12 How much do students participate in class? What strategies are used to promote students' participation?
 - 13 What amount of teacher talk and student talk occurred?
 - 14 What is classroom atmosphere like?
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