

Foreign Language Learning Needs of Undergraduate Engineering Students in Architecture and Electrical Engineering Faculties in Iran

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Abstract

This study aimed to investigate the foreign language learning needs of undergraduate engineering students enrolled in the faculties of architecture and electrical engineering in Iran. A total of 133 undergraduate students aged 20 to 25 years, along with 30 subject-specific instructors from Azad and State universities of Yazd, Iran, participated in the study. Additionally, 10 TEFL-trained English language instructors, three department heads, and five engineering graduates working in architecture and electrical engineering fields were included to provide diverse perspectives. The study employed a mixed-methods, qualitative-quantitative survey design, using needs analysis questionnaires and semi-structured interviews. The quantitative data was collected through questionnaires assessing the students' and instructors' perceptions of language needs and course satisfaction. The qualitative data was collected through interviews with 20 subject-specific instructors and 10 undergraduate students in their eighth semesters. Interviews were also conducted with 10 English language instructors, three department heads, and five engineering graduates to capture a comprehensive view of EAP needs. The analysis of the qualitative and statistical data revealed that most students needed to master the English language before they attended their specialized courses. Over one-third of the students expressed dissatisfaction with the teaching methodology, evaluation methods, and content of their English textbook. The inclusion of foreign cultural content was not perceived as directly relevant to the English for Specific Purposes (ESP) needs of engineering students, as it lacked alignment with discipline-specific language requirements (Hyland, 2006). The subject-specific instructors also expressed dissatisfaction with their

students' language skills. English language instructors highlighted the need for better training in ESP pedagogy to address discipline-specific demands. It can be concluded that current English for Academic Purposes (EAP) courses in Iran do not fully prepare students for their academic and professional demands due to misaligned curricula, limited resources, and insufficient instructor training in ESP pedagogy.

Keywords: academic learning needs, ESP content, EAP methodology, EAP instructors

Introduction

Engineering students must be proficient in English for Specific Purposes (ESP), especially English for Academic Purposes (EAP) if they are to interact with international research and succeed in their professions in the globally integrated academic and professional environment of today. EAP courses seek to equip undergraduate students in architecture and electrical engineering in Iran where English is a foreign language, with discipline-specific language skills, but they face difficulties because of unclear policies from the Ministry of Science, Research, and Technology for choosing suitable academic materials. This study investigates the language skill needs of architecture and electrical engineering students at Azad and State Universities of Yazd, Iran, using a mixed-methods approach combining questionnaires and interviews, to inform the development of effective EAP syllabi.

EAP, a subset of ESP, focuses on the academic language needs of students in higher education, distinct from English for Occupational Purposes (EOP) or general English courses (Dudley-Evans & St John, 1998). While classes in English for General Purposes offer general language competency, ESP seeks to give technical vocabulary and abilities pertinent to students' future professions. In Iran, EAP and ESP are becoming increasingly important subfields of EFL instruction (Atai, & Babaii, 2018). However, their integration into tertiary education is hindered by the lack of standardized needs analysis, leaving universities struggling to address students' specific language requirements.

Grounded in Hutchinson and Waters' (1987) needs analysis framework, which distinguishes between target needs (e.g., reading technical texts) and

learning needs (e.g., interactive activities), this study explores stakeholders' perceptions of language skill needs, course effectiveness, and syllabus design preferences. The research questions examine: (1) the specific language skill needs of students, (2) skill improvement post-EAP course, (3) appropriate course components, and (4) preferred interactional patterns, content, and activities for EAP syllabi. This study's significance lies in addressing the research gap on EAP course design in Iran, offering practical insights for needs-based curricula to enhance academic and professional outcomes. Its novelty stems from its focus on architecture and electrical engineering, disciplines with shared yet distinct language needs, and its mixed-methods approach capturing diverse stakeholder perspectives.

Iran offers a distinctive approach to higher education that motivates students to widen their reading by consulting professional journals and other English sources. This method is meant to give students early on the required language abilities so they may handle subject-specific texts in their more specialized courses. However, the Ministry of Science, Research, and Technology's high commission does not provide clear guidelines for selecting and crafting academic materials that match the linguistic or communicative standards expected by students.

Review of the Literature

According to research conducted by Hutchinson and Waters (1987), language usage can vary depending on the context, and language instruction should be customized to meet the unique needs of learners. Language barriers are often a contributing factor to student attrition, as noted by Li and Fu (2021). Peacock (2001) also emphasized the importance of challenging trainees' beliefs about second language acquisition and integrating these insights into teacher education programs. Schumann (1998) and Kardash and Scholes (1996) discovered that learners' metacognitive knowledge and beliefs significantly impact their academic learning. Additionally, Spence and Liu (2013) identified crucial communication skills necessary for engineers in the Asia-Pacific region to succeed in their workplace.

Ferris and Tagg (1996) surveyed a large group of subject matter teachers at four universities in the US to determine the most crucial academic speaking and listening skills required by students across a range of disciplines, including

engineering majors. The findings highlighted that taking notes, asking questions, and speaking during office hours were the most essential speaking and listening requirements for students in an English-medium university.

Many studies have been conducted to investigate the effectiveness of advanced ESP courses in an academic context in Iran. (e.g., Atai, & Babaii, 2018; Malmir & Bagheri, 2019; Mashhadi Heidar & Abassy Delvand, 2015; Mostafavi & Mohseni, 2021; Zand-Moghadam, Meihami, & Ghiasvand, 2018 & Mostafavi et al., 2021) There appears to be a lack of research on methods of teaching English to engineering students. Moreover, several studies focusing on technical English for engineering students (e.g. Danaye-Tous & Haghghi, 2014; Hatam & Shafiei, 2012) are based on a fragmented view of course evaluation and consequently focus only on specific aspects such as textbooks and language skills, without providing a comprehensive assessment of course design.

A study conducted by Atai and Shoja (2011) found that undergraduate students place the highest priority on the following skills, in order of importance: utilizing the internet for research, comprehending subject-specific texts, writing scientific articles, understanding teacher's slides, possessing general vocabulary knowledge, writing emails, translating texts, having proper pronunciation, and possessing knowledge of grammar. The research further revealed that English textbooks, journal articles, and websites were the primary sources used by professors for subject classes, emphasizing the significance of reading. The study also underlined how important vocabulary is to reaching academic excellence.

The success of a course depends on the students' excitement and good attitude toward the topic. Dornyei and Cheng (2007) advise using successful teaching strategies like appreciating hard effort, boosting confidence, establishing a suitable classroom, assigning interesting assignments and thorough directions, and stressing the importance of the course. It is essential to prioritize these elements to ensure the triumph of a course.

According to Binalet and Guerra's (2014) research, effective teaching practices, teacher knowledge, and methodology significantly impact student learning in English courses at the tertiary level. Language experts have identified that teaching reading strategies and technical terms are crucial to student success. Moreover, Rahimi and Hassani's (2012) findings suggest that students' attitudes are a reliable predictor of their level of engagement and success. In particular,

students' self-efficacy and proficiency level are key factors that influence their opinions, as shown in Martinovic and Poljakovic's (2010) study. Low self-efficacy among ESP teachers in Iran can prevent them from integrating technology, designing challenging curricula, and meeting the needs of their students (Atai & Karrabi, 2015). This issue is particularly significant as it affects teachers' ability to adapt to the specific demands of ESP instruction, building on the importance of student engagement discussed earlier.

Undergraduates in technical fields like architecture and electrical engineering must finish two ESP courses at Iranian institutions. These ESP classes seek to provide students with the language abilities required to satisfy the academic and professional needs of their particular disciplines, not to improve general English competency. Despite passing these courses, many students continue to struggle with their ability to perform tasks in English that are relevant to their disciplines. While there is substantial research on the alignment of ESP courses with learner needs globally, studies specifically evaluating the effectiveness of ESP courses for engineering students in Iran remain limited. A study on the difficulties teachers and students have in teaching and studying ESP at two Iranian institutions is now under progress in order to close this disparity. The ultimate goal is to identify specific obstacles and perspectives held by participants and to gain a comprehensive understanding of the difficulties encountered in teaching and learning ESP in an academic context.

This study focuses on architecture and electrical engineering students because both disciplines require extensive engagement with English-language technical texts and professional communication, despite their distinct specializations. The research presupposes that these fields share common language needs, such as reading comprehension of technical materials and academic writing, which justify their inclusion in a single study. The term "requirements" is used interchangeably with "needs" to denote the specific language competencies demanded by their academic and professional contexts.

The following questions were explored in an attempt to find answers:

1. What are the particular English language needs of Iranian Architectural and Electrical Engineering students at the tertiary level?
2. To what extent have the language skills of tertiary-level Iranian architecture and electrical engineering students improved after completing the EAP course?

3. What are the appropriate content, teaching methodologies, and classroom activities for Iranian tertiary-level students studying architecture and electrical engineering, and how can these components be tailored to address their specific language needs?
4. What are the preferred interactional patterns, content priorities, and activity preferences of students and instructors for designing syllabi for English for Academic Purposes (EAP) courses for Iranian tertiary-level students majoring in architecture and electrical engineering?

Method

Design of the Study

The present study was devised on a qualitative-quantitative survey basis to delve deep into the issues that are faced by ESP students. The study was cross-sectional, collecting data at a single point in time (2023), and descriptive, aiming to describe stakeholder perceptions of EAP needs and course design preferences. To address the research questions developed for the study, the data was collected from instructors, students, and additional stakeholders to provide a broader and more realistic picture of the ESP context. In addition to teachers and students, semi-structured interviews were conducted with three department heads and five engineering graduates working in the field of architectural and electrical engineering to gather diverse perspectives on language needs and course effectiveness. The research focuses especially on English for Academic Purposes (EAP), a branch of ESP, as it applies to the academic language demands of students in higher education, unique from English for Occupational Purposes (EOP) or English for Social, Survival, and Recreational Purposes (ESSRP). Unlike the more general umbrella term ESP, which covers several fields, the word EAP is adopted purposefully to fit the academic background of this study. The interviews were conducted to gain a comprehensive understanding of the EAP courses, with the results being refined and tabulated. The quantitative research involved collecting numerical data that was analyzed primarily through statistical methods, whereas the qualitative research involves collecting non-numerical, open-ended data which requires non-statistical analysis.

Participants

In this study, 133 male and female undergraduate students majoring in architecture and electrical engineering, aged 20 to 25 years and enrolled in bachelor's programs, along with 30 instructors (20 subject-specific in architecture and electrical engineering with master's or Ph.D. degrees, and 10 TEFL-trained English language instructors with master's degrees) participated. The student group consisted of 70 male and 63 female students, with 65 majoring in architecture and 68 in electrical engineering. Additionally, three department heads (two from architecture and one from electrical engineering) and five engineering graduates (three in architecture and two in electrical engineering) working professionally were included to provide broader insights. The participants were selected via purposive sampling to ensure representation of students who completed mandatory EAP courses and instructors with relevant expertise. The sampling procedure involved selecting students who had completed both a general English course and two mandatory EAP courses, ensuring they were in their third to eighth semesters. Subject-specific instructors were chosen based on their expertise in architecture or electrical engineering and their experience teaching discipline-specific content. English language instructors were selected for their TEFL qualifications and experience in EAP instruction. Department heads and graduates were chosen for their administrative and professional perspectives, respectively, with graduates contacted through university alumni networks. The subject-specific instructors were distinct from the English language instructors, as the former teach discipline-specific content (e.g., architectural design, electrical circuits) while the latter focus on language instruction tailored to these disciplines. The total of 30 instructors mentioned in the abstract comprises these two groups. All the students had previously passed a general English course before taking the English for Academic Purposes (EAP) course, which lasted for 16 weeks, with two hours of classes per week. The participants' motivation to engage in the study was assessed through a preliminary survey question asking about their willingness to contribute to improving EAP courses, with over 80% indicating high motivation.

Additionally, 10 male and female students majoring in architecture and electrical engineering at Azad and State Universities of Yazd, Iran, were selected voluntarily and interviewed, along with 10 subject-specific instructors (specializing in architecture or electrical engineering) and 10 English language

instructors (specializing in EAP). These interviews also included three department heads and five engineering graduates to ensure diverse stakeholder input. All participants spoke Persian as their mother tongue and had successfully completed one mandatory English for General Purposes (EGP) course and two mandatory EAP courses as part of their undergraduate curriculum. The study was conducted at Azad and State Universities of Yazd to gather the necessary data.

Instruments

The study relied on two key methods: interviews and needs analysis questionnaires. Semi-structured interviews were developed by the researchers, guided by Hutchinson and Waters' (1987) needs analysis framework and prior studies (e.g., Atai & Shoja, 2011), using an inductive approach to explore stakeholders' perspectives on EAP needs. The questions addressed learning needs (e.g., "What language skills are most critical for academic success?"), challenges (e.g., "What difficulties do students face in EAP courses?"), and course design preferences (e.g., "What content or activities should be included in EAP syllabi?").

At the outset of the research, ten undergraduate students, ten English language instructors, and ten subject-specific instructors were interviewed at Azad and State Universities of Yazd. Additionally, three department heads and five engineering graduates were interviewed to provide administrative and professional perspectives. The questions probed various topics including the learning requirements of students, specific language skills that needed improvement, areas of difficulty experienced by students, and the attitudes of respondents towards language instruction, content, methodology, and duration of the English course. These interviews were conducted once at the study's outset and are the same as those referenced later in the paper.

Other instruments used in this study were three needs analysis questionnaires: an engineering students' questionnaire, an English language instructors' questionnaire, and a subject-specific instructors' questionnaire. The English language instructors' questionnaire mirrored the subject-specific instructors' questionnaire in structure, focusing on EAP-specific language needs, but was tailored to their expertise in language pedagogy rather than discipline-specific content. The reliability of the English language instructors' questionnaire was .938, alongside the students' (.936) and subject-specific instructors' (.941)

questionnaires. The English language instructors were trained in Teaching English as a Foreign Language (TEFL) and specialized in EAP, while the subject-specific instructors were experts in architecture or electrical engineering who also taught EAP courses tailored to their disciplines. The translated version of Mazdayasna and Tahirian, (2008) questionnaires were used to investigate the perception of engineering students and teachers toward the EAP courses. The internal consistency reliabilities of students' and teachers' questionnaires were respectively .936 and .941.

The student questionnaire had two sections. The first section, which consisted of twenty-one items (items 1-21), explored the students' opinions on their expressed needs for English language skills in their academic studies. The second section, consisting of fourteen items (items 22-35), explored the students' opinions on language demands, language needs, attitudes towards language instruction, length of the course, and the content, syllabus, and methodology of the specialized English course.

The first section (items 1-21) required respondents to express their opinions about each statement by marking the options on a six-point Likert scale ranging from 6 (to a very great extent) to 1 (not at all). The first seven items of the second section (items 22-29) also used a Likert scale, while items 29-35 were in multiple-choice format.

The instructors' questionnaire comprised three sections. The first section, items 1-37, explored the instructors' perspectives on the foreign language learning needs of engineering students in using the four macro-English skills and general study skills as related to their academic studies. This applied to both subject-specific and English language instructors, with responses analyzed separately to capture distinct perspectives. In the second section, items 38-42, instructors evaluated the English language proficiency of the students by indicating the extent to which they developed the desired competence and performance after passing the EAP course.

The third section of the questionnaire, items 43-47, used the multiple-choice format to explore the instructors' opinions concerning the students' attitude toward language instruction, the length of the course, the content, syllabus, and methodology used in their EAP course. The English language instructors'

questionnaire followed the same structure but emphasized pedagogical approaches to EAP teaching.

In addition to the questionnaires, semi-structured interviews were conducted with students, English language instructors (TEFL-trained EAP specialists), and subject-specific instructors (architecture and electrical engineering experts teaching EAP) at the universities. Conducting interviews was mostly meant to personally gather information on the viewpoints of the interviewees on the learning needs of students, areas of difficulty that they face, and so investigate the attitude and expectations of the participants on the ESP EAP course. The responses of the respondents on the value of mastery in many spheres of language competency—that of hearing, speaking, reading, and writing—were gathered.

Procedure

The study was conducted in 2023 to gather information about the learning needs and language difficulties of students and teachers in architecture and electrical engineering majors at Azad and State Universities in Yazd, Iran. The researcher distributed questionnaires and conducted in-depth interviews with participants. The sampling procedure involved purposive selection to ensure the participants met specific criteria. The students were selected from third to eighth semesters, having completed one general English course and two EAP courses, with 65 architecture and 68 electrical engineering students chosen to balance discipline representation. The subject-specific instructors (20 total: 10 architecture, 10 electrical engineering) were selected for their expertise in teaching discipline-specific content and EAP courses. The English language instructors (10 total) were chosen for their TEFL qualifications and EAP teaching experience. The department heads (two architecture, one electrical engineering) were selected for their administrative oversight, and five engineering graduates (three architecture, two electrical engineering) were recruited via alumni networks for professional insights. Interviews were conducted by the researchers, trained in qualitative methods, to ensure consistency. The collected data was analyzed using SPSS Statistical Analysis Software (V28) to ensure reliability. The qualitative interview data was analyzed using thematic analysis, following Braun and Clarke's (2006)

guidelines, to identify recurring themes such as discipline-specific content preferences and motivation strategies.

Results

Results for the First Research Question

With an eye on the perceived value of certain language abilities necessary for academic performance, this study examined the English language demands of Iranian architecture and electrical engineering students and their teachers. The term "teachers" refers to both subject-specific instructors (architecture and electrical engineering) and English language instructors, with separate analyses conducted to compare their perspectives. The linguistic abilities judged necessary for students to properly engage in their academic studies and future professional responsibilities, as judged by both teachers and students, are referred to as "needs." Table 1 presents the percentage distribution and mean ranks of instructors' and students' attitudes toward listening skills, highlighting their perceived importance for academic and professional tasks.

Table 1

Percentage Distribution of Instructors' and Students' Attitudes about Listening Skills

Needs	Group	Not at all	A little	To some extent	To moderate extent	To a great extent	To a very great extent	Mean Rank
1. Listening to conversations on general topics.	Instructors	0.0	0.0	16.7	53.3	26.7	3.3	4.17
	Students	2.3	5.3	40.6	40.6	8.3	3.0	3.56
2. Listening to lectures	Instructors	0.0	0.0	30.0	63.3	3.3	3.3	3.80
	Students	0.8	7.5	51.1	34.6	5.3	0.8	3.38

3. Listening to presentations in class	Instructors	0.0	0.0	26.7	53.3	16.7	3.3	3.9
	Students	1.5	7.5	25.6	43.6	21.1	0.8	3.7
4. Listening to English mass Media	Instructors	0.0	0.0	56.7	26.7	16.7	0.0	3.6
	Students	0.0	20.3	48.9	26.3	4.5	0.0	3.1
5. Listening to instructions in real situations	Instructors	0.0	0.0	6.7	33.3	43.3	16.7	3.7
	Students	2.3	22.0	48.5	25.0	2.3	0.0	3.0
6. Listening to students, colleagues, and engineers	Instructors	0.0	3.3	43.3	50.0	0.0	3.3	3.5
	Students	1.5	23.3	57.9	14.3	2.3	0.8	2.9

According to the data presented in Table 1, the average scores of the instructors have been higher than those of the students. It is evident that the instructors believe that the students need more practice in listening to conversations on general topics, while the students prioritize listening to class presentations. Both groups recognize the importance of listening skills, though their priorities differ slightly, with instructors emphasizing broader conversational contexts and students focusing on academic settings. Analyses showed no significant differences between subject-specific and English language instructors' responses ($p > 0.05$), indicating shared views on listening skill needs.

Comparison of Instructors and Students Based on Listening Subskills

Levene's test verified the assumption of equal variances, allowing the t-test to be interpreted. Instructors had a significantly higher mean (3.80) than students (3.30) (Table 2, $p < 0.05$). The assumption of equal variances was confirmed by Levene's test, enabling us to interpret the t-test results. According to Table 2 ($p < 0.05$), instructors had a significantly greater mean score of 3.80 compared to students' mean score of 3.30.

Table 2

Comparison of Instructors and Students' Groups Based on Listening Subskills

Group	Mean	Std. Deviation	Std. Error Mean	F ¹	Sig	t	df	Sig*. (2-tailed)
Instructors	3.80	0.568	0.104	0.001	0.985	4.449	161	0.001
students	3.30	0.547	0.047			4.345	42.011	0.001

* Data are presented as the mean \pm SD. Evaluated by Independent sample t-test and $p < 0.05$ considered a significant level.

Table 3 presents the percentage distribution and mean ranks of instructors' and students' attitudes toward speaking subskills, reflecting their perceived importance for academic and professional contexts.

Table 3

Percentage Distribution of Instructors' and Students' Attitudes about Speaking Subskills

Needs	Group	Not at all	A little	To some extent	To a moderate extent	To a great extent	To a very great extent	Mean Rank
7. Participating in academic discussions	Instructors	0.0	0.0	23.3	73.3	3.3	0.0	3.81
	Students	0.8	10.5	45.1	33.1	6.8	3.8	3.46
8. Speaking at seminars, meetings and presentations	Instructors	0.0	0.0	40.3	56.7	3.3	0.0	3.63
	Students	0.8	18.3	53.4	21.1	5.3	1.5	3.17
9. Asking and answering questions in class	Instructors	0.0	0.0	33.3	56.7	10.3	0.0	3.77

¹ Levene's Test for Equality of Variances

	Students	0.0	15.3	47.4	32.3	5.3	0.0	3.28
10. Asking and answering questions in seminars	Instructors	0.0	3.3	50.3	43.3	3.3	0.0	3.47
	Students	0.0	31.6	48.9	17.3	2.3	0.0	2.90
11. Talking with professionals in real situations	Instructors	0.0	3.3	33.3	53.3	10.3	0.0	3.70
	Students	1.5	37.6	39.1	19.5	1.5	0.0	2.84
12. Talking with lecturers, Students and engineers	Instructors	0.0	33.3	26.7	60.3	6.7	3.3	3.80
	Students	0.0	33.1	50.4	7.5	8.3	0.8	2.93

According to the data presented in Table 3, the instructors received higher ratings compared to the students. However, both parties acknowledge the difficulty in encouraging academic discussions. The instructors place lesser importance on asking and answering questions during seminars, while the students consider conversing with professionals in real-life settings as the least significant requirement. These findings highlight potential areas for improvement to optimize the learning experience for all involved. No significant differences were found between subject-specific and English language instructors' responses ($p > 0.05$), suggesting aligned priorities.

Comparison of Instructors and Students Based on Speaking Subskills

Based on the results of Levene's test indicating unequal variance, it is recommended to use the second line t-test. As illustrated in Table 4, a statistically significant difference ($p < 0.01$) is observed between the instructors and students, with the instructors having a higher mean (3.69) as compared to the students (3.10).

Table 4

Comparison of Instructors and Students' Groups Based on Speaking Subskills

Group	Mean	Std. Deviation	Std. Error Mean	F ²	Sig	t	df	Sig*. (2-tailed)
instructors	3.69	0.358	0.065	9.424	0.003	5.247	161	0.001
Students	3.10	0.600	0.052			7.154	70.941	0.001

* Data are presented as the mean \pm SD. Evaluated by Independent sample t-test and $p < 0.05$ considered as significant level.

Table 5 presents the percentage distribution and mean ranks of the instructors' and students' attitudes toward reading subskills, indicating their perceived importance for academic and professional tasks.

Table 5

Percentage Distribution of Instructors' and Students' Attitudes about Reading Subskills

Needs	Group	Not at all	A little	To some extent	To a moderate extent	To a great extent	To a very great extent	Mean Rank
13. Reading original textbooks	Instructors	0.0	0.0	3.3	13.3	50.0	33.3	5.13
	Students	0.8	8.3	34.6	33.1	21.8	1.5	3.71
14. Reading articles in professional journals	Instructors	0.0	0.0	3.3	6.7	33.3	56.7	5.43
	Students	0.0	18.3	33.8	24.8	18.8	4.5	3.58

² Levene's Test for Equality of Variances

15.	Reading technical reports	Instructors	0.0	0.0	0.0	10.0	43.3	46.7	5.37
		Students	0.0	10.5	33.1	34.6	18.8	3.0	3.71
16.	Reading English newspapers and magazines	Instructors	0.0	0.0	6.7	6.7	50.0	36.7	5.17
		Students	1.5	24.1	32.3	24.1	15.3	3.0	3.36
17.	Reading texts on the Internet	Instructors	0.0	0.0	0.0	13.3	50.0	36.7	5.23
		Students	2.3	21.1	31.6	21.1	18.8	5.3	3.49

Based on the results of the research, professional journal articles were deemed significant by the instructors whereas the students gave priority to original textbooks and technical reports. In contrast, the instructors considered reading original textbooks the least important while the students did not place much value on reading English newspapers and magazines. These results underscore the significance of comprehending the distinct outlooks and preferences of the instructors and students, regarding their reading requirements. No significant differences were observed between subject-specific and English language instructors' responses ($p > 0.05$), indicating consensus on reading priorities.

Comparison of Instructors and Students Based on Reading Subskills

Levene's test indicates unequal variances, so we use the t-test for unequal variances. Table 6, shows a significant difference ($p<0.01$) between instructors and students, with instructors' mean (5.27) being higher than students' (3.57).

Table 6

Comparison of Instructors and Students' Groups Based on Reading Subskills

Group	Mean	Std. Deviation	Std. Error Mean	F ³	Sig	T	df	Sig*. (2-tailed)
Instructors	5.27	0.557	0.102	7.770	0.006	10.18	161	0.001
Students	3.57	0.872	0.076			13.39	65.59	0.001

* Data are presented as the mean \pm SD. Evaluated by Independent sample t-test and $p < 0.05$ considered as significant level.

Table 7 presents the percentage distribution and mean ranks of the instructors' and students' attitudes toward writing subskills, reflecting their perceived importance for academic and professional tasks.

Table 7

Percentage Distribution of Instructors' and Students' Attitudes about Writing Subskills

	Needs	Group	Not at all	A little	To some extent	To moderate extent	To a great extent	To a very great extent	Mean	Rank
21. Taking lecture notes	Instructors	0.0	0.0	16.7	70.0	10.0	3.3	4.00		
		Students	0.8	5.3	48.9	30.8	11.3	3.0	3.56	
22. Taking notes from Textbooks	Instructors	0.0	0.0	23.3	60.0	13.0	3.3	3.97		
		Students	0.8	18.0	53.4	20.3	6.8	0.8	3.17	
23. Writing a paper for oral presentation	Instructors	0.0	3.3	23.3	60.0	13.0	0.0	3.83		
		Students	0.8	33.8	39.8	21.1	4.5	0.0	2.95	

³ Levene's Test for Equality of Variances

24. Writing term papers	Instructors	0.0	3.3	33.3	30.0	33.3	0.0	3.93
	Students	1.5	36.8	27.8	24.1	9.0	0.8	3.05

Table 7 data shows higher scores for the instructors than students. However, both groups recognize the importance of taking comprehensive lecture notes for academic success. This emphasizes its value as a learning strategy, regardless of one's role in education. No significant differences were found between subject-specific and English language instructors' responses ($p > 0.05$), suggesting aligned views.

Comparison of Instructors and Students Based on Writing Subskills

The independent sample t-test requires verifying the assumption of equal variances using Levene's test. As the assumption holds, the t-test is interpretable. The results in Table 8, indicate a significant difference ($p < 0.05$) between instructors and students. Instructors had a higher mean (4.49) compared to students (1.82) (Table 11).

Table 8

Comparison of Instructors and Students' Groups Based on Writing Subskills

Group	Mea n	Std. Deviati on	Std. Error Mean	F ⁴	Sig	t	Df	Sig*. (2- tailed)
Instruct ors	4.49	0.454	0.083	0.201	0.654	32.21	161	0.001
Students	1.82	0.400	0.035			29.73	39.78	0.001

* Data are presented as the mean \pm SD. Evaluated by Independent sample t-test and $p < 0.05$ considered as significant level.

While the second study question gauges the degree to which the students' competency in these subskills has increased following the EAP course, the first research question centers on the perceived value of language skills and their subskills for academic and professional objectives. This difference guarantees that

⁴ Levene's Test for Equality of Variances

the research looks at the real results of EAP education as well as the supposed needs.

Results for the Second Research Question

After finishing the English for Academic Purposes (EAP) course, the second study question sought to find how much the language abilities of tertiary-level Iranian students specializing in architecture and electrical engineering had developed. The findings of the questionnaire that instructors answered to evaluate the supposed increase in the language competency of the engineering students in Iran were examined and shown in Table 4.2.1, therefore offering information on the success of the EAP course in this regard.

Table 9

Instructors' Views about Engineering Students' Skill Improvement after Passing the EAP Course

	Not at all	A little	To some extent	To moderate extent	a	To great extent	a	To very great extent	a	Mean Rank
38. I judge the engineering students' listening ability has been improved	0.0	0.0	0.0	30.0		66.7		3.3		3.73
39. I judge the engineering students' speaking ability has been improved	0.0	0.0	0.0	43.3		50.0		6.7		3.63
40. I judge the engineering students' writing ability has been improved	0.0	0.0	0.0	26.7		66.7		6.7		3.80
41. I judge the engineering students' reading ability has been improved	0.0	0.0	13.3	20.0		13.3		53.3		5.07
42. I judge the engineering students' communicative competence has been improved	0.0	0.0	16.7	30.0		50.0		3.3		4.40

The data in Table 9 shows that the instructors rated the students' language skills and communicative competence as having improved above the average threshold (mean rank > 3). Reading ability showed the most significant improvement, with

a mean rank of 5.07, and 53.3% of instructors indicating improvement “to a very great extent.” Communicative competence also improved notably (mean rank of 4.40), followed by writing ability (mean rank of 3.80) and listening ability (mean rank of 3.73). Speaking ability had the lowest perceived improvement (mean rank of 3.63), with 43.3% of instructors rating it as improved “to a moderate extent.” These findings suggest that the EAP course was most effective in enhancing reading skills, likely due to its focus on technical texts, while speaking skills showed the least improvement, indicating a potential area for further development in the curriculum. Subject-specific and English language instructors showed no significant differences in their ratings ($p > 0.05$), indicating agreement on skill improvement levels.

Results for the Third Research Question

The third research question aimed to identify the appropriate content, teaching methodologies, and classroom activities for English for Academic Purposes (EAP) courses tailored to the specific language needs of Iranian tertiary-level students majoring in architecture and electrical engineering. To address this, feedback was collected from the students and instructors through questionnaires and semi-structured interviews at Azad and State Universities of Yazd, Iran. This study combined architecture and electrical engineering students because both disciplines share core EAP needs, such as comprehending technical texts, writing academic reports, and using discipline-specific vocabulary, as supported by prior research (Atai & Shoja, 2011) and preliminary interview findings indicating common requirements like analyzing journal articles and producing technical documentation. Table 10 presents the students’ satisfaction with various aspects of their EAP courses, providing insights into their preferences for course components.

Table 10

Students' Satisfaction with EAP Course Components

	Not at all	A little	To some extent	To moderate extent	a To great extent	a To a very great extent	a To a great extent	Mean Rank
22. I feel satisfied with the number of students in the class	0.8	21.8	33.1	31.6	10.5	2.3	3.36	
23. I feel satisfied with the topics included in the textbook	0.8	17.3	51.9	24.1	6.0	0.0	3.17	
24. I am satisfied with the teaching method used in the class	4.5	19.5	41.4	33.1	1.5	0.0	3.08	
25. I feel satisfied with the teacher's evaluation method	3.0	21.1	50.4	21.8	3.0	0.8	3.03	
26. I feel satisfied with the current textbook	4.5	22.6	51.9	19.5	1.5	0.0	2.91	
27. I feel satisfied with the amount of foreign culture taught in my class	3.8	24.8	57.9	12.8	0.8	0.0	2.82	
28. I feel satisfied with the content of the textbook	8.3	24.1	57.9	8.3	1.5	0.0	2.71	

With mean scores between 2.71 and 3.36, Table 10 shows modest student satisfaction with EAP course elements. With a mean rank of 3.36, the number of students in the class had the highest satisfaction; this suggests that smaller class numbers help to enable engaging classroom activities such peer evaluations and group discussions, which are vital for developing language abilities. Though satisfaction with foreign cultural integration (mean rank of 2.82) and textbook content (mean rank of 2.71) was lower, suggesting that these components might not sufficiently fulfill the students' discipline-specific language demands, suggesting a need for more interesting and relevant approaches, teaching methodology (mean rank of 3.08) and evaluation techniques (mean rank of 3.03) both got moderate scores. The students wanted course materials including real-world literature, architectural blueprints or electrical engineering reports, and approaches included task-based activities like writing technical summaries or presenting project ideas, according to interviews. For instance, whereas electrical engineering students focused on circuit analysis vocabulary, the architecture students stressed the requirement of vocabulary connected to design criteria. The absence of class observations, which would have given more thorough understanding of teaching techniques, marks a research limitation since the questionnaire items were only partially addressing content, methodology, and activities. Table 11 presents the instructors' recommendations for EAP course content, methodologies, and classroom activities, highlighting priorities for tailoring courses to the students' needs.

Table 11

Instructors' Recommendations for EAP Course Content, Methodologies, and Classroom Activities

	Not at all	A little	To some extent	To moderate extent	a great extent	To a very great extent	To a great extent	Mean Rank
30. Learning common core vocabulary	0.0	0.0	50.0	50.0	0.0	0.0	3.50	

31. Learning semi-technical Conversation	0.0	0.0	30.0	63.3	6.7	0.0	3.77
32. Learning Technical Conversation	0.0	0.0	50.0	43.3	6.7	0.0	3.57
33. Learning new engineering technologies	0.0	0.0	20.0	63.3	16.7	0.0	3.98
34. Learning new words in sentences, synonyms, and paraphrases	0.0	0.0	30.0	63.3	6.7	0.0	3.77
35. Learning technical reading skills of skimming and scanning	0.0	0.0	10.0	83.3	6.7	0.0	3.97
36. Practicing how to use engineering vocabulary in real settings	0.0	0.0	33.3	60.0	0.0	6.7	3.80
37. Attending 'Grammar Workshop where common difficulties of students can be explained	0.0	0.0	40.0	50.0	10.0	0.0	3.70

Instructors rated all items above average (mean ranks 3.50–3.98), indicating their importance. Content-related items, such as including new engineering technologies (mean rank of 3.98) and common core vocabulary (mean rank of 3.50), suggest the need for discipline-specific topics like emerging architectural materials or electrical circuit innovations. Methodology recommendations include teaching vocabulary through sentences, synonyms, and paraphrases (mean rank of 3.77) and using grammar workshops (mean rank of 3.70) to address linguistic challenges. Classroom activities, such as technical reading exercises for skimming and scanning (mean rank of 3.97), semi-technical/technical conversation tasks (mean ranks of 3.77 and 3.57), and practicing vocabulary in real settings (mean rank of 3.80), were highly valued for fostering practical skills. Interviews complemented these findings, emphasizing authentic texts (e.g., SAMT textbooks, journal articles) and teamwork-based activities like group-based report writing to

tailor content to students' needs. For instance, architecture students benefit from texts on design specifications, while electrical engineering students require terminology for circuit analysis. Subject-specific and English language instructors showed no significant differences in their recommendations ($p > 0.05$), indicating shared priorities for course design.

Results for the Forth Research Question

The fourth research question aimed to identify the preferred interactional patterns, content priorities, and activity preferences of students and instructors for designing syllabi for English for Academic Purposes (EAP) courses for Iranian tertiary-level students majoring in architecture and electrical engineering. Data were collected through questionnaires and semi-structured interviews at Azad and State Universities of Yazd, Iran. In this study both architecture and electrical engineering students participated since both disciplines share core EAP needs, such as reading technical texts, writing academic reports, and mastering discipline-specific vocabulary, as supported by prior research (Atai & Shoja, 2011) and preliminary interview findings indicated common requirements like analyzing journal articles and producing technical documentation. Discipline-specific needs, such as architectural design terminology or electrical circuit analysis terms, were addressed through tailored content suggestions. Table 12 presents the preferred interactional patterns for EAP courses, highlighting differences between students and instructors.

Table 12

Preferred Interactional Patterns for EAP Courses

	individually	in pairs	in small groups
Instructors	0.0	76.7	23.3
Students	18.8	39.1	42.1

Table 12 highlights interactional patterns as a key syllabus design factor. Although students preferred small groups (42.1%) over pairs (39.1%) or solitary work (18.8%), instructors preferred partnered work (76.7%) thinking it promotes participation. This disparity implies that EAP syllabi should give small group activities—such as group projects or cooperative discussions—priority so as to match student preferences and improve interactive learning. Table 10 shows moderate student satisfaction with current EAP course components (mean ranks 2.71–3.36), indicating preferences for improvement. Higher satisfaction with class size (mean rank of 3.36) suggests a preference for smaller classes that support interactive activities, while lower satisfaction with textbook content (mean rank of 2.71) and foreign culture inclusion (mean rank of 2.82) indicates a preference for discipline-specific materials. Instructors' priorities, presented in Table 11 (items 30–37), include content elements like new engineering technologies (mean rank of 3.98) and common core vocabulary (mean rank of 3.50), and activities such as technical reading exercises for skimming and scanning (mean rank of 3.97), semi-technical/technical conversation tasks (mean ranks of 3.77 and 3.57), and practicing vocabulary in real settings (mean rank of 3.80). Interview data (section 4.5) further emphasized selecting authentic texts, such as SAMT textbooks or journal articles, to develop reading and vocabulary skills, and incorporating teamwork-based activities, like group-based report writing, and practical tasks, such as summarizing technical texts, to bridge academic and professional contexts. To tailor syllabi to discipline-specific needs, instructors recommended architectural texts focus on spatial design terminology and electrical engineering texts on circuit analysis terms. These findings suggest that EAP syllabi should integrate small group interactional patterns, authentic and discipline-specific content, and practical, collaborative activities to reflect stakeholder preferences. The narrow focus of Table 12 on interactional patterns and the limited scope of questionnaire items directly addressing syllabus design restrict the comprehensiveness of these findings.

Qualitative Insights from Semi-Structured Interviews

To augment the questionnaire results and offer more in-depth understanding of curriculum design choices for EAP courses, the researcher carried semi-structured interviews. The participants included ten undergraduate students from third through eighth semesters, ten subject-specific instructors (five architecture, five

electrical engineering), ten English language instructors, three department heads (two architecture, one electrical engineering), and five engineering graduates (three architecture, two electrical engineering) from Azad and State Universities of Yazd, Iran. This method caught different knowledge pertinent to curriculum design. Because of the qualitative character of the data, Table 13 highlights the common points of view from these interviews representing majority opinions rather than total agreement.

Table 13
Verbal Data of the Semi-Structured Interviews

Items	Instructors' Perspectives	Students' Perspectives
The reason for learning English	To write a thesis and academic papers, students need to read studies by non-Iranian researchers.	Most engineering studies and published books are in English.
Which skills are most important for graduate studies and future career	Reading comprehension is essential for academic studies. Listening and speaking are required for future careers.	All four skills (reading, writing, listening, speaking) are vital for academic studies and future careers.
The learning style	Teach English through carefully selected technical texts and teamwork-based activities.	Learn English by reading academic papers and analyzing their content.
The students lack after passing the course	Significant deficiencies remain in all language skills (reading, writing, listening, speaking).	Deficiencies in listening, speaking, writing, reading proficiency, and translation skills.
The way to increase motivation in the ESP course	Link course content to academic success in graduate studies and financial success in future careers.	Connect learning to academic success in graduate studies and financial

		opportunities in future careers.
The factors and exercises to consider in the design of the ESP textbook	Select texts from reliable sources (e.g., SAMT textbooks, journal articles) and include practical tasks like summarizing texts and report writing, as well as reading comprehension exercises.	Include discipline-specific technical texts and practical tasks like summarizing and analyzing academic papers.
The sources for the ESP textbook	Textbooks published by SAMT, recognized for their comprehensive and authoritative content.	[No specific student perspective provided on sources.]

These results help qualitatively support the fourth study question by pointing out preferences for material and activities for EAP syllabus design. Particularly for accessing non-Iranian research, the instructors underlined reading comprehension as the main necessity for academic achievement, in line with their preference for real materials such as SAMT textbooks and journal publications. Still, the students reported a desire for all four language abilities, which reflected their larger goals for academic and professional success. In syllabus design, the teachers' perceived needs—such as reading comprehension—take front stage above students' wishes since they more closely mirror the academic target environment. Syllabi should thus give technical books top priority in order to improve reading abilities, catered to architecture language (e.g., spatial design) and electrical engineering vocabulary (e.g., circuit analysis). To increase involvement and application, the teachers suggested practical assignments such summarizing journal articles and group discussions and cooperative report writing as well as teamwork-based exercises. These fit the students' inclination for reading scholarly publications. Both groups emphasized tying course materials to academic accomplishment (e.g., thesis writing) and job chances (e.g., professional communication), proposing syllabi contain pertinent, career-oriented objectives, so increasing motivation within the ESP course. Teachers approved of SAMT textbooks as a main source as they were dependable and consistent with engineering disciplines. These results suggest that EAP syllabi should combine real, discipline-specific books, team-based, pragmatic exercises, and motivating components connected to academic

and professional aspirations. The qualitative character of the data and the absence of particular student participation on textbook sources restrict the depth of these revelations. To confirm these conclusions, more study with quantitative data on syllabus preferences is required.

Discussion

The present study, conducted at Azad and State Universities of Yazd, Iran, investigated the English for Academic Purposes (EAP) learning needs of undergraduate students majoring in architecture and electrical engineering, alongside the perspectives of their English as a Foreign Language (EFL) and subject-specific instructors, guided by theoretical frameworks of needs analysis and ESP. Both EFL (English language instructors) and subject-specific instructors (architecture and electrical engineering) provided distinct yet complementary insights, with EFL instructors emphasizing pedagogical approaches and subject-specific instructors focusing on discipline-relevant content. Drawing on Hutchinson and Waters' (1987) distinction between target and learning needs, and Dudley-Evans and St John's (1998) ESP principles, the study addressed the fourth research question, identifying preferred interactional patterns, content priorities, and activity preferences for EAP syllabus design. Data from questionnaires (sections 4.3 and 4.4) and semi-structured interviews (section 4.5) highlight the importance of tailoring EAP courses to meet discipline-specific needs while addressing shared academic requirements across architecture and electrical engineering.

The findings indicate that students and instructors prioritized discipline-specific content and interactive activities to support short-term academic goals, defined as achieving proficiency in reading technical texts and writing academic reports, and long-term career goals, such as effective professional communication in English. These findings align with needs analysis theory, emphasizing the importance of aligning course content with learners' target situations (Hyland, 2006). Table 10 revealed moderate student satisfaction with EAP course components (mean ranks 2.71–3.36), with higher satisfaction for class size (mean rank of 3.36) suggesting a preference for smaller classes that enable interactive activities like group discussions. This supports Dornyei and Cheng's (2007) emphasis on conducive learning environments for student engagement. Lower

satisfaction with textbook content (mean rank of 2.71) and foreign culture inclusion (mean rank of 2.82) underscored a need for more relevant, discipline-specific materials. This echoes Hyland's (2006) argument for context-specific ESP materials over generic content. While teachers liked paired work (76.7%), students selected small group activities (42.1%) over paired work (39.1%) or solitary work (18.8%), Table 12 indicated. This disparity implies that in order to match student interests and increase involvement, EAP curricula should stress small group assignments including group talks or cooperative projects. This finding aligns with Binalet and Guerra's (2014) advocacy for collaborative learning in ESP contexts.

Instructors' priorities, as presented in Table 11 (items 30–37), included content elements like new engineering technologies (mean rank of 3.98) and common core vocabulary (mean rank of 3.50), and activities such as technical reading exercises for skimming and scanning (mean rank of 3.97), semi-technical/technical conversation tasks (mean ranks of 3.77 and 3.57), and practicing vocabulary in real settings (mean rank of 3.80). These findings were supported by interview data, which identified reading comprehension as the primary academic need for accessing non-Iranian research, essential for thesis writing and academic reports. Emphasizing reading comprehension, instructors reflect Dudley-Evans and St John's (1998) difference between needs—essential for academic tasks—and wants—desired abilities like speaking—priorities in syllabus design. While students stated a desire for mastery in all four language abilities (reading, writing, listening, speaking) to support both academic and vocational objectives, instructors pointed out that future professions, like professional communication, depend critically on listening and speaking skills. In syllabus design, instructors' perceived needs for reading comprehension were prioritized, as they align with the academic target situation of analyzing journal articles and producing technical documentation. Both groups recommended authentic texts, such as SAMT textbooks and journal articles, tailored to architectural terminology (e.g., spatial design) and electrical engineering terminology (e.g., circuit analysis). SAMT textbooks, endorsed by instructors for their comprehensive and authoritative content, were used as a primary resource for both disciplines, with discipline-specific selections (e.g., design briefs for architecture, technical papers for electrical engineering) to address unique needs.

The study emphasized the value of teamwork-based activities, such as group-based report writing, and practical tasks, like summarizing technical texts, to bridge academic and professional contexts. Motivation in EAP courses was linked to academic success (e.g., mastering thesis writing) and career opportunities (e.g., professional communication), suggesting syllabi incorporate relevant, career-oriented tasks. The inclusion of EFL instructors and subject-specific instructors (architecture, electrical engineering, and general engineering, totaling 30 in two groups: 20 subject-specific, 10 EFL), along with three department heads and five engineering graduates, provided diverse perspectives on syllabus design, combining language pedagogy with content expertise. This approach supported the study's focus on architecture and electrical engineering, which share core EAP needs (e.g., reading technical texts) but require tailored content to address discipline-specific demands, as highlighted by the reviewer's emphasis on unique ESP needs.

The study's contribution lies in its mixed-methods approach, addressing a gap in Iranian ESP research by providing actionable insights for EAP syllabus design at Azad and State Universities of Yazd. Several limitations must be acknowledged. The narrow focus of Table 12 on interactional patterns and the limited scope of questionnaire items directly addressing syllabus design restricted the comprehensiveness of the findings. The absence of class observations limited insights into syllabus implementation, and the lack of data on cross-university course variations prevented conclusions about course consistency beyond Azad and State Universities of Yazd. The study did not explore technology's role in EAP learning, such as the use of digital resources or online platforms, limiting its relevance to modern pedagogical trends (Atai & Karrabi, 2015). The study captured distinctions in satisfaction between EFL and subject-specific instructors, with EFL instructors noting challenges in adapting generic materials to discipline-specific needs, though these differences were not statistically significant ($p > 0.05$). While interviews suggested students desired proficiency before specialized courses, this was not quantitatively explored, warranting further research.

This study underscores the critical role of discipline-specific needs analysis in ESP, as architecture and electrical engineering students require tailored syllabi to meet unique language demands, aligning with Atai and Shoja's (2011) findings on discipline-specific vocabulary needs. The findings contribute to EAP course

design at Azad and State Universities of Yazd by identifying stakeholder preferences for interactional patterns, content, and activities. The absence of a standardized needs assessment for ESP courses in Iranian engineering education highlights a systemic gap, necessitating further research to develop uniform, needs-based curricula. Future research should incorporate targeted questionnaires, class observations, and explorations of technology's role (e.g., digital tools for vocabulary practice) to enhance EAP effectiveness. Collaboration between EFL and subject-specific instructors, as well as consultation with content departments, could enhance syllabus relevance and alignment with disciplinary needs.

Conflict of interest: None

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Appendix A

Subject-Specific Instructors' Questionnaire

Dear Participants, the following questionnaire is part of a research project that investigates the needs of Architectural and Electrical Engineering students taking English as a required course. The first section of the questionnaire is designed to explore the opinions of the subject-specific instructors about the expressed language needs of engineering students in using the four macro-English skills for their academic studies.

Please tick () the relevant choice for each question

Listening skills

The engineering students need English for:	Not at all	A little	To some extent	To moderate extent	a	To great extent	a	To very great extent	a
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1. listening to conversations on general topics.

2. listening to lectures

3. listening to presentations in class

4. listening to English mass Media

5. listening to instructions in real situations

6. listening to students,
colleagues and engineers

Speaking skills

The engineering students need English for:	Not at all	A little	To some extent	To moderate extent	To a great extent	To a very great extent	To a great extent
--	------------	----------	----------------	--------------------	-------------------	------------------------	-------------------

7. participating in
academic
discussions

8. speaking at seminars,
meetings and
presentations

9. asking and answering
questions in class

10. asking and
answering
questions in seminars

11. talking with
professionals
in real situations

12. talking with
lecturers,
Students and engineers

Reading skills

The engineering students need English for:	Not at all	A little	To some extent	To moderate extent	To a great extent	To a very great extent	To a great extent
--	------------	----------	----------------	--------------------	-------------------	------------------------	-------------------

13. reading original
textbooks

14. reading articles in
professional journals

15. reading technical
reports

16. reading English
newspapers and
magazines

17. reading texts on the
Internet

18. reading laboratory
reports

19. reading instructions for
engineering new
technologies

20. reading the information
to progress the project and
interpret data

Writing skills

The engineering students need English for: Not at all A little To some extent To moderate extent a To a great extent To a very great extent

21. taking lecture
notes

22. taking notes
from
Textbooks

23. writing a paper
for oral
presentation

24. writing term
papers

25. writing articles
for
journals

26. writing
technical reports

27. writing case
reports

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28. writing
proposals and
reports

29. writing
instructions to
engineers

General study skills

The engineering students need English for:	Not at all	A little	To some extent	To moderate extent	To a great extent	To a very great extent	To a great extent
--	---------------	----------	-------------------	--------------------------	----------------------------	------------------------------------	----------------------------

30. learning common core
vocabulary

31. learning semi-technical
Conversation

32. learning technical
Conversation

33. learning new
engineering
technologies

34. learning new words in
sentences, synonyms, and
paraphrases

35. learning technical
reading skills of skimming
and scanning

36. practicing how to use
engineering vocabulary in
real settings

37. attending 'Grammar
Workshop
where common
difficulties of students can
be explained

The second section aims to explore the special-subject instructors' views in terms of what the engineering students lack after passing the specialized English course. 'Lacks are reflected in subject-specific instructors' assessment of their students' language skills on the scale as described below. Please tick () the relevant choice for each question.

	Not at all	A little	To some extent	To a moderate extent	To a great extent	To a very great extent
38. I judge the engineering students' listening ability has been improved						
39. I judge the engineering students' speaking ability has been improved						
40. I judge the engineering students' writing ability has been improved						
41. I judge the engineering students' reading ability has been improved						
42. I judge the engineering students' communicative competence has been improved						

The third section aims to explore the opinions of the subject-specific instructors, concerning the engineering students' language demands, language needs, attitudes towards language instruction, length of the course as well as the content, syllabus, methodology of the specialized English course. Please tick () the relevant choice for each question

43. The Architectural and Electrical engineering students prefer to work and study -----

(a) individually
 (b) in pairs
 (c) in small groups

44. The specialized English course should be offered in the -----

- (a) 2nd semester
- (b) 3rd semester
- (c) 4th semester
- (d) 3rd year
- (e) 4th year

45. How long should specialized English courses be offered to students of engineering?

- (a) one semester
- (b) two semesters
- (c) throughout the four years of their studies.

46. English should be taught by -----

- (a) English teachers
- (b) Subject-specific instructors
- (c) Both English language teachers and subject-specific instructors

47. What do you expect English teachers who teach you English to know?

- (a) general vocabulary and expressions
- (b) specialized engineering vocabulary
- (c) both general vocabulary and expressions as well as specialized engineering vocabulary

Appendix B

Architectural and Electrical Engineering Students' Questionnaire

Dear Participants,

The following questionnaire is part of a research project that investigates the needs of Engineering students taking English as a required course.

Background Information

1. Name and family name: (optional) -----

2. Age ----- years

Please tick () the relevant choice for each question

3. Sex: (a) male (b) female

4. Department in the Engineering University

(a) Electrical (b) Architectural

5. Have you passed the General English course?

(a) Yes (b) No

6. Have you enrolled for specialized English course?

(a) Yes (b) No

The first section of the questionnaire aims to explore the opinions of the Engineering students on them

expressed needs in using the four macro-English skills for their studies. Please tick () the relevant choice for each question.

Listening skills

As an engineering student, I need English for:	Not at all	A little	To some extent	To a moderate extent	To a great extent	To a very great extent
--	------------	----------	----------------	----------------------	-------------------	------------------------

1. listening to conversations on general topics.
2. listening to lectures
3. listening to presentations in class
4. listening to English mass Media
5. listening to instructions in real situations
6. listening to students, colleagues and workers

Speaking skills

As an engineering student, I need English for:	Not at all	A little	To some extent	To a moderate extent	To a great extent	To a very great extent
--	------------	----------	----------------	----------------------	-------------------	------------------------

7. participating in academic Discussions
8. speaking at seminars, meetings and presentations
9. asking and answering questions in class
10. asking and answering questions in seminars
11. talking with professionals in real situations
12. talking with lecturers, students

Reading skills

As an engineering student, I need to develop my reading skills for:	Not at all	A little	To some extent	To moderate extent	a great extent	To a great extent	To a very great extent
---	------------	----------	----------------	--------------------	----------------	-------------------	------------------------

13. reading engineering textbooks

14. reading articles in professional journals

15. reading engineering reports

16. reading English newspapers and magazines

17. reading texts on the Internet

Writing skills

As an engineering student, I need to develop my writing skills for:	Not at all	A little	To some extent	To moderate extent	a great extent	To a great extent	To a very great extent
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18. taking lecture notes

19. taking notes from textbooks

20. writing a paper for oral Presentation

21. writing term papers

The second section aims to explore the opinions of Engineering students concerning their language demands, language needs, attitudes towards language instruction, length of the course as well as the content, syllabus, and methodology of the specialized English course. Please tick () the relevant choice for each question.

Not at all	A little	To some extent	To moderate extent	a great Extent	To a great extent	To a very great extent
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22. I feel satisfied with the number of students in my class

23. I feel satisfied with the topics included in the textbook

24. I feel satisfied with the methodology utilized in my class

25. I feel satisfied with my teacher's evaluation method

26. I feel satisfied with the present textbook

27. I feel satisfied with the amount of foreign culture taught in my class

28. I feel satisfied with the content of the textbook

Please tick () the relevant choice for each question

29. I prefer to work and study -----

(a) individually (b) in pairs (c) in small groups

30. The specialized English course should be offered in the -----

(a) 2nd semester (b) 3rd semester (c) 4th semester (d) 3rd year (e) 4th year

31. How long should specialized English courses be offered to students of Architectural and Electrical Engineer?

(a) one semester (b) two semesters (c) throughout the four years of their studies.

32. How often do you like to study the specialized English course?

(a) once a week (3 hours)
(b) twice a week (1.5 hours)
(c) three times a week (1 hour)

33. I prefer to be taught by -----

(a) Native English instructors
(b) Iranian English instructors
(c) Subject specialist instructors

34. I prefer to master my English -----

(a) before starting my specialized subject courses
(b) at the same time that I am taking my specialized subject courses
(c) after completing my specialized subject courses

35. It is important for me to learn my subject lessons -----

(a) through Persian books and sources
(b) through English books and sources
(c) through Persian and English sources

Biodata

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