Investigating the Needs of English for Academic Purposes (EAP) Learners

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Abstract

Compulsory English preparatory programs (EPPs) in which undergraduate students receive English language education aim to provide their students with not only general English proficiency but also the academic competence required for their departmental courses taught in English. Conducting needs analysis (NA) is regarded as the crucial first step in identifying learners' needs and designing a needs-driven course. This NA aimed at unveiling the English language needs of undergraduate engineering students in the EAP courses. By adopting a convergent parallel mixed methods research design, the data were collected by means of quantitative and qualitative data collection tools. 256 undergraduate engineering students participated in the questionnaire which gathered information on the importance levels of academic skills for the EAP learners. Eight focus group interviews with 41 undergraduate engineering students and semi-structured interviews with three EAP instructors were conducted to understand the necessities, lacks and wants of EAP learners regarding their EAP courses. The quantitative data were analysed by descriptive analysis using SPSS, whereas the qualitative data were analysed via thematic analysis. The questionnaire findings showed that academic speaking skills were considered to be the most important for the participants. The qualitative data supported those findings with a need for academic vocabulary knowledge. Within the light of the findings, it has been suggested that EAP-related content should be added into the curriculum of EPP to make it compatible with EAP courses in the engineering faculty. The participants also emphasized the need for collaboration between the preparatory school and the faculty.

Keywords: English for Academic Purposes (EAP), English preparatory programs, needs analysis

İngilizce Hazırlık Programlarındaki Öğrencilerin Akademik Amaçlı Dil İhtiyaçlarına Yönelik Bir İhtiyaç Analizi

Özet

Lisans öğrencilerinin İngilizce dil eğitimi aldığı İngilizce Zorunlu Hazırlık Programları öğrencilere yalnızca Genel İngilizce'de yeterlilik kazandırmakla kalmaz, aynı zamanda eğitim dili İngilizce olan bölümlerdeki derslerde gerekli olan akademik yeterliliği de kazandırır. İhtiyaç analizi öğrencilerin ihtiyaçlarını belirlemek ve ihtiyaç temelli bir ders tasarlamak için gerekli ilk adım olarak görülmektedir. Bu ihtiyaç analizi, mühendislik fakültesi lisans öğrencilerinin Akademik Amaçlı İngilizce (AAİ) derslerindeki İngilizce dili ihtiyaçlarını ortaya çıkarmayı hedeflemektedir. Çalışmanın nicel ve nitel verileri yakınsayan paralel karma araştırma deseni kullanılarak toplanılmıştır. AAİ öğrenenlere göre akademik becerilerin önem seviyeleri hakkında bilgi toplayan ankete mühendislik fakültesinden 256 lisans öğrencisi katılmıştır. AAİ öğrenenlerin bölümlerindeki AAİ derslerine yönelik ihtiyaçları, eksiklikleri ve ihtiyaçlarını anlamak için 41 mühendislik fakültesi lisans öğrencisi

ile sekiz odak grup görüşmesi ve AAİ dersleri veren üç İngilizce öğretim görevlisi ile yarı-yapılandırılmış görüşmeler düzenlenmiştir. Nicel veriler SPSS kullanılarak betimleyici analiz ile analiz edilirken, nitel veriler tematik analiz vasıtasıyla analiz edilmiştir. Anket sonuçları katılımcılar için en önemli İngilizce akademik becerinin konuşma becerisi olduğunu göstermiştir. Nitel veriler de akademik kelime bilgisi öğrenmeye olan ihtiyaç ile bu bulguları desteklemektedir. Bu bulguların ışığında, mühendislik fakültesindeki AAİ dersleriyle uyumlu hale getirebilmek için İngilizce Hazırlık Eğitimi Programına AAİ ile alakalı içerik eklenmesi gerektiği önerilmiştir. Katılımcılar da İngilizce hazırlık okulu ile fakülte arasında işbirliği ihtiyacını vurgulamışlardır.

Anahtar Sözcükler: Akademik amaçlı İngilizce, İngilizce hazırlık eğitimi programları, ihtiyaç analizi

1. Introduction

The evolving communicative role of English language in international contexts has also caused its cultivation in the field of higher education. It has shifted towards a fundamental tool in accessing the academic and vocational knowledge. Starting with Middle East Technical University (METU) in 1956 (METU, n.d.), Turkish higher education institutions have been offering undergraduate programs where English is partially or fully the medium of instruction (EMI). Undergraduate students enrolled in EMI programs have to complete one-year compulsory English language preparatory program (EPP) before starting their majors. Most of the compulsory EPPs provide English for General Purposes (EGP) courses for students to be competent in four main language skills (reading, listening, writing and speaking). When the preparatory school students transfer to their departments, they are also expected to have background knowledge on academic English which is regarded as a prerequisite for their departmental English for Academic Purposes (EAP), English for Specific Purposes (ESP) or EMI courses. However, EPPs seem to fall behind providing that required academic ground with their highly EGP oriented course contents (Coşkun, 2013; Gerede, 2005; Karataş & Fer, 2009; Kırkgöz, 2009; Özkanal & Hakan, 2010; Şahan et al., 2016; Tunç, 2009). To this end, determining the learners' target and learning needs has a crucial importance in adjusting the learning environment according to those needs. In this particular context, this needs analysis (NA) primarily aimed to investigate the EAP needs of undergraduate engineering students. A further aim was to examine the contribution level of EPP to the departmental EAP courses.

The ultimate aim of the EPPs is to make learners gain language skills they need in their academic and vocational lives. However, their being efficient in meeting the EAP needs of learners has been a matter of debate for long (Özkanal & Hakan, 2010) and much uncertainty still exists about the extent to which EPP contributes to departmental EAP courses caused by the scarcity of research in this specific subject. This indicates the incompatibility between EPPs and EAP courses stressing the significant gap in understanding the lacks of students' academic skills (Şahan et al., 2016). This NA aimed to add significant contributions to the existing literature by investigating the academic language needs of undergraduates of engineering faculty from their and their departmental EAP course instructors' perspectives.

2. Literature Review

The primary aim of EAP, as a sub-branch of ESP (Carver, 1983; Lee, 2003) is to respond to the particular linguistic and academic needs of students enrolled in various academic programs at universities. While the emphasis of ESP is more discipline-specific, EAP instruction typically focuses on the basic academic register or a collection of linguistic skills applicable to several disciplines (Basturkmen, 2019). Flowerdew and Peacock (2001) define EAP as the teaching of English with the particular purpose of assisting learners in studying, researching or teaching in that language. This teaching approach gets beyond teaching general English language skills and focuses on more specific academic language skills such as note taking, referencing, giving presentations, and so on (Jordan, 1997). Based on the studies conducted to assess EAP learners' needs, Flowerdew (2013) underscored that analyzing the needs in academic contexts were apt to be conducted adopting a skills-based approach on macro-level.

2.1. EPPs in Türkiye and EAP

In Türkiye, most of the EPPs offer EGP courses and do not include any EAP content in their curricula (Gerede, 2005; Özkanal & Hakan, 2010). Students who transfer to their departments after an EPP are also

assumed to have academic English proficiency to succeed in the department (Şahan et al., 2016). In this essence, it is of significant concern to identify and meet EAP needs of learners properly. However, compulsory EPPs seem to fall short in fulfilling these needs caused by lack of EAP related materials, and course content in their curricula (Abdioğlu et al., 2022; Akbulut, 2016; Doruk, 2016; Karataş & Fer, 2009). EGP focused courses lead to incompatibility with EAP content and thus do not contribute much to the development of academic skills which are required in departmental EAP courses (Şahan et al., 2016). According to Hyland's (1997) study conducted with undergraduate students from eight different majors, undergraduate students realized the importance of EAP courses after apprehending that their proficiency level in English determined their academic success in EMI contexts.

Şahan et al. (2016) examined undergraduate engineering students, EFL instructors, engineering faculty members, engineers and employers to reveal whether EPPs in Türkiye addressed academic and language needs of engineering students The findings of their NA emphasized the urgency of designing or reconsidering the curricula of EPPs in Türkiye in a way catering EAP and vocational needs as well as EGP needs of the students to render the EPPs more comprehensible and targeted. Similarly, the results of Özkanal and Hakan's (2010) study yielded a need for an ESP course in the EPP. Participants reported the absence of such a course as a deficiency of the program. As can be seen, delivering EAP courses in EPPs will better serve to learners' academic needs facilitating academic learning (Gerede, 2005) and thus eliminate the incompatibility of EPPs with the departmental EAP courses (Cheng, 2016; Gaffas, 2019, as cited in Abdioğlu et al., 2022).

2.2. EAP and NA

Conducting NA is regarded as the starting point for designing EAP /ESP instruction (Benesch, 1996). Utilizing NA as the basis of EAP /ESP instruction determines the aspects of students' target English contexts, and it offers lecturers certain ways to teach their students the specific language which is essential for success in their courses and future professions (Johns, 1991). Several scholars of EAP curriculum development prioritized the role of NA in EAP course design process which is formed and propelled by analysing and assessing what students need (Dudley Evans & St. John, 1998; Flowerdew & Peacock, 2001; Hutchinson & Waters, 1987; Jordan, 1997; Nation & Macalister,2010; Richards, 2007). In Alkhalidi's study (2021) regarding the role of NA in an EAP course design, teacher participants believed that addressing learners' needs in the course design process was the key for efficient, focused and responsive courses.

There have been several approaches to conduct NA (Dudley-Evans & St. John, 1998; Hutchinson & Waters, 1987; Jordan, 1997; McDonough, 1984; Munby, 1978; Robinson, 1991; West, 1994). Hutchinson and Waters (1987) advocated a learning centred approach in which they made the distinction between learning needs and target needs. Their model put learners' needs into the centre in designing a course. Target needs are concerned with learners' needs in the target contexts, whereas learning needs are related to learners' needs in the learning contexts (Hutchinson & Waters, 1987). If target needs are like "the starting and the destination of a journey" (Huang, 2024, p.2); learning needs are like "the route of the journey" (Hutchinson & Waters, 1987, p.60). Hutchinson and Waters (1987) further classified target needs into three as necessities, lacks and wants. For the target situation, necessities are what learners need to learn to be regarded as successful; lacks indicate learners' knowledge gaps between the existing and targeted situation, and wants include learners' subjective wishes about what to learn (Hutchinson & Waters, 1987). Considering what learners need to learn plays a pivotal role in NA (Nation & Macalister, 2010), thus making it significant to analyse what students need, lack and want in a detailed way while designing EAP courses properly. Seedhouse (1995) remarked the articulation between processes of designing, implementing, and evaluating a course by focusing on the determining role of NA.

There have been several NAs investigating the academic language needs of EAP learners in EMI contexts (Abdioğlu et al., 2022; Çetinavcı & Topkaya, 2012; Doruk, 2016; Ergünay & Uysal, 2020; Gerede, 2005; Kırkgöz, 2005; Özkanal & Hakan, 2010; Şahan et al., 2016). Surveying the content teachers about their expectations from undergraduates starting various EMI departments after an EPP for the required academic English skills, İnan et al. (2012) found that the participants regarded receptive academic skills as more important. In light of their NA, some enhancements were done in preparatory school's course materials to cover the revealed needs. Undergraduate engineering students in Alhadiah's study (2021) highlighted the difficulties they experienced in academic reading, listening and writing activities due to lack of technical vocabulary or improper use of academic vocabulary. Lack of confidence hindered them from giving

presentations and they reported understanding their instructors' explanations of complicated ideas in English during the courses as highly difficult (Alhadiah, 2021). Likewise, engineering students in Gözüyeşil's study (2014) remarked their academic listening needs to understand the lectures, their peers' questions during the lectures and oral presentations; academic reading primarily for research purposes and for understanding the main idea; and academic speaking to interpret the tables or graphs orally, to ask and answer questions during the lectures, and to give oral presentations. The results of the large-scale study of Evans and Green (2007) revealed that the undergraduates in various EMI programs of Hong Kong universities mainly had problems in style, grammar and cohesion in academic writing; and grammar, fluency and pronunciation were challenging areas in academic speaking. Another large-scale study conducted with Taiwanese graduate EAP learners and their professors unveiled that the students had difficulties in comprehending complex sentences in academic reading and writing skills (Huang, 2024). Investigating the EAP needs of computer science undergraduates to design an EAP course for them, Irshad and Anwar (2018) found out that the participants mostly used academic speaking, listening, reading and writing skills respectively. Moreover, the faculty members in their study stated that the EAP learners mostly had deficiencies in using grammar and technical vocabulary accurately in academic speaking and writing activities (Irshad & Anwar, 2018). To overcome such challenges, the ME and engineering management undergraduates who participated in the study of Tasić and Stamenković (2024) emphasized the significance of students' active participation in EAP courses which become more engaging with their interactive nature.

3. Method

3.1. Research Design

The present study utilized a convergent parallel mixed-methods research design to investigate the academic language needs of EAP learners. The benefit of this approach is enabling researchers to collect qualitative and quantitative data simultaneously, but analyze them independently with the aim of merging or comparing two data sets for any convergences or divergences (Creswell, 2014). A questionnaire, developed by Canbay (2006), provided the quantitative data, whereas focus group interviews (see Appendix A) with undergraduate engineering students, and semi-structured interviews (see Appendix B) with the EAP instructors comprised the qualitative data.

For NA, Hutchinson and Waters' (1987) framework, which is a highly recognized one with its comprehensive and practical structure making it a fundamental model in ESP/EAP contexts (Basturkmen, 2019; Dudley-Evans & St. John, 1998; Nunan, 1988), was employed. The rationale was that their framework presented a comprehensible way to approach the learning and target needs of undergraduate engineering students in the context of this study. Furthermore, their framework provided a flexible and systematic design to deal with the sub component of needs—necessities, lacks and wants—in a detailed way.

3.2. Participants and Setting

Undergraduate engineering students normally consist of the exempt students who are regarded as succesful in the exemption test in the EPP and the students who cannot succeed in that exam and take one year compulsory EPP education before they can be able to start their studies in the department. In the present study, the second group of students were the participants. Purposive sampling was opted for collecting both qualitative and quantitative data from the student participants who were undergraduate engineering students from the departments of Electrical-Electronic Engineering (EEE) and Mechanical Engineering (ME). Criteria for selecting the student participants in focus group interviews were as follows: they had to be from EMI departments where EAP courses were offered, and they should have completed a one-year compulsory EPP. 256 undergraduate engineering students participated in the questionnaire (see Table 1). Eight sessions of focus group interviews with 41 undergraduate engineering students were held. Each focus group consisted of 4-6 participants from all grades of EEE and ME departments. In their EAP courses in the engineering departments, as far as the student and instructor participants declared, there was not a clear syllabus specificed for those courses. Thus, the educational activities in the EAP courses did not follow a specific syllabus in the department.

On the other hand, convenience sampling was preferred to collect data from the EAP instructors (N = 3) teaching EAP courses in the departments of EEE and ME via semi-structured interviews. Only one EAP instructor had relatively less teaching experience (4 months) compared to the one with 8 years and the other

with 20 years of teaching experience. All of them, as English language instructors, had no prior training on teaching EAP courses.

Table 1
Distribution of questionnaire participants

Year in the faculty	Department	
	ME	EEE
Freshman	37	14
Sophomore	93	6
Junior	30	15
Senior	46	15
Total (*N* = 256)	206	50

3.3. Data Collection

3.3.1. Semi-structured individual and focus group interviews

By means of using semi-structured interviews, especially in social sciences, the researcher can focus on the ideas, perceptions, and experiences of the participants (Bryman, 2016). In this study, semi-structured individual and focus group interviews were conducted with EAP instructors and students to reveal their perceptions about EAP learners' needs. Both individual and focus group interviews were piloted before conducting the main interviews to increase the validity and reliability of the data collection process and to make the necessary refinements in the interview questions.

3.3.2. Questionnaire

As the means of quantitative data collection tool, the adapted version of the questionnaire of Canbay (2006), with his consent taken, was utilized to learn the linguistic and academic needs of student participants. The tool consisted of five-point Likert-type questions, in which 1 meant not important and 5 very important, to assess the importance level of specific tasks / activities regarding four academic language skills. The piloting of the questionnaire had been conducted with undergraduate engineering students (*N* =31). Students voluntarily participated in the questionnaire which was computerised on Google Forms to make the data collection process more feasible and time-saving.

3.4. Data Analysis

In order to increase the reliability and validity, both quantitative and qualititative data collection tools were piloted before being used in the main NA. Four experts in the field of ELT revised the tools in terms of their appropriateness. 31 undergradute engineering students participated in the piloting of the questionnaire. The reliability coefficient of the questionnaire was calculated as $\alpha = 0.97$, indicating its high reliability. On the other hand, the piloting phase for the qualitative data collection tools was held with an EAP instructor and a focus group consisting of four undergraduate engineering students before using the tools for the main NA.

Data analysis aimed to identify the underlying patterns in the collected data. Quantitative data was processed using SPSS (Version 27.0.1) program for statistical analysis. Consisting of 57 ordinal variables, the analysis of the questionnaire entailed non-parametric methods, since this type of data provides an ordering relation but does not meet the assumption of the equal intervals between categories (Norman, 2010). To provide more accurate results, descriptive analysis such as frequency and percentage were preferred to summarize quantitative data. The reliability coefficient of the questionnaire demonstrated that the tool was highly reliable (Cronbach's $\alpha = 0.98$).

On the other hand, adopting the framework of Braun and Clarke (2006), researchers utilized thematic analysis to identify key themes revealed in the qualitative data. Clarke and Braun (2017) define thematic analysis as a method for identifying, analysing and reporting of meaning patterns, in other words themes, in qualitative data. While analysing the qualitative data, using MAXQDA (Version 24.6.0) software assisted the coding process. Based on NA framework of Hutchinson and Waters (1987), the main themes were identified as "learning needs" and "target needs". Categories and codes were constructed accordingly. To this end, the coding procedure followed a deductive coding approach. In order to keep participants

anonymous, researchers coded participants' names in the transcription process such as 1ME2, which meant the participant who took turn in the second place in the focus group of 1st year ME students or 3EAPI, which meant the third EAP instructor interviewee.

4. Findings

4.1. Quantitative Data Analysis

The frequencies (*f*) and percentages (*%*) of student participants' ratings of four main language skills according to their importance level were presented in Table 2 (see Table 2). The ratings of the responses of *fairly important* and *very important* were added together while reporting the questionnaire findings. A high majority of participants (*f* = 179; 70.5*%*) regarded speaking as the most important skill in their EAP courses. Academic listening skills (*f* = 149; 58.6 *%*), academic reading skills (*f* = 130; 51.1 *%*), and academic writing skills (*f* = 128; 50.6 *%*) followed that respectively.

Table 2
Importance ratings across four language skills

Skill (*N* = 57)	Not Important		Not Important	Very	Important		Fairly Important		Very Important	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Reading (*n* = 17)	3	1.2	11	4.3	110	43.3	57	22.4	73	28.7
Writing (*n* = 21)	2	0.8	19	7.5	104	41.1	56	22.1	72	28.5
Listening (*n* = 6)	3	1.2	11	4.3	91	35.8	58	22.8	91	35.8
Speaking (*n* = 13)	3	1.2	10	3.9	62	24.4	36	14.2	143	56.3

Table 3 displays the importance ratings of the speaking tasks (see Table 3). 59.9 % of the participants indicated that *speaking in informal daily life situations* was fairly and very important (*f* = 152). The second most important speaking task for 57.6% of the participants (*f* = 145) was s*peaking to foreigners about their subject* and 51.4% of them signified *conveying the message while speaking* (*f* = 130) as fairly and very important. However, the tasks to which participants most frequently responded as not important were *grammatical accuracy while speaking* (*f* = 9; 3.6%) and *pronunciation / accent in speaking* (*f* = 9; 3.5%).

Table 3
Importance ratings of speaking tasks

Task (*n* =13)	Not Important		Not Important	Very	Important		Fairly Important		Very Important	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
S1 Participating in classroom discussions	3	1.2	30	11.8	126	49.6	53	20.9	42	16.5
S2 Asking and answering questions in class	7	2.8	17	6.7	110	43.3	64	25.2	56	22
S3 Making presentations/presenting oral reports	6	2.4	23	9.1	109	42.9	58	22.8	58	22.8
S4 Speaking in the seminars	2	0.8	29	11.5	98	38.7	56	22.1	68	26.9
S5 Speaking in informal daily life situations	8	3.1	18	7.1	76	29.9	65	25.6	87	34.3
S6 Speaking to foreigners about their subject	5	2	11	4.4	91	36.1	73	29	72	28.6
S7 Using non-academic vocabulary while speaking	7	2.8	26	10.2	103	40.6	66	26	52	20.5
S8 Using academic vocabulary while speaking	8	3.1	30	11.8	101	39.8	64	25.2	51	20.1

S9 Grammatical accuracy while speaking	9	3.6	40	15.8	117	46.2	54	21.3	33	13
S10 Pronunciation/accent in speaking	9	3.5	36	14.2	114	44.9	61	24	34	13.4
S11 Fluency/accuracy in speaking	6	2.4	13	5.1	109	42.9	68	26.8	58	22.8
S12 Intelligibility /comprehensibility while speaking	3	1.2	19	7.5	110	43.5	69	27.3	52	20.6
S13 Conveying the message while speaking	4	1.6	14	5.5	105	41.5	72	28.5	58	22.9

Table 4 demonstrates the importance ratings of listening tasks (see Table 4). 59.1% of the participants reported *understanding daily life conversations* as *fairly* and *very important* (*f* = 149) and 58% of them (*f* = 145) stated *understanding materials in English (e.g. video programs)* to be the second most important one. On the other hand, 2% rated *understanding foreigners studying the same discipline* as *not important* (*f* = 5) and 7.2% as *not very important* (*f* = 18) (see Table 5). This task turned out to be less important compared to other tasks for the participants.

Table 4
Importance ratings of listening tasks

	Not Important		Not Very Important		Important		Fairly Important		Very Important	
Task (*n* = 6)	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
L1 Understanding words/expressions in lectures	6	2.4	9	3.6	98	38.7	66	26.1	74	29.2
L2 Understanding instructions in lectures	4	1.6	15	6	98	39.2	70	28	63	25.2
L3 Understanding daily life conversations	5	2	16	6.3	82	32.5	64	25.4	85	33.7
L4 Understanding seminars/presentations	6	2.4	12	4.8	99	39.3	67	26.6	68	27
L5 Understanding materials (e.g., video programs)	3	1.2	10	4	92	36.8	72	28.8	73	29.2
L6 Understanding foreigners in the same discipline	5	2	18	7.2	90	35.9	69	27.5	69	27.5

Table 5 elaborates participants' labelling the importance levels of the academic reading tasks (see Table 5). The data analysis unveiled that 63.2% of participants stated that *reading for main idea* was fairly / very important (*f*= 152). Similarly, *reading on the Internet* also interested the participants with a rate of 58.4 % considering it as fairly and very important (*f* = 145). *Reading for specific information* was opted for being fairly and very important by 57 % of the participants (*f* = 142). On the other hand, participants regarded *reading articles from weekly magazines / periodicals / journals* as less fairly and very important (*f* = 101; 40.4 %) compared to other tasks.

Table 5
Importance ratings of reading tasks

	Not Important		Not Very Important		Important		Fairly Important		Very Important	
Task (*n* = 17)	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
R1 Reading lecture handouts	5	2.0	16	6.4	120	48.0	53	21.2	56	22.4
R2 Reading text books	4	1.6	25	10.1	97	39.1	64	25.8	58	23.4
R3 Reading on the Internet (e.g. emails, web sites)	5	2.0	18	7.3	80	32.3	74	29.8	71	28.6

R4 Reading articles from magazines or journals	8	3.2	22	8.8	119	47.6	50	20.0	51	20.4
R5 Reading instruction manuals	8	3.2	25	10.0	95	38.2	62	24.9	59	23.7
R6 Reading reports	6	2.4	11	4.4	107	43.0	50	20.1	75	30.1
R7 Interpreting graphs, charts, and tables	4	1.6	21	8.5	99	40.2	45	18.3	77	31.3
R8 Reading reference books (e.g. encyclopaedias)	4	1.6	24	9.6	93	37.2	60	24.0	69	27.6
R9 Reading for specific information	5	2.0	15	6.0	87	34.9	74	29.7	68	27.3
R10 Reading for general information	4	1.6	19	7.6	97	38.8	62	24.8	68	27.2
R11 Reading for main idea	4	1.6	9	3.6	82	33.2	73	29.6	79	32.0
R12 Drawing conclusions while reading	4	1.6	19	7.7	92	37.4	73	29.7	58	23.6
R13 Understanding logical relations within a text	4	1.6	10	4.0	101	40.7	68	27.4	65	26.2
R14 Understanding the writer's attitude or viewpoint	7	2.8	19	7.7	107	43.1	60	24.2	55	22.2
R15 Scanning for unknown words while reading	5	2.0	11	4.4	110	44.4	65	26.2	57	23.0
R16 Recognizing terminology while reading	6	2.4	19	7.7	108	43.5	60	24.2	55	22.2
R17 Making inferences while reading	8	3.2	9	3.6	103	41.7	72	29.1	55	22.3

Lastly, as Table 6 shows, the participants' importance ratings of the academic writing tasks were analysed. 63.2 % of the participants evaluated *writing business letters / personal letter / CV* as fairly and very important (*f* = 155). For 56 % of participants *use of academic vocabulary in writing* was fairly and very important (*f* = 139). Notwithstanding this, 44.2 % of the participants reported *appropriate use of non-academic vocabulary* as the least fairly and very important writing task (*f* = 111) among others. Likewise, the participants did not prioritize *writing critiques of an article* as a fairly / very important writing task (*f* = 112; 44.4 %).

Table 6

Importance ratings of writing tasks

	Not Important		Not Important	Very	Important		Fairly Important		Very Important	
Task (*n* = 21)	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
W1 Writing essays	7	2.8	18	7.2	94	37.8	68	27.3	62	24.9
W2 Answering short-answer questions in exams	8	3.2	24	9.6	90	36.1	67	26.9	60	24.1
W3 Preparing presentations	9	3.6	12	4.9	94	38.1	73	29.6	59	23.9
W4 Writing research papers	6	2.4	15	6.0	92	37.1	63	25.4	72	29.0

W5 Taking notes in the class	12	4.8	26	10.4	100	40.2	61	24.5	50	20.1
W6 Writing summaries/abstracts	7	2.8	20	8.1	92	37.1	77	31.0	52	21.0
W7 Writing projects	8	3.2	13	5.2	89	35.7	60	24.1	79	31.7
W8 Writing descriptions of experiments	6	2.4	14	5.6	94	37.9	69	27.8	65	26.2
W9 Writing critiques of an article	7	2.8	24	9.7	107	43.1	54	21.8	56	22.6
W10 Writing lab reports	10	4.0	20	8.1	87	35.2	63	25.5	67	27.1
W11 Writing business letters/personal letters/CV	5	2.0	11	4.5	74	30.2	53	21.6	102	41.6
W12 Good expression of the main idea in writing	3	1.2	15	6.1	92	37.4	66	26.8	70	28.5
W13 Grammatical accuracy in writing	6	2.4	13	5.2	96	38.7	66	26.6	67	27.0
W14 Relevance of ideas to the context in writing	3	1.2	14	5.6	111	44.8	58	23.4	62	25.0
W15 Appropriate connections between ideas in writing	4	1.6	10	4.0	110	44.4	63	25.4	61	24.6
W16 Sequence of ideas in writing	5	2.0	14	5.7	104	42.1	70	28.3	54	21.9
W17 Adequate development of ideas in writing	5	2.0	11	4.5	102	41.3	67	27.1	62	25.1
W18 Originality of thoughts in writing	6	2.4	18	7.3	99	40.1	66	26.7	58	23.5
W19 Appropriate use of non-academic vocabulary	3	1.2	25	10.1	110	44.5	57	23.1	52	21.1
W20 Use of academic vocabulary in writing	7	2.8	14	5.6	88	35.5	67	27.0	72	29.0
W21 Mechanics (spelling, punctuation, format, etc.)	6	2.4	18	7.3	99	39.9	56	22.6	69	27.8

4.2. Qualitative Data Analysis

The thematic analysis employed deductive coding in alignment with the concept of needs in Hutchinson and Waters' (1987) NA framework. Thus, the concepts of "needs", "lacks" and "wants" helped to determine the themes considering target and learning needs of the learners. MAXQDA qualitative data analysis program assisted the analysis procedure. Moreover, direct quotes from the participants' responses were extracted to support the thematic analysis. Five themes emerged after thematic analysis specified by merging the results of semi-structured individual and focus group interviews. Categories and codes were systematically determined under each theme:

- Background knowledge on EAP
- Contribution of EPP to departmental EAP courses
- Challenges in departmental EAP courses
- Enhancement suggestions for departmental EAP courses
- Preparatory school EAP course suggestions

4.2.1. Background knowledge on EAP

Thematic analysis identified that a high majority of the focus group interviewees (*f* = 39; 95.12*%)* had no prior knowledge, experience or training on EAP before the departmental EAP courses, while only few of them claimed that they had a limited background knowledge on EAP (*f* = 2; 5.88*%*).

4.2.2. Contribution level of EPP to departmental EAP courses

The focus groups rated the contribution level of EPP to their EAP courses that they have taken in the faculty. They evaluated the contribution level on a scale of 1 to 5; in which 1 meant *minimal*, 2 *limited*, 3 *moderate*, 4 *significant* and 5 *outstanding* contributions. More than half of the interviewees rated the contribution level as *moderate* (*f* = 22). Some of them stated that it was *significant* (*f* = 10), and two of them indicated that the EPP made an *outstanding* (*f* = 2) contribution to the EAP courses in the faculty. Only one participant regarded the contribution as *minimal* (*f* = 1), and the rest considered that it had a *limited* (*f* = 5) contribution to EAP courses.

As the student participants noted, the EPP fell behind contributing to subjects like academic vocabulary knowledge despite developing EGP skills. One of the participants stated: "I'd say the prep program was helpful in giving a foundation for English, but it didn't directly contribute to academic English skills" (3ME6). Another one reported: "It was more helpful for general skills than for specific academic needs" (4ME5). Another statement was also parallel to these: "…but it didn't help with technical terms or academic tasks like writing reports or understanding complex reading materials. It helped build a base, but it wasn't tailored for the needs we have in the departmental courses" (3ME3).

Supporting this finding, the focus groups delivered their opinions about the availability of EAP related content in the EPP. Only three interviewees responded that they had *very little* EAP related content in their preparatory courses, which remained limited with a few instructors' bringing extra materials on academic reading and speaking. One of the interviewees stated: "One of our instructors did some academic speaking activities, but it was instructor-based, not the general curriculum" (1EEE6). Overall, the majority indicated that they had *no* EAP related content in their preparatory courses (*f* = 33). The focus group interviewees considered EPP to be the most insufficient in providing *academic vocabulary* (*f* = 10) and *academic speaking* (*f* = 7) in the course content. *Academic writing*, *listening*, *reading* and *grammar* were regarded as the other *insufficient areas* to provide EAP content.

EAP instructors stressed upon the variability in students' English proficiency levels after completing EPP. They underlined the points which students lack in terms of basic language skills, especially in grammar, and pointed out that they had to devote a considerable amount of the teaching time to grammar topics in EAP courses. Thematic analysis also revealed that a remarkable majority of the undergraduate engineering students were below the expected English proficiency level despite completing a one-year compulsory EPP. This led to restraints about students' active participation in EAP courses. Thus, EAP instructors mostly evaluated the overall contribution of the EPP to EAP courses as *positive but limited*.

According to the views of EAP instructors, EPP turned out to be non-compatible with EAP courses in ME and EEE. They acknowledged that the EPP could not precipitate for EAP courses, though they also pointed out that the challenges that students had in EAP courses did not stem from the EPP and that it was totally independent of it. On this issue, one of the participants stated: "I don't think that any of the challenges or difficulties they have now stem from the prep education" (2EAPI).

4.2.3. Challenges in EAP Courses

The thematic analysis yielded that undergraduate engineering students experienced certain difficulties in their EAP courses. Each language skill was classified as a separate code under the category of *departmental EAP course gaps*. The students articulated that they had difficulties in *academic speaking skills* the most. Among these difficulties were *lack of academic vocabulary knowledge* (*f* = 11), *sentence structuring* (*f* = 7), *lack of self-confidence* (*f* = 6) and *inaccurate pronunciation* (*f* = 1). The next code emerged as *academic reading* with which the interviewees faced difficulties the most. They conveyed that they had difficulties in *academic vocabulary knowledge* (*f* = 10), *comprehension* (*f* = 5) and the *complexity of field-specific texts*

(*f* = 2). The interviewees also reported challenges with *academic writing skills*; stating difficulties in *vocabulary knowledge* (*f* = 7) and *sentence structuring* (*f* = 2) related to it. They identified *limited practice opportunities in writing* as another gap in their EAP courses. For *academic listening skills*, the interviewees outlined *difficulties in understanding what they hear* stemming from *lack of academic vocabulary knowledge* (*f* = 9). Lastly, the interviewees associated *lacks of grammar knowledge* with various skills and noted the difficulties in *sentence structuring* as the most common (*f* = 7).

Concerning another challenge of EAP courses, the interviewees claimed that the departmental EAP courses fell behind *preparing them for their future careers*. They stated that the content of EAP courses was *not useful for workplace requirements*. In this regard, one of them expressed: "… there is a disconnection between what we are learning now and what will be needed in professional life" (1EEE4).

In evaluating the challenges that their students experienced in EAP courses, the EAP instructors determined that their students had the most difficulty in *academic writing*, *speaking* and *listening skills*, respectively. The challenges stemming from *grammar knowledge* and *listening skills* tended to be less compelling compared to those.

4.2.4. Enhancement suggestions for departmental EAP courses

Selecting materials for their EAP courses, two of the EAP instructors declared that they did not contact with other stakeholders, and they were the only decision-makers themselves in the process. On the other hand, one of them noted the *collaboration with students* during this process as follow:

> 2EAPI: During the process, I am trying not to be the only decision maker about the course content as I think that I should better act as a guide to the students who already know what they lack and need to be enhanced much better than me. I ask them to collaborate with me during the process and make a needs analysis together and act accordingly.

The students also indicated their views on what they wanted to learn in their departmental EAP courses. Those involved issues about *teaching and learning activities* and *cooperation with the preparatory school*. Some of the interviewees pointed out that they wanted *comprehensive, tailored and relevant materials* for their EAP courses. They also acknowledged their demands on inclusion of more *writing activities and student participation* in the EAP courses. Thematic analysis yielded that undergraduate engineering students needed *assignments*, *business* /*academic English skills* in their EAP courses.

According to the revealed codes, the most needed academic English skill was *speaking* (*f* = 32). The interviewees suggested *debates*, *presentations*, *speaking clubs* to be included in EAP course content as *academic speaking activities*. The need to learn *academic vocabulary* (*f* = 23) followed academic speaking. The other content suggestions to be added into EAP courses were *the inclusion of more academic writing activities* (*f* =16), *dealing with academic articles,* and *reading field-specific texts, listening to academic content* and *having more grammar*. The interviewees argued that they needed to learn how to *prepare job application forms, learn more academic vocabulary in Business/Academic English*. They stated that it would be better to have *field-specific content* in EAP courses. Thus, they touched upon their desire to increase their *academic vocabulary* and having EAP specific materials such as *course books*. The students declared that they desired to develop their *academic speaking skills* via *presentations,* and *conversations with native speakers*; *writing skills* via *academic articles; reading skills* via *academic texts*/*articles; listening skills*, and *grammar*.

4.2.5. Preparatory School EAP Course Suggestions

The EAP instructors (1EAPI, 2EAPI, 3EAPI) claimed that there was a need for a *separate EAP course in the EPP*. They also highlighted the importance of *building a basis for departmental EAP courses in preparatory school* by structuring that course to that effect. In that respect, they suggested including *field-specific topics, academic vocabulary, intensive grammar instruction* (2EAPI), and *academic English skills* into the course content. 1EAPI presented her suggestions such as *teaching how to search for scientific articles on Google Scholar, how to read an abstract or other parts of an article and how to give references in composing academic writings* under the scope of inclusion and teaching academic English in the EPP. 2EAPI asserted the need for following *a skill-based curriculum* in that EAP course, "Following a more skill-based path may help students become more qualified". In parallel to her, 3EAPI noted "improving their writing and speaking skills to an expressive level" would be helpful. The instructor participants

addressed the importance of integrating academic skills such as *the presentation techniques, discussions, essay writing and note-taking* into EAP course content in the EPP.

Supporting the EAP instructors' opinions, the results of the thematic analysis for focus group interviews emphasized the need for a *separate EAP course in the preparatory school* (*f* = 17). 3ME3 claimed: "There should be more resources directed towards academic English, especially for *writing* and *academic vocabulary*. If we had a course focused on technical terms during the preparatory phase, it would help a lot". Another one stressed that need: "I think there should be a course dedicated to academic English, where all skills (reading, writing, speaking, listening) are developed in an academic context. It would make more sense than just focusing on general English" (3ME4).

The interviewees also made some suggestions on what to include in that separate EAP course. Their suggestions constituted the codes under the category of *content suggestions*. Those codes were related to the *assessment* and *evaluation*—which included *having more exams* in the evaluation process and a *process-based assessment*—, *EAP related course materials, a clear syllabus, activities to be covered in the class*—which included *grammar, academic vocabulary* and all *academic English skills*. For academic reading, they stated that *field specific resources* would be useful; for academic speaking, they proposed that learning to do *presentations* and *group discussions* would make a great difference. One of the students stated: "Presentation skills are lacking. We weren't given much training on how to present academically, so I think having more structured lessons on academic presentations would be useful" (3ME5).

5. Discussion and Conclusion

This NA primarily addressed the academic language needs of EAP learners from their own and EAP course instructors' perspectives. As the questionnaire findings demonstrated, academic speaking skills were regarded as the most important one for undergraduate engineering students. The results of the NA which Irshad and Anwar (2018) conducted were very similar to this study, since the participants in their study stated the mostly employed academic skills as speaking followed by listening, reading and writing, respectively. Supporting the quantitative data, thematic analysis also revealed the mostly stated academic need of the participants as academic speaking skill. The participants also underscored that lack of academic/technical vocabulary knowledge and difficulties they had in academic speaking affected their self-confidence and academic performance adversely. The findings matched up with the studies of Abdioğlu et al. (2022) and Doruk (2016) by confirming the importance of field-specific and academic vocabulary (Abdioğlu et al., 2022) in comprehending the subject matter and participating in class discussions (Doruk, 2016). Likewise, the importance of active involvement of students in EAP classes was stressed by the undergraduate participants in Tasic and Stamekovic'(2024) study. This asserted that developing speaking skills was critical for students' both academic and vocational success in a discipline like engineering where international communication plays a vital role.

Student participants of this study specified their needs for academic presentation and communication skills which needed to be covered in the curriculum of the EPP, which was in line with Şahan et al.'s (2016) study. Their study also came up with the need of revising the curriculum of the EPP to include the basics of ESP content. Different from the current study, undergraduate students in their study prioritized all academic skills. Abdioğlu et al. (2022) found out that undergraduate EEE students in their study attributed higher importance to academic reading, listening and research skills compared to productive skills. However, lecturer participants regarded all the skills as significant, which was a similar finding with the current study. The reason for this may be that lecturers have a more holistic view on their students' needs and lacks due to their teaching experience whereas students may prioritize their felt needs upon confrontation with challenges.

According to the thematic analysis of this NA, speaking in academic contexts like presentations and group discussions, lack of academic / technical vocabulary regarding all academic language skills, incompetencies in writing academic texts, difficulties in sentence structuring were among the most challenging areas for students in their EAP courses. Huang's (2024) study had similar results to this study in which participants reported challenges in comprehending academic reading and producing academic wiriting due to complex sentence structures. Similarly, grammar, cohesion, and fluency were some of the problematic areas in academic speaking and writing skills of the participants who were the undergraduates enrolled in EMI programs in Evans and Green's (2007) study. For EAP instructor participants of the present study, grammatical knowledge of their students was also regarded as unsatisfactory to function effectively in the

courses. Likewise, Evans and Green (2007) also indicated that grammatical resources as well as lack of vocabulary were also deemed to be inadequate in producing academic assignments. Irshad and Anwar (2018) also emphazied the importance of students' knowledge of grammar and technical/academic vocabulary for completing academic speaking and writing tasks in their study findings.

The findings of the present study on the students' challenging areas and their needs regarding EAP courses elucidates the significance of having tailored content which serve directly to their academic needs. Flowerdew (2013) emphasized that discipline specific EAP content influences student motivation and learning outcomes positively. Stating that a separate EAP course should be added to EPP, both EAP instructors and undergraduate engineering students participating in this study rooted for this. If students are exposed to content that serves their needs in their own fields instead of an only EGP-centred education in EPP, this will directly affect their success rates in EAP courses in their departments. Such a course may prepare undergraduates enrolled in EMI departments better for their departmental courses taught in English. From another perspective, not being exposed to any EAP content before the faculty may explain the difficulties and incompatibility of students in departmental EAP courses.

A further finding of this study was that EPP had limited contribution to the departmental EAP courses and undergraduate engineering students experienced certain difficulties in EAP courses, which negatively impacted their performance. Likewise, there have been several studies in the literature concerning the necessity of focusing on EAP in EPPs (Çetinavcı & Topkaya, 2012; Ergünay & Uysal, 2020; Gerede, 2005; Özkanal & Hakan, 2010; Şahan et al., 2016). In that vein, the suggestion of a separate EAP course in the EPP for undergraduate engineering students was another need revealed in the results. Students would like to learn the basics of academic English instead of taking merely EGP oriented courses in the EPP. The challenges that the EAP learners have in EAP courses may stem from the incompatibility of the EPP with departmental EAP courses due to its highly EGP oriented content without considering the academic needs in the departmental EAP courses. This study confirmed this discrepancy through the perceptions of students and their EAP instructors, who highlighted the misalignment between the EPP and EAP courses. The findings indicated that the EPP was incompatible with departmental EAP courses, as its curriculum lacked EAP-related content. This view is supported by the results of Abdioğlu et al. (2022) indicating the rough transition from preparatory class with EGP education to departmental courses with academic requirements. Thus, there occurs a discrepancy between EPP students and faculty students regarding their language needs, the cause of which can be attributed to neglecting academic needs in EPPs. Learners' EAP course needs should also be taken into consideration while designing the curriculum of EPPs as suggested by Gerede (2005). Çetinavcı and Topkaya (2012) remarked the point that EPPs in Turkish higher education system often overemphasize grammar and teaching / learning activities while neglecting issues such as the development of productive skills and interaction and feedback both between teacher and student and among peers. This point can be seen as the gap of EPPs in preparing the students for EAP courses, which was also supported by the current study. In spite of receiving a one-year compulsory EPP, the students participating in this study emphasized their unpreparedness and reported their comprehension problems in academic skills in the department. This finding further highlights the shortcoming of the EPP in meeting the requirements of departmental EAP courses, and emphasizes the need to align its curriculum with the academic language demands of departmental EAP courses.

All in all, undergraduate engineering students of this study seem to lack certain academic skills required in departmental EAP courses. On the other hand, the overall contribution of EPP turned out to be solely on EGP and the program was inadequate for providing a basis for EAP since it lacked technical /academic English. The integration of academic English into the EPP can be through academic speaking and listening activities such as speaking clubs, doing presentations and note-taking besides grammar (Özkanal & Hakan, 2010). Kırkgöz (2005) suggested EPPs to give more emphasis on academic skills and field-specific vocabulary which are prerequisites of departmental EMI courses. This view was undergirded in this study with the need of a separate EAP course implementation in the EPP endorsed by the participants.

The primary aim of the current study was to scrutinize the academic language skills of EAP learners, who were the undergraduate engineering students of ME and EEE departments, from the lens of them and their EAP course instructors. In that regard, a NA was conducted by adopting a convergent parallel mixed-methods research design to collect data from the participants. The questionnaire findings elucidated that undergraduate engineering students mostly needed academic speaking, listening, reading and writing skills respectively. On the other hand, thematic analysis underscored the significance of academic /technical

vocabulary knowledge for all academic language skills, as being frequently reported by the participants. Another pivotal result was the need for a separate EAP course in the EPP, which also underlined the need for a tailored curriculum.

6. Implications

Within the light of the results of this study, the following suggestions could be taken into consideration in order to better meet the EAP needs of learners and increase the compatibility of EPPs with the departments offering fully or partially EMI programs.

- The curriculum of EPPs should be revised by taking into consideration the results of NA and it should include the academic language skills needs of EAP learners enrolled in certain EMI departments.
- The EPPs may offer modular language programs with academic English tailored for students with varying language proficiency levels.
- The course contents of EPPs may benefit from materials specific to the field of EAP which will help develop learners' academic language skills as well as their general English skills.
- A holistic and integrated approach should be adopted in teaching language skills which addresses academic skills such as giving presentations, academic note-taking, critical thinking, and so on.
- Collaboration with faculty members of the engineering departments on EAP course curriculums should be established.
- Professional development opportunities or training programs for instructors teaching EAP courses should be provided.
- Although this study is limited to ME and EEE undergraduates, certain identified EAP needs such as the challenges in academic English skills and academic/technical vocabulary knowledge may be shared by the students in other disciplines with EMI-based contexts. However, future research should take into account the discipline-specific variations while making generalizations.

Note on Ethical Issues

The author(s) confirm(s) that ethical approval was obtained from the Ethics Committee of Çanakkale Onsekiz Mart University, School of Graduate Studies (2023-YÖNP-0689) in October 2023. (Approval Date: 05.10.2023).

Conflict of interest

The authors have no conflicts of interest to declare.

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APPENDIX A

Focus Group Interview Questions (Undergraduate Engineering Students)

1. Do you have any background knowledge/experience/training on English for Academic Purposes (EAP) courses? If yes, can you explain it?
2. Have you had any EAP courses in your department until now? If yes, what are they?
3. What is the perceived impact of your English language education that you have taken in the preparatory school to your EAP courses at your department?
a. Are there any aspects of your English preparatory education that you think are beneficial for the EAP courses in the department? If so, can you specify them?
4. Do you experience any difficulties in your EAP courses regarding any skills (reading, listening, speaking and writing)? If so, what difficulties do you experience?

5. What are the English academic skills/tasks that you need most in your EAP courses in the department? (e.g. academic writing, presentation skills, academic vocabulary, etc.)
6. How would you evaluate the instructional materials/activities/textbooks used in your EAP courses?
a. Do you think that the curriculum in preparatory school includes any materials/activities/content in their courses related to EAP?
b. What are your suggestions for English Preparatory Program to better meet your needs in your EAP courses in terms of materials/activities/content?
7. Is there anything else you would like to add or suggest? If so, please specify.

APPENDIX B

Semi-Structured Interview Questions (For Instructors of English teaching EAP courses)

1. How long have you been teaching EAP courses at Mechanical Engineering or Electrical-Electronic Engineering in the Faculty of Engineering?
a. Could you give information about your experiences in teaching EAP courses at the faculty of engineering? What EAP courses have you taught?
2. How would you evaluate the English proficiency level of your students taking your EAP courses after completing English preparatory education?
a. How would you evaluate the contribution level of English preparatory education for your EAP courses?
3. Do your students experience any challenges and difficulties that you think stem from English preparatory education? If so, what are they?
4. Are there any language skills that your students have difficulties in your EAP courses? If so, what are they?
5. Are there any material selection criteria and decision-making processes that you follow for your EAP courses?
a. Are there any stakeholders you negotiate during this process?
b. Have you ever contacted English preparatory school about these issues?
6. What are your suggestions for improving English Preparatory Program to better meet your students' needs in EAP courses?
a. If an EAP course were to be added to the English Preparatory School program, what purposes/materials/activities/content do you think this EAP course should include?
7. Are there any additional comments or suggestions that you would like to make?

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