NEEDS ANALYSIS OF ENGLISH SKILLS AMONGST ELECTRICAL ENGINEERING STUDENTS IN ESP CONTEXT

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Article Info	Abstract
Article History *Received: August 2023* *Revised: September 2023* *Published: October 2023* **Keywords** *Need analysis;* *English skills;* *Electrical Engineering;*	*English is needed nowadays no matter what in global communication. In the ecucational context, English is neded to support the activites related to the ability in understanding the material and producing articles on the subject matter. The English skills of the electrical engineering students in Indonesia are generally unsatisfying. This study undercover the needs of English skills amongst Electrical Engineering students in Indonesian context. The study was conducted at Tidar University. The data were collected by using questionnaires and semi structured interviews. The results shows that the English skills needed by the Electrical Engineering students were grouped as receptive and productive skills. The receptive skills needed were the ability to grasp the texts' ideas, the ability to listen to others' words, The productive skills are the ability to produce the English eords to convey meanings in oral communications. The main points were greater technical vocabulary, grammatical structures, oral comprehension, and reading understanding.*

INTRODUCTION

In the context of the Indonesian industrial era 4.0, English has assumed a pivotal role as a prominent global language that transcends the boundaries of commerce, industry, and education. This phenomenon can be attributed to the ever-expanding reach of globalization, which necessitates effective communication among diverse international stakeholders (Syarifuddin et al., 2022; Irawan et al., 2022). Consequently, English has seamlessly integrated itself into the fabric of modern Indonesian society, manifesting not only as a linguistic necessity but also as an essential skill set. One notable manifestation of English's significance lies in its incorporation into the core curriculum of educational institutions across the country (Hariyanti, 2023; Santos, 2023). In response to the demands of the globalized world, English has evolved from a mere subject into a foundational pillar of education. From primary schools to universities, English is now considered a fundamental component of the educational journey. This inclusion is emblematic of its indispensable role in shaping the skills and competencies of the Indonesian populace to thrive in the international arena. Furthermore, within the sphere of higher education, university students are increasingly required to attain proficiency in English. This mandate serves multiple purposes. Firstly, it facilitates a deeper understanding of global literature and academic discourse, thereby enriching the academic experience (Naddumba & Athiemoolam, 2022; Al-Zumor, 2021). Secondly, it equips students with the linguistic tools necessary to engage effectively with international academic communities, fostering a sense of scholarly interconnectedness (Haerazi & Nunez, 2022; Haerazi & Irawan, 2020).

In higher education, including at Tidar University, the provision of English language instruction is currently offered at a relatively modest allocation of 4 credits to its students. However, an examination of the students' English proficiency levels, as ascertained through pre-test assessments, reveals a noteworthy deficit in their language competencies. This deficiency underscores a substantial gap between the allocated instructional resources and the actual language learning needs of the students (Amador & Weiland, 2015; Ringotama et al., 2022), particularly within the context of the Electrical Engineering department. Despite this evident inadequacy, it is noteworthy that there has been a dearth of comprehensive research endeavors within this specific domain. Consequently, there is a paucity of empirical data available to inform targeted pedagogical strategies and curricular enhancements tailored to the specific requirements of Electrical Engineering students. Recognizing this gap in the scholarly landscape, it becomes imperative to advocate for a systematic and thorough needs analysis of the English language skills possessed by Electrical Engineering students within Tidar University.

The proposed needs analysis holds substantial potential for yielding valuable insights and outcomes. For instance, it can provide a detailed and data-driven understanding of the specific English language needs, allowing for a precise calibration of instructional efforts (Cahyo et al., 2019; Mochizuki, 2017). Such insights are crucial for ensuring that the limited instructional time and resources are optimally utilized to bridge the existing proficiency gaps. Furthermore, the outcomes of the needs analysis can serve as a foundation for the development of tailored English learning guidelines and materials. These resources, informed by the specific language requirements of Electrical Engineering students, can enhance the overall efficacy of the English language instruction. They can be designed to address not only generic language skills but also domain-specific terminology and communicative competencies, thereby equipping students with the language tools requisite for success in their field.

Rappa & Wee (2006) and Cambridge Assessment (2019) state that English is currently an international language widely used as a means for communication among people of different language and cultural backgrounds. In South East Asean countries, English acts as a catalyst for the economic development. English is also plays a role of the working language in ASEAN countries (Pandey, 2014). English competence is considered critical and crucial. Seeing the importance of English, University students are also equipped with the language to face the coming global chances. The English competence is a tool for assissting them to progress in their carrier path and allows them to access and update their technical information and facilitates self development (Hart-Rawang, 2009). This idea is in line with Lawi and Marentek (2017) who propose that English language skills becomes very important to facilitate communication between cultures, emphasizing the necessity for English language and communication skills in engineering curricula. The necessity of the specific curricula for engineering students is supported by Robinson (1991) who claims that engineering students have specific English requirements and basic ESP principles to equip them with this specific needs as much as possible. Since ESP is currently is the context, it will accupy the syllabus design, material development, and pedagogy.

Aswirawan and Lawi (2022) state that Indonesia is among the expanding circle of countries that uses English as a compulsory foreign language and its role has been widely studies for more specific purposes icluding reading knowledge for Specific purpose which are under the umbrella of English for Specific Purposes (ESP). Expanding the concepts of needs analysis and uses the metaphor of a journey to describe the elements involved (West, 1997). There are severl previous studies related to the needs analysis of English skills among technical students. Ibrahim (1993) had an ethnography study which resulted in that communication skills during meetings and sales process are essential in workplace environments. The results study were also similar with those conducted by Leong (2001). Rezaae and Kazempourian (2017) had

a study among electrical engineering companies which resulted in that reading skills and study skills stand in the first and second place respectively, while listening, speaking, and writing were coming afterwards.

The primary objective of this research endeavor is to undertake a comprehensive needs analysis focusing on the English language proficiency requirements specific to Electrical Engineering students within the academic context of Tidar University. This study is designed as a small-scale investigation, aiming to provide a nuanced understanding of the distinct language needs of these students. The overarching purpose of this inquiry is to inform the subsequent development of tailored English learning materials and their effective integration into the teaching and learning processes within the department. To address the multifaceted nature of English language acquisition, it is essential to recognize that English proficiency comprises four key skills: listening, speaking, reading, and writing. Consequently, the needs analysis conducted in this study encompasses a thorough examination of these four language dimensions.

RESEARCH METHOD
Research Design

The present research constitutes a qualitative investigation conducted within the framework of a case study methodology. The specific case under scrutiny pertains to the domain of Electrical Engineering and is situated within the confines of the esteemed Tidar University. In its pursuit of comprehensive data collection, this study adopts a two-pronged approach, combining questionnaires and semi-structured interviews as its primary data-gathering tools. It is imperative to underscore the pioneering nature of this research within the broader landscape of scholarly inquiry. Positioned as the initial step in a series of studies examining the same subject matter, this investigation serves as the vanguard in exploring and shedding light upon a topicality of utmost significance within the field of Electrical Engineering.

Research Population an Sample

In this academic investigation, the primary focus of attention rested upon a cohort of students within the domain of Electrical Engineering at Tidar University. This cohort was composed of 140 individuals, forming a diverse and representative sample within this academic context. To facilitate the administration and management of the study, these students were distributed across four distinct classes, thereby ensuring a degree of heterogeneity within the subject pool. To initiate the research process, all participants were subjected to an English proficiency assessment at the outset. This initial assessment served the dual purpose of gauging their baseline English language competency and establishing a common starting point for subsequent analyses. From this pool of participants, one of the classes was meticulously selected as the focal point of the study. This class was chosen as the sample group for in-depth inquiry, involving the administration of a set of carefully crafted questionnaires and the conduct of semi-structured interviews. These instruments were specifically designed to delve into the nuanced aspects of their English learning needs, thereby affording valuable insights into the pedagogical requirements of Electrical Engineering students within the academic setting of Tidar University. This strategic selection of a representative sample, coupled with the utilization of comprehensive data collection methods, underscores the rigor and depth of this academic inquiry, ultimately contributing to the body of knowledge in the domain of language acquisition and its relevance to engineering education.

Research Instruments

In this research endeavor, the instruments utilized for data collection encompassed both questionnaires and interview manuals, each meticulously tailored to serve the specific research objectives. The questionnaire, a pivotal component of the data collection process, comprised a

series of well-crafted inquiries designed to elicit participant responses. These queries were structured around a Likert-scale format, affording respondents the opportunity to express their levels of agreement or disagreement, ranging from 'completely disagree' to 'strongly agree.' It is worth noting that this questionnaire was adapted from a previously validated instrument developed by Aswirawan and Lawi in 2022, thus ensuring the reliability and validity of the survey instrument. The administration of this questionnaire was directed towards a targeted subset of the participant population, precisely a class comprising 40 students. This strategic selection facilitated the collection of data from a manageable yet statistically meaningful sample, allowing for robust analyses and insights into the research questions at hand.

In parallel with the questionnaire, the study incorporated a qualitative dimension through semi-structured interviews. These interviews were carefully designed to encourage participants to provide elaborate responses, delving deeper into their perspectives and experiences related to English language learning needs. The interview manual, mirroring the questionnaire's adaptation process, was also derived from the work of Aswirawan and Lawi in 2022, ensuring alignment with established research protocols. The interviews, conducted with a random selection of 10 participants, constitute a critical element of this research. The insights gleaned from these interviews serve as a rich source of supporting data, providing qualitative depth and context to complement the quantitative findings derived from the questionnaire. In this manner, the research employs a balanced approach, harnessing both quantitative and qualitative instruments to achieve a comprehensive understanding of the English language learning needs of the selected student population.

Data Analysis

The analysis of data in this research adhered to a rigorous and systematic methodology, aligning with the established conventions of academic inquiry. The dataset under examination encompassed the outcomes of both the administered questionnaires and conducted interviews, reflecting a comprehensive approach to data collection that encompasses both quantitative and qualitative facets. For the quantitative component of the data analysis, the results derived from the questionnaires underwent a meticulous examination through the lens of descriptive statistical analysis. This analytical framework provided a structured means to quantify and interpret the responses obtained from the Likert-scale questions within the questionnaire. Through this process, key statistical measures such as means, standard deviations, and frequency distributions were computed and employed to characterize the central tendencies and variations within the dataset. This quantitative analysis furnished valuable insights into the participants' responses, offering a quantitative perspective on their perceptions and attitudes concerning their English language learning needs.

Concurrently, the qualitative dimension of the research, centered on the interview data, underwent a distinct analytical treatment. Drawing upon the guidelines outlined by Miles et al. in 2014, the qualitative analysis followed a multi-stage process encompassing data condensation, data display, and the formulation of conclusions. Initially, the raw interview data were condensed, involving the identification and categorization of key themes, concepts, and recurring patterns within the narratives provided by the participants. Subsequently, these condensed data were visually displayed, often through the use of thematic matrices or other organizational frameworks, to facilitate a comprehensive and systematic review of the qualitative content. Finally, the process culminated in the drawing of well-grounded conclusions, wherein the overarching themes and insights gleaned from the interviews were synthesized to contribute to the overall research findings. This dual-track approach to data analysis, incorporating both quantitative and qualitative methodologies, underpinned the research's comprehensive exploration of the English language learning needs of the study's participants.

RESEARCH FINDINGS AND DISCUSSION
Research Findings

The first research finding is related to the age span among the electrical engineering students. Table 1 shows that the age is ranged from 19 to 22 years old. There are 22 students who are 19 years old (15.71%) while 32.14% are in their 20. Most of them (41.43%) or 58 students are 21 years old, and 15 students (10.72%) are 22.

Table 1
Frequency Distribution of Students 'Ages

No	Age	Frequency	%
1.	19	22	15.71
2.	20	45	32.14
3.	21	58	41.43
4.	22	15	10.72
	Total	140	100

Seeing the condition, then the researcher needs to conduct a special treatment for the students. But before the treatment is assigned, needs analysis was done to figure out the needs and wants of the students in their context. Dealing with the data of reading percieved by students, most students perceived that reading is essential for them to attain various information relating to electrical engineering topics. The results of the needs analysis can be depicted in Table 2.

Table 2
The Importance of Reading as Perceived by Students

Skill	Sub skills	N = 40	Mean
	Reading written Instruction	40	4.560
	Reading field-related articles and books in English	40	4.560
	Reading project documents	40	4.380
Reading	Reading technical manuals/documents	40	4.480
	Reading standards related to the design	40	4.540
	Reading office documents	40	4.220
	Reading texts on the computer	40	4.740
	Reading notes	40	3.920
	Reading professional texts	40	4.580

Table 2 depicts the importance of reading skill as perceived by electrical engineering students. The sub skills involved 9 kinds of reading. Most students perceived that this kind of reading was important. The mean of reading written instruction was 4.560, reading field-related articles and books in English 4.560, reading project documents 4.380, reading technical manuals 4.480, reading standards related to the design 4.540, reading office documents 4.220, reading texts on computer 4.740, reading professional texts 5.580 and reading notes 3.920. From the data, the students strongly agreed that reading was of great importance for electrical engineering students.

Beside reading skills, students perceived other language skills such as litening skills are important for them in getting succesful English learning. The students mostly strongly agree that listening skills were also beneficial. Among the sub skills of listening, there were following instruction with 4.120, receiving spoken instructions with 4.320, listening in meetings, seminars, workshops with 4.560. the sub skill of listening and understanding the contractual,

legal, and technical negotiation in English reached 4.240 and teamwork interaction reached 4.720. It can be said that most listening sub skills were of great importance toward lectrical engineering students. Table 3 shows the numerical data. The results of the listening skill were presented in Table 3.

Table 3
The Importance of Listening as Perceived by Students

Skill	Sub skills	N = 40	Mean
	Following instruction	40	4.120
	Receiving spoken instructions	40	4.320
Listening	Listening in meetings, seminars, workshops	40	4.560
	Listening and understanding the contractual, legal, and technical negotiations in English	40	4.240
	Teamwork interactions	40	4.720

The symbiotic relationship between speaking skills and language acquisition effectiveness is a testament to the practicality and real-world relevance of language learning endeavors. Electrical Engineering students, who aspire to excel in their field, must not only possess technical expertise but also the ability to communicate their ideas, research findings, and problem-solving approaches clearly and persuasively. In this light, speaking skills stand as the linchpin of their academic and professional journey. In conclusion, within the realm of Electrical Engineering education, speaking skills surpass reading and listening skills in terms of their paramount importance. The perception among students that exemplary speaking performance mirrors language learning achievements is grounded in the practical realities of the field. As effective communication constitutes an integral facet of success in Electrical Engineering, the cultivation and refinement of speaking skills are indispensable, signifying their pivotal role in the holistic development of students within this domain. The data can be presented in Table 4.

Table 4
The Importance of Speaking Skill as Perceived by Students

Skill	Sub skills	N = 40	Mean
	Giving formal presentations	40	4.120
	Teamwork interaction	40	4.240
	Small talk	40	4.020
Speaking	Discussing work	40	4.140
	Having contractual and legal negotiations in English	40	3.980
	Teleconferencing	40	4.260
	Telephone communication	40	4.140
	Conflict resolution	40	4.160
	Networking	40	4.080

Table 4 showed the speaking skills involved nine sub skills. They are giving formal presentations, Teamwork interactions, small talk, discussing work, having contractual and legal negotiations in English, teleconferencing, telephone communication, conflict resolution, networking. The means of those sub skills were 4.120, 4.240, 4.020, 4.140, 3.980, 4.260, 4.140, 4.160, 4.080 successively. The data showed that the listening skill was also of great benefit for electrical engineering students toward their study and carrier.

After speaking skills, students also showed their needs in writing skills to support their language skills. Table 5 presented how the electrical engineering students perceived toward writing skill. The sub skills involved were writing emails with 4.120, writing memo with 3.240, writing formal letter with 4.120, and writing meeting minutes with 4.140. The writing skill also covered making presentation slides with 3.980, writing project proposals with 4.260, writing reports with 4.140, making technical specifications of equipment with 3.860, and making plans for 3.160. More than half of the students strongly agree with the sub skills and the rest agree with them.

Table 5
The Importance of Writing Skill as Perceived by Students

Skill	Sub skills	N = 40	Mean
Writing	Writing emails	40	4.120
	Writing memo	40	3.240
	Writing formal letter	40	4.120
	Writing meeting minutes	40	4.140
	Making presentation slides	40	3.980
	Writing project proposals	40	4.260
	Writing reports	40	4.140
	Making technical specifications for equipment	40	3.860
	Making plans	40	3.160

The interviews were held in August 2023 for 10 randomly selected respondents. The researcher posed the questions, and the respondents shared their opinions and experience in the subject matter. In response to the importance of the English skill, all respondents agreed that English indeed played an important part in the teaching learning process and in the workplace. All 4 language skills were badly needed to support the learning and the job. The skills that were posed by respondents were stated in table 11.

Table 6
The Communication Skills needed by Electrical Engineering Students

No	Communication skills	Approved by
1	Explaining product range	8 respondents
2	Explaining technical specifications	10 respondents
3	Providing consultancy	9 respondents
4	Project communication	10 respondents
5	Having small talk on culture exchange	5 respondents
6	Sharing engineering knowledge	10 respondents
7	Project discussions	10 respondents
8	Giving formal presentations	10 respondents
9	Having meetings	10 respondents
10	Reporting work	10 respondents
11	Giving instructions	9 respondents
12	Making enquiries	7 respondents

Table 6 showed that students still need communicative skills for their education sustainability. The data indicated that 8 respondents agreed that explaining product range was a great benefit in electrical engineering. Explaining technical specifications, project communication, sharing engineering knowledge, project discussions, giving formal presentations, having meetings and reporting work were posed by all respondents. Giving instructions was proposed by 9 respondents, while 7 respondents posted making enquiries.

Discussion

The research question concerning the English language skill requirements of electrical engineering students is fundamentally addressed through this study's findings. Students themselves highlight the significance of reading and listening skills, recognizing their pivotal roles in the context of electrical engineering education. Reading skills facilitate the acquisition of specialized information, while listening skills enable effective engagement in the dynamic learning environment of this discipline. These insights underscore the importance of tailored language instruction and support mechanisms to equip electrical engineering students with the requisite language competencies for success in their academic and professional pursuits. In this regard, it is illuminating to observe that students perceive reading and listening skills as being of particular importance within the realm of electrical engineering education. These skills are regarded as essential tools that empower students to access and assimilate a diverse range of information that is directly pertinent to their educational and professional pursuits.

With the total mean of 4.442, reading became the most skill needed by electrical engineering students in facing their learning and workplace to be. It supported the results of the study by Kaewpet (2009) which identified that reading is the most essential skill for engineers at work. The importance attributed to reading skills can be attributed to their function as a gateway for students to acquire diverse and specialized information essential for their learning objectives. In the intricate world of electrical engineering, students are tasked with comprehending complex technical literature, research papers, manuals, and documentation. Proficiency in reading is, therefore, an indispensable asset, enabling students to access, interpret, and integrate the wealth of technical knowledge that informs their academic and practical endeavors.

Similarly, listening skills are perceived as valuable assets, facilitating students' engagement with aural content such as lectures, presentations, and discussions. In the dynamic and collaborative environment of electrical engineering education, effective listening skills enable students to grasp the nuances of technical discourse, engage with instructors, and collaborate effectively with peers on projects and problem-solving activities (Kenza-Tacarraocht et al., 2022; Kim, 2013). The students perceived that if they were capable in reading and listening, they were able to grasp the message transferred. Within the realm of language acquisition, the cultivation of effective listening skills constitutes a crucial dimension, particularly for students. To comprehensively address the multifaceted needs of students in this regard, it is essential to delineate specific aspects of listening skills that hold particular relevance within the educational context (Terzioglu & Kurt, 2022). This discussion is framed within the context of students' engagement in diverse learning settings, including but not limited to formal classrooms, meetings, seminars, and workshops.

One salient aspect of listening skills that merits attention is the strategic integration of listening materials with instructional content. The importance of this facet lies in its potential to provide students with structured opportunities to engage with authentic spoken language (Ferrari-Bridgers & Murolo, 2022; Abobaker, 2017). By coupling listening materials with instruction, educators can guide students in their exploration of real-world language usage, thereby facilitating the development of their auditory comprehension skills. This pedagogical approach aligns with contemporary language teaching methodologies that emphasize immersion and contextual learning as effective strategies for enhancing listening proficiency. Additionally, spoken instruction represents another noteworthy dimension of listening skills. This pertains to the ability of students to process and comprehend oral directions, explanations, and guidance provided by instructors and peers (Kenza-Tacarraocht et al., 2022; Kim, 2013). Proficiency in this area is instrumental in ensuring that students can effectively navigate classroom settings and comprehend the spoken components of their coursework. It also plays a pivotal role in fostering clarity of communication between students and instructors, thereby

enhancing the overall learning experience. Furthermore, the application of listening skills extends beyond the classroom environment into various professional and academic contexts such as meetings, seminars, and workshops.

The mentioned settings demand a heightened level of attentiveness and comprehension as students are required to engage with spoken discourse that may involve complex technical terminology or specialized subject matter (Kaewpet, 2009; Tomlinson, 2011; Harding, 2007). The cultivation of effective listening skills equips students with the capacity to actively participate in such events, extract key information, and engage in meaningful dialogue. Due to this, the development of listening skills among students encompasses a multifaceted landscape, encompassing various aspects that are of paramount importance in their educational journey. The strategic integration of listening materials with instruction, proficiency in comprehending spoken instructions, and the ability to engage effectively in diverse listening contexts are all critical dimensions of listening skill development (Aswirawan & Lawi, 2022). These skills are instrumental in enhancing students' capacity to receive and comprehend spoken language, equipping them with the tools needed to excel in both academic and professional spheres.

In the domain of language acquisition among students, it is apparent that, alongside reading and listening skills, speaking skills are accorded significant importance. The recognition of the value of speaking skills is not merely a subjective inclination; it is substantiated by empirical findings that shed light on students' perspectives and preferences with regard to language learning. These preferences are instrumental in shaping language instruction strategies and curricular design. According to the research findings, students express a pronounced inclination toward the development of their speaking skills through active engagement in a diverse array of speaking activities. These activities encompass a broad spectrum of communicative contexts and serve as vehicles for honing various facets of speaking proficiency (Terzioglu & Kurt, 2022; Ariani, 2020). The enumerated speaking activities include formal presentations, teamwork interactions, small talk, discussion work, negotiation practices, telephone communication, and participatory communicative exercises.

This eclectic repertoire of activities underscores the multifaceted nature of speaking skills and the diverse settings in which they are deployed. The multifaceted nature of speaking skills necessitates a nuanced examination of the specific aspects that students perceive as essential for improvement (Afifah & Devana, 2020; Karya et al., 2022). In this regard, three key dimensions emerge as pivotal: fluency, pronunciation, and comprehension. Fluency encompasses the ability to articulate ideas and thoughts seamlessly, without hesitations or disruptions, thereby facilitating effective communication. Pronunciation pertains to the accurate articulation of speech sounds and the clarity of spoken language, ensuring that the speaker's intended message is conveyed accurately (Nugraha et al., 2022). Lastly, comprehension entails the capacity to understand and interpret spoken language effectively, allowing students to engage in meaningful dialogue and respond appropriately to verbal input (Hidayatullah & Haerazi, 2022). The acknowledgement of these critical dimensions of speaking skills aligns with contemporary pedagogical approaches that emphasize communicative competence. It underscores the significance of providing students with opportunities to engage in diverse speaking activities that target fluency, pronunciation, and comprehension.

Additionally, it underscores the importance of tailoring language instruction to meet students' preferences and needs, thus facilitating a more effective and engaging language learning experience. So, the acknowledgment of the importance of speaking skills among students extends beyond mere perception and is substantiated by research findings. The diversity of speaking activities preferred by students underscores the multifaceted nature of speaking proficiency, while the recognition of fluency, pronunciation, and comprehension as pivotal dimensions highlights the specific areas that warrant attention in language instruction (Nugraha et al., 2022; Hidayatullah & Haerazi, 2022). This knowledge serves as a foundation

for the development of effective language learning programs that align with students' preferences and cater to the holistic development of their speaking skills in academic and real-world contexts.

Following the acknowledgment of the significance of speaking skills, it is evident that students also recognize the need to enhance their writing skills. This recognition is not merely a matter of personal preference; rather, it is substantiated by a pragmatic understanding of the role that proficient writing plays in academic and professional contexts. The development of writing skills assumes paramount importance, as it empowers students with the ability to effectively communicate their thoughts, ideas, and information in a coherent and structured manner (Al-Zumor, 2021; Dari et al., 2022). The essential facets of writing skills that students aspire to cultivate encompass a diverse range of written communication forms. These include, but are not limited to, the composition of emails, memos, and formal letters. Such practical written forms constitute integral components of modern-day professional communication, and students acknowledge their importance in preparing them for the demands of the workplace. Beyond these conventional forms of written communication, students also aspire to attain proficiency in crafting presentation slides, project proposals, reports, technical specifications, and work plans in the English language.

The inclusion of these specialized writing genres underscores the interdisciplinary nature of the skills required in their academic and future professional roles. It is noteworthy that students perceive writing skills as indispensable assets in their prospective workplaces. This recognition is in alignment with the evolving expectations of employers in various fields, who place a premium on effective written communication as a marker of professionalism and competence. Consequently, the incorporation of writing skills into the educational curriculum is not only pedagogically prudent but also responds to the pragmatic needs of students as they transition into the workforce (Yundayani, 2018; Alkhataba et al., 2018). In response to these pedagogical and pragmatic imperatives, students are provided with a structured array of writing activities aimed at honing their writing skills. These activities span the continuum of writing proficiency, commencing with the production of simple sentences and progressing to the development of supporting sentences, coherent paragraphs, and ultimately, complete genres of texts.

The progressive approach to writing instruction aligns with best practices in language pedagogy, ensuring that students acquire the foundational skills necessary to construct complex and contextually appropriate written communication (Yundayani, 2018; Alkhataba et al., 2018). Therefore, the recognition of the importance of writing skills among students transcends personal preference and is grounded in practical considerations related to their academic and professional journeys. The breadth of writing forms they seek to master reflects the interdisciplinary nature of the skills demanded in their future roles. The provision of structured writing activities, designed to progress from foundational skills to complex genre-based writing (Haerazi et al., 2020), serves as a pedagogically sound approach to equipping students with the essential writing competencies they require for success in both academic and professional contexts.

In the trajectory of language acquisition, the culmination of proficiency in the four fundamental language skills—listening, speaking, reading, and writing—serves as a foundation upon which students must subsequently build their communicative competence (Cahyani et al., 2023; Chun, 2011). Within the specialized realm of electrical engineering classrooms, the acquisition of communicative skills assumes particular significance as students prepare for their academic and professional journeys. This stage represents the convergence of language proficiency with the practical application of language in a technical and professional context. The impetus for students to enhance their communicative skills is underpinned by empirical findings, which indicate that this skill set holds substantial relevance within their workplace

environments. As they embark on careers in the field of electrical engineering, students recognize the pivotal role that effective communication plays in navigating the complex dynamics of their professional milieu.

The workplace environment demands not only technical expertise but also the ability to convey ideas, concepts, and technical information with clarity, precision, and professionalism (Mostafaei-Alaei & Nosrati, 2018). To cater to these communicative needs, educational institutions and instructors in the field of electrical engineering are tasked with providing appropriate teaching materials and pedagogical strategies. These materials encompass a spectrum of communicative activities tailored to the unique demands of the discipline. These activities include the explanation of products, the presentation of technical specifications, consultancy interactions, project-related discussions, formal presentations, and the art of making inquiries. Each of these activities serves as a microcosm of the communication challenges students are likely to encounter in their professional roles.

The incorporation of communicative activities into the curriculum reflects an acknowledgement of the dynamic nature of language proficiency (Ibrahim, 1993; Rezae & Kazempourian, 2017). Beyond the foundational language skills, students must acquire the ability to synthesize and apply their language proficiency in real-world scenarios that mirror their future professional engagements. As such, these activities are strategically designed to equip students with the linguistic tools and strategies necessary to excel in technical discourse, collaborative projects, and client interactions—all of which are integral components of their future workplace environments. In conclusion, the acquisition of communicative skills represents the culminating phase of language development for students in electrical engineering classrooms. These skills are recognized as essential in the workplace, underscoring their practical relevance and significance. The provision of teaching materials and communicative activities aligns with the pedagogical imperative to bridge the gap between language proficiency and practical communicative competence, preparing students for the multifaceted demands of their academic and professional journeys within the field of electrical engineering.

CONCLUSION

This study endeavors to provide insights into the English language skill requirements perceived by electrical engineering students, with a specific focus on their perceived importance and frequency of use in various professional contexts. Additionally, the research delves into the communication skills deemed essential by engineers in their workplace environments. The findings of this investigation reveal a clear hierarchy among the language skills, with the majority of students ranking reading as the most important skill, followed by listening, speaking, and writing. These rankings are consistent with the perceived frequency of skill usage in the workplace, where reading is again identified as the most frequently employed skill, followed by listening, speaking, and writing. The implications of these findings extend to the development of tailored English language materials that align with the articulated needs of the learners. Furthermore, the interview component of the study underscores the priority placed by learners on productive skills, followed by receptive ones, shedding light on their specific communication skill preferences within the context of English for Specific Purposes (ESP). Collectively, these results offer valuable insights into the genuine language and communication needs of electrical engineering learners, with potential implications for the design of effective language instruction and curriculum development in ESP contexts.

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