

An ESP Needs Analysis for Electrical Engineering Students at Universitas Muhammadiyah Pare-Pare

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ABSTRACT

This study identifies the English for Specific Purposes (ESP) needs of electrical engineering undergraduates at Universitas Muhammadiyah Pare-pare to inform an ESP curriculum within the Outcome-Based Education (OBE) framework. A descriptive quantitative design was employed in 2026/2027. An open online questionnaire yielded 33 voluntary responses. The instrument, based on Hutchinson and Waters (1987), covered demographics, english experience, a five-point Likert-scale needs analysis (Lacks, Wants, Necessities), and preferred topics; it was not externally validated or pilot-tested. Data were analyzed using descriptive statistics. Results: 93.9% (n = 31) had studied English, but only 9.1% (n = 3) had taken a formal course. General English prepares learners to communicate; ESP prepares them to practice. Moderate lacks appeared in communication confidence (M = 3.24, SD = 0.79) and technical comprehension (M = 3.39, SD = 0.79). Strongest wants were listening (M = 4.03, SD = 0.64), technical reading (M = 4.00, SD = 0.75), and report writing (M = 3.94, SD = 0.79). Necessities included technical vocabulary (M = 4.03, SD = 0.81) and workplace presentations (M = 3.91, SD = 0.68). Top preferences were technical vocabulary (51.52%, n = 17), TOEFL (24.24%, n = 8), job interviews (18.18%, n = 6), and reading-speaking (18.18%, n = 6). Technical vocabulary emerged as the gateway skill of ESP for electrical engineering. The absence of an ESP curriculum is an unaddressed outcome in the OBE architecture. Limitations include the small voluntary sample, single-institution setting, and self-reported data.

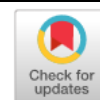
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INTRODUCTION

In the contemporary era of globalization, English language proficiency has transitioned from a supplementary skill to a core competency across academic and professional domains. On a global scale, English serves not merely as a medium of cross-border communication, but as the primary vehicle for accessing advanced technical literature, tracking rapid technological innovations, and participating in international engineering discourse. Because technical terminologies, design schematics, global engineering standards, and industrial documentations are predominantly published in English, the ability to comprehend and apply technical concepts in this language is vital for modern professionals.

English for Specific Purposes (ESP) is an instructional approach designed to meet learners' specific needs, preparing them to utilize English effectively in academic and professional environments. Hutchinson & Waters (1987) define ESP as an educational approach on learner needs, wherein all decisions regarding materials and methodologies are dictated by the specific requirements of the learners. The instructional framework is systematically structured to address unique learner needs within contextually relevant domains, focusing on specialized competencies such as technical report writing, professional presentations, colleague collaboration, or documentation drafting. Consequently, learners can directly apply their English proficiency in real-world contexts. General English instruction, while providing a foundation in grammar, vocabulary, and basic communication, does not

automatically equip learners with the discipline-specific reading strategies, technical terminology, and professional genres required in electrical engineering contexts.

Within higher education, English instruction plays an indispensable role in equipping graduates to navigate intense workforce competition and globalized industrial standards. This institutional challenge is particularly pronounced in electrical engineering programs, where students routinely encounter professional specifications, software interfaces, and technical operational guidelines articulated exclusively in English. Consequently, curriculum developers must ensure that instructional materials remain relevant and efficacious in fostering academic and professional success. [Yulientinah et al. \(2020\)](#) emphasize the necessity of developing ESP syllabi grounded in rigorous needs analyses to ensure instructional relevance to students' academic disciplines. Similarly, [Syukur & Nugraha \(2019\)](#) underscore that needs analyses are essential for supplying students with materials that support their ongoing studies and future careers. [\(Lee, 2016\)](#) adds that needs analyses assist instructors in gauging baseline proficiencies and identifying distinct learning gaps. English for Specific Purposes (ESP) teaching bridges the gap between traditional language learning and global business demands, while advancing ESP syllabus development by incorporating student-driven feedback into curriculum design [\(Hariyanti et al., 2025; Mebitil, 2023\)](#).

Previous ESP needs-analysis studies have examined learners across various disciplines, revealing that needs are highly contextual and discipline-specific. [Dele et al. \(2025\)](#) found that psychology students required English to comprehend psychology journals, diagnostic terminology, and pragmatic communication for case handling. In information technology programs, [Susanti et al. \(2025\)](#) reported that students prioritized reading and writing skills over speaking, driven by the need to understand technical code documentation and produce technology project reports, making digital materials and technological vocabulary indispensable. [Ulyani et al. \(2025\)](#) identified a significant curriculum gap in business programs, where instruction remained theoretical English for Academic Purposes (EAP) rather than the English for Occupational Purposes (EOP) demanded by students, who needed interactive business communication such as meeting simulations, presentations, negotiations, and correspondence, with limited technical vocabulary and teacher-centered methods as key constraints. [Hulwa et al. \(2025\)](#) examined marketing students found that grammar, speaking, and vocabulary were perceived as the most difficult skills, with students needing project-based materials such as professional self-introduction and product description writing. In industrial engineering, [Novianti et al. \(2025\)](#) surveyed 120 students across three Indonesian universities and found that the most critical necessities were understanding English technical literature ($M = 4.29$) and negotiating with international clients ($M = 4.27$), while students reported significant lacks in interpreting technical documentation ($M = 2.91$) and technical reporting ($M = 3.12$).

Although the ESP framework has proven effective, English language instruction at many higher education institutions, including Universitas Muhammadiyah Pare-pare (UMPAR), is often still oriented toward General English concepts. In the Faculty of Engineering, specifically the Electrical Engineering program at UMPAR, the English course carries a weight of 2 credit units (SKS) and is taken alongside other courses, with the general objective of enabling students to develop and apply language skills while focusing on discipline-specific competencies. However, during implementation and development, teaching practices are often out of step with the specific technical realities of the field of electrical engineering. We found that students face significant challenges regarding their confidence in communication and the relevance of the curriculum.

Despite the growing body of ESP needs-analysis research across psychology, information technology, business, marketing, and industrial engineering, empirical needs analyses focusing specifically on undergraduate electrical engineering students in Indonesian higher education remain limited. In particular, few studies have systematically examined the three ESP domains—lacks, wants, and necessities—in relation to students' preferred learning topics within a single institutional context, and even fewer have positioned the findings as the

empirical basis for developing an ESP curriculum adapted to an Outcome-Based Education (OBE) framework.

Therefore, conducting an empirical analysis of actual learning needs is warranted so that instruction can focus more on the areas that are needed. This study is fundamentally important because its findings are expected to serve as the basis for developing a more targeted English for Specific Purposes (ESP) program that aligns with real-world needs in the field, ultimately enhancing students' readiness to face professional challenges in electrical engineering. The Electrical Engineering Program at UMPAR is currently transitioning to the Outcome-Based Education (OBE) curriculum. Under OBE, every course, including English, is expected to contribute to clearly defined program learning outcomes. However, the English course remains General English-oriented and is not yet supported by a dedicated ESP curriculum aligned with the OBE framework. This study addresses this gap by providing empirical needs-analysis data as the foundation for developing an ESP curriculum adapted to the OBE framework.

Furthermore, curriculum development based on students' needs should consider not only the English skills students perceive as important but also the alignment between learning activities, disciplinary requirements, and expected learning outcomes. Basturkmen (2010) emphasizes the importance of developing ESP courses that respond to learners' specific purposes and contextual demands, while Hutchinson & Waters (1987) highlight the central role of needs analysis in determining course content and instructional methods. In engineering education, this alignment is particularly relevant to the Outcome-Based Education (OBE) framework, which emphasizes measurable learning outcomes and the integration of teaching, learning activities, and assessment (Mahrishi et al., 2025; Zamir et al., 2022). Accordingly, identifying electrical engineering students' necessities, lacks, and wants can provide a systematic foundation for determining appropriate English learning priorities and designing learning activities that support both technical literacy and professional communication. Such an approach may help ensure that the proposed ESP curriculum is not merely a collection of general language topics but a contextually relevant learning framework that contributes to the academic and professional competencies expected of electrical engineering graduates.

METHOD

This study was conducted during the 2026/2027 academic year at the Electrical Engineering Program of Universitas Muhammadiyah Pare-pare (UMPAR), which is currently implementing the Outcome-Based Education (OBE) curriculum. Since the program lacks a dedicated English for Specific Purposes (ESP) curriculum and relies solely on General English, a descriptive quantitative approach with an ESP needs analysis framework was employed. This design systematically maps the relationship between workplace demands and learners' actual conditions, converting students' perceptions into a valid empirical basis for developing a comprehensive ESP curriculum aligned with the OBE framework.

Population and sample

The population and sample for this study consisted of 33 active students in the program. The questionnaire was distributed openly to all eligible students via Google Forms. Participation was voluntary, and no personal identifiers were collected. A total of 33 students responded and completed the questionnaire. Because the sample was formed by students who voluntarily responded to an open survey, the sampling technique is best described as voluntary response sampling. The exact total population size was not recorded; therefore, the response rate cannot be calculated. The participants were predominantly 19–21 years old (69.7%, $n = 23$), enrolled in semesters 2–8, and reported limited formal English course experience outside campus (90.9%, $n = 30$) and low frequency of technical English use in daily communication. The small sample size and voluntary nature of participation limit generalizability; findings should be interpreted as context-specific.

Instrument

Data were collected using a questionnaire administered through Google Forms in the same academic year. The instrument was developed based on [Hutchinson and Waters' \(1987\)](#) needs-analysis framework and adapted from previous ESP studies. The questionnaire consisted of 30 items across four sections. Details of the instrument's structure are presented in Table 1.

Table 1. ESP Needs Analysis Instrument Outline

Section	Focus	Item Type	Number of Items
I	Demographic profile (gender, semester, age)	Multiple choice	3
II	English learning background and experience	Multiple choice / scale	9
III	Target needs: Lacks (5), Wants (5), Necessities (5)	Five-point Likert scale	15
IV	Preferred topics, materials, and strategies	Open-ended / multiple response	2
—	Identifier (initial name, not analyzed)	Text	1

The five-point Likert scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree. Positive items in the Lacks section were not reverse-coded; one item in the Lacks dimension (LACK5) was positively worded, while the remaining items were negatively worded. The direction of interpretation for LACK5 is therefore opposite to the other items in the same dimension, and this is noted explicitly in the presentation of results. No formal expert validation or pilot test was conducted; therefore, the content validity and reliability of the instrument were not empirically established. This is acknowledged as a limitation.

Data Analysis

Quantitative data were analyzed descriptively using response percentages, means, and standard deviations based on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). No reverse coding was applied, and composite means were calculated for the Lacks, Wants, and Necessities dimensions. Open-ended responses were thematically coded and grouped into categories. Given the voluntary, non-random sample, no inferential statistics were performed. All analyses were conducted using IBM SPSS Statistics version 32.

Ethical Considerations

Participation was voluntary. Informed consent was obtained before data collection. Responses were anonymized and used only for research purposes. The survey was open to all active electrical engineering students, and no incentives were provided.

FINDINGS AND DISCUSSION

Overview of English Learning Experiences

This section presents the findings from respondents' baseline exposure to English language learning environments.

06. Apakah Anda telah menempuh kursus Bahasa Inggris sebelumnya?
33 jawaban

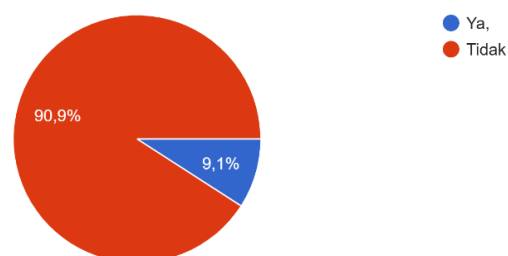


Figure 1. Students' Course Experiences (n = 33)

In Figure 1, of the total 33 respondents, only 3 respondents (9.1%) had previously taken a formal English course, while the large majority, namely 30 respondents (90.9%), had never taken a formal English course outside of campus. This empirical indicator suggests that the majority of electrical engineering students enter the college environment with minimal preparatory learning experiences outside the curriculum.

07. Apakah Sebelumnya anda telah belajar bahasa inggris
33 jawaban

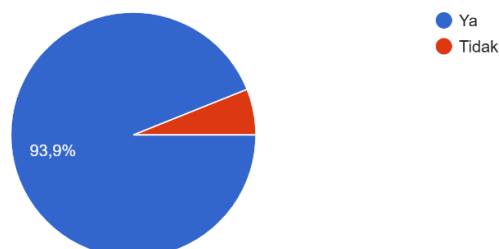


Figure 2. Students' Prior English Learning Experience (n = 33)

Conversely, the data in Figure 2 demonstrate that 31 respondents (93.9%) had previously studied English through general institutional schooling, whereas only 2 respondents (6.1%) reported no prior academic exposure. Synthesizing these baseline results reveals a critical nuance, while nearly all students have encountered English through compulsory general education, almost none have engaged in specialized or formal language training programs prior to their tertiary studies.

Lacks Aspect

The Lacks dimension yielded moderate composite scores ($M = 3.28$, $SD = 0.45$). Table 2 presents the descriptive statistics for all items in this dimension.

Table 2. Lack Aspect

Item	SD/D (%)	N (%)	A/SA (%)	M	SD	Interpretation
LACK1 – I often feel insecure when communicating with coworkers in English.	12.1	51.5	36.4	3.24	0.79	Moderate lack
LACK2 – The current curriculum does not place enough emphasis on electrical engineering English.	12.1	60.6	27.3	3.12	0.70	Moderate lack
LACK3 – A recognized English proficiency certificate can improve my job prospects.	6.1	30.3	63.7	3.76	0.83	High necessity
LACK4 – I have difficulty understanding technical instructions in English.	3.0	60.6	36.4	3.39	0.79	Moderate lack
*LACK5 – My current English knowledge is sufficient for professional settings. ^a	33.4	48.5	18.2	2.88	0.99	Moderate lack

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. Mean interpretation: 1.00–1.80 = Very low; 1.81–2.60 = Low; 2.61–3.40 = Moderate; 3.41–4.20 = High; 4.21–5.00 = Very high

* LACK5 is a positively worded statement. A higher mean indicates higher perceived sufficiency (i.e., lower perceived lack). All other items in this dimension are negatively worded, where a higher mean indicates greater perceived lack.

As detailed in Table 2, the item-level percentages from Google Forms reveal which specific lacks are most prominent. Regarding self-confidence in communication, 36.4% of respondents agreed that they lack confidence when interacting with coworkers in English (LACK1: $M = 3.24$, $SD = 0.79$), and 48.5% remained neutral. This indicates that oral communication anxiety is a prevalent psychological barrier requiring targeted pedagogical intervention. Furthermore, 57.6% of participants expressed a neutral stance while 27.3% agreed that the existing curriculum lacks adequate emphasis on discipline-specific electrical engineering English (LACK2: $M = 3.12$, $SD = 0.70$). This points toward an urgent requirement for structural curriculum adjustments.

In terms of career credentials, 63.7% agreed or strongly agreed that holding a recognized English proficiency certificate enhances employability within the engineering sector (LACK3: $M = 3.76$, $SD = 0.83$). Regarding technical comprehension, 60.6% were neutral and 36.4% agreed that they experience difficulties comprehending English technical documentation or instructions (LACK4: $M = 3.39$, $SD = 0.79$). Finally, regarding self-assessed proficiency, only 18.2% agreed or strongly agreed that their current English competency is sufficient for professional settings (LACK5: $M = 2.88$, $SD = 0.99$).

Wants Aspect

The Wants dimension yielded the highest composite mean among the three dimensions ($M = 3.89$, $SD = 0.62$), indicating strong learner motivation. Table 3 presents the Google Forms response distribution alongside the mean scores and standard deviations for each item.

Table 3. Wants Aspect

Item	SD/D (%)	N (%)	A/SA (%)	M	SD	Interpretation
WANT1 – I need to improve my English writing and reading skills when preparing reports or technical documents.	3.0	24.2	72.7	3.94	0.79	High want
WANT2 – Having the ability to give oral presentations in English will help me present electrical engineering projects.	0.0	39.4	60.7	3.76	0.71	High want
WANT3 – I would like to have the opportunity to practice speaking English with colleagues in electrical engineering contexts.	0.0	39.4	60.6	3.73	0.67	High want
WANT4 – I want to improve my English listening skills to understand presentations or discussions.	0.0	18.2	81.8	4.03	0.64	High want
WANT5 – I want to be able to read and understand technical documents in English well.	0.0	27.3	72.8	4.00	0.75	High want

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. Percentages are derived from Google Forms response distribution. Mean scores and standard deviations are calculated from the same responses using the five-point Likert scale.

The item-level distribution in Table 3 shows consistently high agreement across all items. A combined 72.8% of respondents expressed a strong desire to master the reading and comprehension of technical documentation (WANT5: $M = 4.00$, $SD = 0.75$). Similarly, 72.7% prioritized the improvement of reading and writing competencies for technical report writing (WANT1: $M = 3.94$, $SD = 0.79$). Regarding oral communication, 60.7% recognized that presentation skills are vital for showcasing engineering projects (WANT2: $M = 3.76$, $SD = 0.71$). Listening comprehension emerged as a primary focus, with 81.8% of participants seeking

enhanced listening capabilities for academic and professional discourse (WANT4: $M = 4.03$, $SD = 0.64$). Lastly, 60.6% expressed a clear preference for interactive speaking practice situated within engineering contexts (WANT3: $M = 3.73$, $SD = 0.67$).

Necessity Aspect

The Necessities dimension recorded a high composite mean ($M = 3.84$, $SD = 0.53$). Table 4 presents the Google Forms response distribution alongside the mean scores and standard deviations for each item.

Table 4. Necessity Aspect

Item	SD/D (%)	N (%)	A/SA (%)	M	SD	Interpretation
NEC1 – I would like to have access to additional learning materials or online courses focused on English for electrical engineering.	0.0	45.5	54.5	3.58	0.56	High necessity
NEC2 – My English skills have a direct impact on my career opportunities in electrical engineering.	6.1	36.4	57.6	3.64	0.78	High necessity
NEC3 – I want to expand my English vocabulary related to concepts and technologies in electrical engineering.	0.0	30.3	69.7	4.03	0.81	High necessity
NEC4 – Understanding technical terms in English is essential for a career in electrical engineering.	0.0	18.2	81.8	4.03	0.64	High necessity
NEC5 – I need additional English training to prepare for technical presentations in the workplace.	0.0	27.3	72.7	3.91	0.68	High necessity

Note. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. Percentages are derived from Google Forms response distribution. Mean scores and standard deviations are calculated from the same responses using the five-point Likert scale.

The percentage distribution in Table 4 confirms that students perceive English as an operational necessity for engineering practice. A cumulative 57.6% agreed that language proficiency directly influences their career trajectories (NEC2: $M = 3.64$, $SD = 0.78$). Furthermore, an overwhelming 81.8% acknowledged that mastering technical terminology is indispensable for professional success (NEC4: $M = 4.03$, $SD = 0.64$). To support this, 54.5% requested supplementary digital learning materials (NEC1: $M = 3.58$, $SD = 0.56$), while 69.7% emphasized the necessity of expanding technical vocabulary related to modern electrical technologies (NEC3: $M = 4.03$, $SD = 0.81$). Finally, 72.7% indicated an explicit requirement for targeted training modules designed to prepare them for workplace technical presentations (NEC5: $M = 3.91$, $SD = 0.68$).

While most items in the Wants and Necessities dimensions recorded high mean scores, two items received comparatively lower agreement. WANT3 (practice speaking in electrical engineering contexts) recorded $M = 3.73$ ($SD = 0.67$), and NEC1 (access to additional learning materials) recorded $M = 3.58$ ($SD = 0.56$). These lower scores suggest that students may prioritize foundational vocabulary and technical reading over speaking practice, or that they already access informal online resources for learning materials. This pattern highlights the importance of sequencing ESP learning outcomes from lexical competence toward applied communication tasks, rather than assuming equal priority across all language skills.

Preferred Topics and Learning Materials

Following the three needs dimensions, students' preferred learning topics and materials were captured through open-ended responses in the Google Forms questionnaire. These responses were thematically coded and are presented in Table 5; percentages exceed 100% because multiple responses were allowed.

To establish direct practical implications for syllabus design, students were surveyed regarding their preferred thematic focuses and instructional content.

Table 5. Distribution of Students' Preferences Regarding Key Learning Topics and Materials

Focus of curriculum scope	*n*	%
Technical Vocabulary	17	51.52
TOEFL Preparation	8	24.24
Job Interview & Communication	6	18.18
Reading & Speaking Skills	6	18.18

Note. Percentages exceed 100% because respondents could mention more than one topic. Total responses = 37 from 33 respondents.

The distribution of student preferences in Table 5 demonstrates that the majority of respondents (51.52%) prioritize "Technical Vocabulary" acquisition, focusing explicitly on industry-specific electrical terminology and professional lexicons. "TOEFL Preparation" ranked second at 24.24%, reflecting institutional demands for standardized proficiency metrics. Meanwhile, "Job Interview & Communication" and "Reading & Speaking Skills" each accounted for 18.18% of preference distribution, underscoring secondary requirements for employment readiness and applied communicative literacy.

Discussion

Based on the research results, several findings were identified regarding the learning experiences, gaps, needs, and desires of Electrical Engineering students in English language learning.

English Learning Experience

The data obtained shows that only a small proportion of students, namely 9.1%, have experience with formal English courses, while the majority (90.9%) have never taken an English course. Nevertheless, 93.9% of respondents reported that they had studied English before. This suggests that students' exposure to English does not always come from formal courses but may come through other channels such as school education, the media, or self-directed learning.

As stated by [Ekayati et al. \(2020\)](#), in the context of higher education, students take English courses not only because they want to learn English, but also because they are required to take this course as a mandatory course, regardless of whether they like it or not. According to [Melendez \(2022\)](#) formal experiences in English language courses play a crucial role in improving students' language proficiency and self-confidence. The study emphasizes the importance of factors such as motivation, self-confidence, autonomy, anxiety, language learning strategies, and instructional materials in shaping the English language learning experience. This preference appears to begin in university, where disciplinary terminology is often learned through English-medium instruction ([Fang et al., 2024](#); [Hodges & Seawright, 2023](#)).

Needs Analysis: Lacks, Wants, and Necessities

Given that the challenges faced by students largely relate to their self-confidence in communication, the respondents felt that they lacked confidence in communicating with colleagues in English. This is consistent with the findings of [Khansa et al. \(2023\)](#), who stated that not all students have the confidence to communicate in a foreign language such as English. Therefore, strategies such as providing practical English language exercises in real-life communication situations as part of the curriculum are necessary, although the majority of respondents felt that the current curriculum does not focus sufficiently on developing English language skills specific to electrical engineering.

Therefore, it is important for us to support an ESP curriculum that is engaging for students. [Basturkmen \(2010\)](#) points out that one of the main challenges in developing ESP courses is determining how specific the course should be in terms of its target audience. A well-designed ESP curriculum must address the specific needs of the relevant field of study to enhance the effectiveness of learning. [Syukur & Nugraha \(2019\)](#) suggest that ESP English

instructors or relevant stakeholders accommodate students' needs and consistently conduct needs assessments, as the needs of ESP learners are constantly evolving. Another study by [Ng & Chuah \(2015\)](#) concluded that the existence of an "English for Technicians" course, specifically designed to meet their needs, address their shortcomings, and fulfill their aspirations, would provide an additional benefit. In line with the statement by [Novianti \(2021\)](#), programs and materials offered in ESP education must be geared toward students' goals in learning English; in this case, the materials must help students before they enter the working world or begin their careers.

English Language Learning Topics for the Electrical Engineering Program

Based on an analysis of topics or material considered important for English language learning in the electrical engineering program, it appears that mastery of technical vocabulary is the dominant need among students, according to [Hapsari et al. \(2020\)](#). Vocabulary plays a crucial role in learning English. Students need a wide range of vocabulary to communicate and express their ideas, as well as to understand reading passages. Similarly, [Istifadah & Salabila \(2023\)](#) argue that grammar is an essential component that every English learner must study and understand. Furthermore, students also wish to maintain their reading skills because they need them to read technical documents. This is supported by [Rohmiyati et al. \(2023\)](#), who state that reading technical documents in English enables students to critically analyze, evaluate, and interpret information, which is vital to their educational process. Furthermore, [Dewi et al. \(2019\)](#) conclude that reading technical documents in English can increase students' awareness of the importance of reading in various fields, including technology and science. Reading is prioritized as essential for interpreting technical manuals, safety documents, and equipment specifications, yet most students report low confidence and ability ([Sastra et al., 2026](#)). Topics related to speaking can enhance these skills; in this case, it is advisable to focus on honing public speaking skills. [Jalal et al. \(2023\)](#) clarify that public speaking skills help engineering students improve their ability to speak in public.

In addition, students also want training to prepare for the TOEFL test to better prepare themselves for the workforce, as noted by [Putri & Syarif \(2021\)](#) who stated that students take TOEFL preparation courses for several reasons, such as to help them obtain scholarships and as a requirement for completing their studies. [Indra Aprilliandari et al. \(2023\)](#) point out that there is a minimum score that must be achieved to meet certain requirements, such as supporting documents for applying for jobs, admission to institutions, or study abroad programs.

According to the respondents, learning topics such as job interviews in English courses are also necessary as part of job application training, such as preparing for job interviews. This is supported by [Siregar et al. \(2023\)](#), who note that English instruction at the college level is not only intended to teach the language itself but also to ensure that students can apply their English language skills in daily life, such as when applying for jobs. Therefore, understanding students' needs is a crucial step that teachers must take when designing teaching methods and preparing assessment tools; this helps teachers identify the essential knowledge and skills students are expected to achieve.

To align these specific learner needs with broader pedagogical goals, it is essential that the curriculum transitions from traditional delivery models to more integrative, goal-oriented frameworks. The implementation of Outcome-Based Education (OBE) in electrical engineering is primarily driven by the urgent need to bridge the gap between theoretical knowledge and the practical demands of the modern industry. By providing outcome-based education, institutions can equip students with the skills and knowledge necessary to address complex global challenges and contribute to building a more sustainable and equitable society. Furthermore, the systematic nature of this framework reveals the inherent strengths of the OBE system in enhancing future students' learning outcomes ([Liu et al., 2025](#); [Mahrishi et al., 2025](#); [Zamir et al., 2022](#)).

Implications for ESP Curriculum Development Within the OBE Framework

The findings of this study provide empirical direction for developing an ESP curriculum that is adapted to the OBE framework currently implemented in the Electrical Engineering Program at UMPAR. Three implications are particularly relevant.

First, the identified Lacks – moderate insecurity in oral communication ($M = 3.24$, $SD = 0.79$), perceived curriculum misalignment with technical English ($M = 3.12$, $SD = 0.70$), and difficulty understanding technical instructions ($M = 3.39$, $SD = 0.79$) – indicate that the ESP curriculum should prioritize communicative confidence and technical comprehension as measurable learning outcomes. These outcomes can be mapped directly to the OBE program learning outcomes that emphasize professional communication and technical literacy.

Second, the high Wants ($M = 3.89$, $SD = 0.62$) and Necessities ($M = 3.84$, $SD = 0.53$) for listening, technical reading, technical vocabulary, and workplace presentations suggest that ESP learning outcomes should be sequenced from foundational lexical competence toward applied communication tasks. Under OBE, these outcomes can be expressed as observable and measurable competencies, such as "students are able to interpret electrical engineering technical documents" or "students are able to deliver a technical presentation in English."

Third, the prominence of Technical Vocabulary (51.52%) and Job Interview & Communication (18.18%) in students' preferences reflects the dual orientation of ESP within OBE: academic readiness and professional readiness. This dual orientation supports the integration of ESP into the existing OBE curriculum rather than treating it as a standalone course. The ESP curriculum should therefore articulate learning outcomes that contribute to the program's overarching learning outcomes while remaining grounded in the specific language demands of electrical engineering.

Importantly, this study does not propose to replace any existing ESP curriculum, as none currently exists in the program. Instead, it proposes to develop an ESP curriculum that is adapted to and integrated within the OBE framework, using the lacks, wants, and necessities identified in this study as the empirical foundation.

CONCLUSIONS

This study found that electrical engineering students need English proficiency to understand technical materials, communicate professionally, and improve career opportunities. Although most had not taken formal English courses, nearly all had been exposed to English. Their challenges included low confidence, limited curriculum support, and difficulty understanding technical content. The study recommends developing a new ESP curriculum aligned with the existing Outcome-Based Education (OBE) framework, prioritizing technical vocabulary, technical reading, listening, oral presentations, job interview simulations, basic grammar, and TOEFL preparation where required. However, the proposed curriculum has not been implemented or evaluated. Several limitations should be acknowledged: voluntary responses from only 33 students may introduce self-selection bias; the response rate is unknown; the questionnaire lacked expert validation and pilot testing; and the single-institution setting limits generalizability. Furthermore, self-reported data may not reflect actual proficiency, stakeholder perspectives and curriculum documents were excluded, one positively worded item was not reverse-coded, and TOEFL preferences were unexplored. Future research should address these limitations through broader sampling, stakeholder involvement, instrument validation, and intervention studies.

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