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A QUANTITATIVE NEEDS ANALYSIS OF TECHNICAL ENGLISH IN TVET EDUCATION

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Abstract:

English proficiency is widely recognised as a key employability skill in Malaysia's Technical and Vocational Education and Training (TVET) sector. This study investigates the perceptions of students at ADTEC JTM Kampus Kuantan towards the Technical English subject using Hutchinson and Waters' (2002) English for Specific Purposes framework of necessities, lacks, and wants. A descriptive quantitative design was employed using a structured questionnaire distributed to 70 students across eight technical programmes. Findings indicate that students perceive Technical English as moderately to highly relevant to their field of study. Yet, they reported limited application of English in both academic and practical contexts. Productive skills, especially speaking and writing, were identified as the most challenging and least favoured. Students expressed moderate confidence in employability-related communication tasks such as résumé writing and job interviews, with fear of making mistakes emerging as a key barrier to oral performance. The study recommends integrating curriculum with technical subjects, targeting interventions in productive skills, and employability-focused instruction grounded in an ESP needs analysis. These findings underscore the importance of aligning Technical English instruction with the demands of workplace communication in Malaysian TVET.

Keyword:

Employability, ESP, Needs Analysis, Technical English, TVET

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Introduction

In Malaysia's technical and industrial landscape, English proficiency has become an indispensable skill for graduate employability. Employers increasingly expect TVET graduates to possess not only technical expertise but also the ability to communicate effectively in English across diverse workplace contexts, such as reading equipment manuals, writing incident reports, presenting technical projects, and conducting safety briefings. The Malaysia Education Blueprint (2013–2025) and the Malaysia Education Blueprint (Higher Education, 2015–2025) both identify language proficiency as a key graduate attribute, reinforcing the importance of English subjects within Technical and Vocational Education and Training (TVET) programmes.

Kolej Teknologi Termaju Jabatan Tenaga Manusia Kampus Kuantan, or ADTEC JTM Kampus Kuantan, is a leading institution under the Department of Manpower (*Jabatan Tenaga Manusia*, JTM) and plays a vital role in producing skilled workers for technology-based industries. Its programmes span diverse fields including electrical technology, welding, fabrication, CADD architecture, mechanical maintenance, machining, mechatronics, and computer systems. Within these domains, the Technical English subject is offered to equip students with communicative competence tailored to industry needs. As an English for Specific Purposes (ESP) course, Technical English at ADTEC Kuantan is designed to bridge the gap between classroom English and the communicative tasks demanded in real workplace contexts. ESP theory emphasises that language instruction must be aligned with learners' purposes and professional contexts (Dudley-Evans & St John, 1998; Hutchinson & Waters, 2002). Needs analysis is therefore central to ESP course design, as it enables educators to identify learners' current proficiency, target needs, lacks, and wants (Johns & Price, 2014). Prior studies in Malaysian polytechnics, such as Yahaya and Miskam (2024), have shown that while students generally recognise the importance of English, they struggle most with speaking and writing, the very skills most critical for employability.

Formerly known as *Institut Latihan Perindustrian* (ILP) Kuantan, ADTEC JTM Kampus Kuantan is strategically located in the Gebeng Industrial Area of Pahang, a hub for oil and gas, petrochemical, manufacturing, and ICT industries. Over the years, it has earned a strong reputation for producing competent graduates with high employability rates, supported by industry-oriented curricula and hands-on training facilities. The campus offers a wide range of programmes accredited under the Malaysian Skills Certification framework, ensuring its graduates are recognised nationally and internationally. However, while technical skills training is firmly established, language support through the Technical English subject remains a critical component of students' readiness to succeed in professional contexts.

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In the context of ADTEC JTM Kampus Kuantan, there is limited empirical research on how students perceive the Technical English subject, how relevant they find it to their technical fields, and the specific challenges they face in applying it. This study addresses that gap by investigating students' perceptions of Technical English at ADTEC JTM Kampus Kuantan, their preferred and least favoured skills, and their confidence in using English for job applications and workplace communication. The findings aim to inform curriculum enhancement to better support the employability and professional readiness of ADTEC JTM Kampus Kuantan graduates.

Problem Statement

While ADTEC JTM Kampus Kuantan has established itself as a centre of excellence for technical training, challenges remain in ensuring that graduates are fully prepared for the communicative demands of industry. Despite being technically competent, employers frequently note that TVET graduates struggle with key aspects of English communication, such as delivering presentations, writing professional documents, and speaking fluently in workplace interactions (Mat Husin, 2022; Ranasuriya & Herath, 2020). These shortcomings often affect graduates' employability, as effective communication is regarded as essential for career advancement.

The issue is particularly concerning at ADTEC JTM Kampus Kuantan, a public technical training institution under the Malaysian Ministry of Human Resources, where most students begin their studies with intermediate-to-low English proficiency. The results are reflected in their Malaysian Certificate of Education (Sijil Pelajaran Malaysia, SPM) examination results, where the majority score between grades C to E, which generally corresponds to the Common European Framework of Reference for Languages (CEFR) levels B1 (lower intermediate) to A2 (elementary). Although students report positive attitudes toward learning English and recognise its importance, many lack the confidence to apply Technical English in real-life tasks such as writing résumés and cover letters, preparing incident reports, or presenting technical projects during industrial training. Survey feedback indicates that while reading skills are perceived as manageable, productive skills such as speaking and writing are perceived as the most challenging and least preferred, despite being essential for effective workplace communication.

This situation raises important questions about whether the current Technical English subject adequately addresses the needs of ADTEC JTM Kampus Kuantan students. If left unaddressed, the gap between classroom learning and workplace requirements may hinder graduates' readiness for employment. Therefore, a systematic needs analysis is required to investigate students' perceptions of the Technical English subject, the challenges they face, and their confidence in applying it for employability-related communication. The findings will provide valuable insights to guide curriculum enhancements, ensuring that Technical English more effectively supports ADTEC graduates in meeting both academic and industrial expectations.

Research Objectives and Research Questions

In light of the issues identified earlier, this study examined the relevance of the Technical English subject at ADTEC JTM Kampus Kuantan and explored how students perceive its role in preparing them for workplace communication. The objectives were framed in line with the core principles of needs analysis in English for Specific Purposes (ESP), which emphasise the

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importance of identifying learners' needs, gaps, and wants (Hutchinson & Waters, 2002; Dudley-Evans & St John, 1998).

Accordingly, the study was guided by the following objectives:

1. To assess the relevance of the Technical English subject to students' technical fields (necessities).
2. To identify students' challenges (lacks) and priority skills for improvement.
3. To explore students' confidence and preferences (wants) in applying Technical English for employability.

To address these objectives, the study sought to answer three key research questions:

1. How do students perceive the relevance of Technical English to their technical fields?
2. What challenges and lacks do students face, and which skills do they prioritise for improvement?
3. What are students' confidence levels and preferences in applying Technical English for employability?

Literature Review

English for Specific Purposes (ESP)

English for Specific Purposes (ESP) has become a central component of technical and vocational training, equipping learners with the communicative competencies necessary for workplace success. Unlike General English, which emphasises broad linguistic skills, ESP focuses on necessities (skills required for occupational performance), lacks (gaps between current and target proficiency), and wants (learners' preferences and expectations) (Hutchinson & Waters, 2002; Dudley-Evans & St. John, 1998). In vocational contexts, this framework is particularly relevant because language proficiency is directly linked to employability and career advancement.

English for Specific Purposes (ESP) has evolved as a significant branch of English language teaching, characterised by its focus on the specific communicative needs of learners in academic, technical, or professional contexts. Unlike General English, ESP does not teach language for its own sake but equips learners to perform domain-specific tasks such as reading manuals, writing reports, or conducting professional communication. The theoretical foundation of ESP emphasises three interrelated dimensions of learner needs: necessities (what learners must know to function effectively), lacks (the gaps between their current and required proficiency), and wants (their expectations, preferences, and aspirations). This tripartite framework, outlined by Hutchinson and Waters (2002) and further elaborated by Dudley-Evans and St. John (1998), makes needs analysis the cornerstone of ESP course design. Needs analysis can be approached through Present Situation Analysis (PSA), which examines learners' current abilities, and Target Situation Analysis (TSA), which identifies the skills required for their future professional or academic contexts.

Recent studies applying this framework highlight its relevance across diverse disciplines. In hospitality ESP, students' needs were found to be high in terms of skill upgrading, with main gaps in vocabulary, and their wants centred on speaking and listening practice (Kusuma et al., 2023). Similarly, prospective English teachers in Turkey reported practical and occupational

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necessities, significant gaps in teaching practice (e.g., lacks), and strong desires for both pedagogical and linguistic support (Gürler & Konca, 2023). Research in the accounting domain has revealed a wide range of students' needs, wants, and lacks, reinforcing the importance of tailoring ESP materials to specific professional fields (Nawir & Syafitri, 2021).

At the vocational high school level, learners demonstrated a strong need for negotiation and instructional comprehension but struggled with weak speaking abilities. Both PSA and TSA identified mismatches between learners' real-world needs and teacher-prepared course materials (Wahyudi & Jufrizal, 2023). A similarly systematic approach was adopted in ESP course design for government employees, where PSA, TSA, Learning Situation Analysis (LSA), and Means Analysis were integrated to balance learners' needs, lacks, and wants in alignment with workplace demands (Ulfah et al., 2021). In the context of civic education, students lacked strong oral skills but expressed a need for domain-specific vocabulary and writing development, underscoring the gaps between PSA and TSA perspectives (Firmansyah et al., 2023).

Beyond empirical applications, conceptual contributions have also advanced the theoretical clarity of ESP needs analysis. For example, Nduwimana and Louis (2021) refined distinctions between overlapping terms such as necessities, wants, lacks, preferences, and deficiencies, providing researchers with a more precise framework for analysing learner needs in PSA–TSA contexts. These studies reaffirm that effective ESP design must not only identify necessities but also address learners' lacks and wants, while ensuring alignment between the present and target situations. The dynamic interaction between PSA and TSA remains crucial in bridging the gap between what learners currently know, what they need to know, and how they hope to learn it.

Needs Analysis

Needs analysis is the cornerstone of ESP in technical and vocational education. It not only identifies students' present abilities through Present Situation Analysis (PSA) but also anticipates future workplace requirements through Target Situation Analysis (TSA) (Johns & Price, 2014). A well-conducted needs analysis aligns objectives, teaching materials, and assessments with learner backgrounds and job-related demands, thereby enhancing both instructional quality and learner outcomes (Balatska & Vyslobodska, 2020; Maisarah & Nirwanto, 2024). By addressing both target and learning needs, ESP becomes a learner-centred approach that adapts to learners' strengths and weaknesses to prepare them for professional success (Ibodullayevna & Abdimurotovich, 2023; Octaberlina & Muthmainnah, 2021).

In technical and vocational high schools, research indicates that students often exhibit a strong need for negotiation skills and a clear understanding of instructions. Yet they frequently lack proficiency in oral communication, particularly in speaking. Both PSA and TSA have revealed mismatches between learners' actual needs and teacher-prepared materials, underlining the importance of context-driven curriculum design (Wahyudi & Jufrizal, 2023). Similarly, civic education in Indonesia lacked proficiency in listening and speaking but expressed a need for domain-specific vocabulary and writing skills, again highlighting the PSA–TSA gap (Firmansyah et al., 2023). These findings reflect a recurring challenge in vocational ESP: while learners recognise immediate communicative deficits, workplace demands often require broader professional language skills such as grammar, pronunciation, and negotiation (Nhut, 2021).

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Applied models demonstrate how systematic approaches can strengthen ESP design in technical and vocational contexts. For instance, government employee training integrated PSA, TSA, Learning Situation Analysis (LSA), and Means Analysis to ensure comprehensive alignment between learner needs and job requirements (Ulfah et al., 2021). A recent systematic review further emphasises the necessity of combining multiple frameworks in ESP needs analysis, since over-reliance on single models limits adaptability and contextual responsiveness (Pang et al., 2025). Conceptual refinements also contribute, such as distinguishing between necessities, lacks, wants, deficiencies, and preferences, which helps clarify overlaps in vocational needs assessment (Nduwimana & Louis, 2021).

The studies confirm that needs analysis is indispensable in ESP for technical and vocational education. By systematically integrating PSA, TSA, and broader analytical tools, vocational ESP can address learners' current weaknesses while preparing them for the communicative demands of the workplace. Ultimately, a well-designed ESP program for vocational learners bridges the gap between classroom instruction and employability, ensuring that language learning is both practical and professionally relevant.

English in Malaysian TVET

The Malaysian Education Blueprint (2013–2025) and the Malaysia Education Blueprint (Higher Education, 2015–2025) both position language proficiency as a key graduate attribute, recognising English as a driver of employability and global competitiveness. Within the context of Technical and Vocational Education and Training (TVET), this emphasis is especially critical, as vocational graduates are expected to combine technical expertise with strong communicative skills to meet industry needs. However, persistent challenges have been documented in aligning English training with workplace demands.

Research indicates that while Malaysian polytechnic students recognise the importance of English, they continue to struggle with speaking and writing—the skills most vital for workplace communication [(Yahaya & Miskam, 2024)]. Employers also highlight poor communication as a key limitation among otherwise technically capable graduates, underscoring English as an underdeveloped yet essential component of vocational training [(Morshidi & Wan, 2020)]. Similarly, a study of demand–supply mismatches in Malaysian polytechnics identified misalignments between industry needs, student expectations, and institutional readiness, calling for program realignment to improve graduate employability (Ibrahim & Nashir, 2022).

The issue extends beyond broad employability rates. In specific fields, such as tourism management, polytechnic graduates reported significantly lower employment outcomes, reflecting gaps between training provision and job readiness. Instructor quality and student engagement were also found to influence employability outcomes in these sectors strongly (Ismail et al., 2021). Consistently, studies show that English language competency ranks among the top five criteria valued by Malaysian employers, with weak communication skills reducing the competitiveness of TVET graduatess in the labour market (Suhaili & Mohama, 2021).

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At the learner level, attitudes and motivation are vital. While most TVET students view English as valuable for career advancement, levels of engagement vary, underscoring the need for more practical, career-relevant teaching approaches (Sulaiman et al., 2024). Industry perspectives reinforce this point: Malaysian employers consistently stress the importance of strong spoken English communication (ESC), yet graduates' training often falls short of workplace expectations (Abdullah et al., 2022). Addressing this gap, Jamaludin et al. (2020) proposed a Technical Communication Pedagogical Model (TCPM) for vocational colleges, which situates English proficiency as a mediator of employability outcomes. However, the study also found that current curricula under-emphasise English instruction, limiting its effectiveness in preparing graduates for real-world communication.

Despite these insights, a notable tension persists in Malaysian TVET between policy aspirations and institutional realities. While national blueprints emphasise English proficiency as a critical graduate attribute, vocational curricula often underplay language instruction, leaving graduates technically skilled but communicatively underprepared. This gap not only affects employability outcomes but also highlights the urgency of integrating ESP-informed needs analysis into TVET curriculum design. By aligning present learner competencies with future workplace demands and industry expectations, vocational institutions can ensure that English training becomes both practical and professionally relevant.

Challenges in Productive Skills

International and local research consistently identifies speaking and writing as the most challenging skills for students in technical and vocational fields. Learners often avoid speaking tasks out of fear of making mistakes, resulting in weak oral competence despite years of instruction (Ali & Salih, 2021). Similarly, anxiety and low confidence are long-recognised barriers that reduce classroom participation and limit opportunities for oral practice (Tsui, 1996). For vocational students in particular, these factors significantly impact professional readiness, as low confidence in presentations and discussions is a substantial obstacle to effective communication (Sulindra et al., 2023). Writing presents a different set of challenges: it demands not only grammatical accuracy but also mastery of technical genres such as reports, memos, and incident logs, which require clarity, structure, and familiarity with professional conventions (Hyland, 2006).

In Malaysia, these difficulties are well documented. ADTEC Kuantan students, for example, rated speaking and writing as their least favoured skills, reporting low confidence in presentations and report writing. Broader studies confirm similar patterns: vocational learners face technical and pedagogical challenges in online speaking classes, including poor internet connections, limited interaction, and low engagement (Patty & Bilung, 2023). Since oral communication is vital for professional contexts—such as presentations, negotiations, and workplace discussions—TVET learners require task-based online modules to strengthen these skills (Musa & Rahim, 2024). Technology-enhanced practice has shown promise: Malaysian undergraduates improved fluency and confidence through Skype-based speaking activities, though challenges related to access and digital familiarity persisted (Palpanadan et al., 2021); (Palpanadan & Ahmad, 2021).

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Writing remains equally problematic among Malaysian learners. ESL undergraduates struggle with composing processes due to limited awareness of academic writing conventions, which prevents them from meeting tertiary expectations (Tung & Afnizul, 2024). These findings align with a systematic review of Malaysian ESL classrooms, which concluded that students face both internal (fear and low confidence) and external (limited exposure and rigid curricula) barriers to learning to speak English (Aziz & Kashinathan, 2021).

Globally, vocational learners face similar issues. International studies report that students often lack vocabulary, make frequent grammatical errors, experience speaking anxiety, and have limited opportunities for practice, which leads to low confidence (Efrizah et al., 2024). In India, rural engineering students faced comparable challenges but benefitted from interactive oral assessments and continuous speaking practice, which improved confidence and performance (Kumar & Divya, 2021). Research in broader ESP contexts reinforces these findings, showing that productive skills remain the most demanding: learners struggle with clarity, structure, correctness, and professional interaction in both speaking and writing (Viera et al., 2024). Ukrainian studies add that writing in technical and business English is complicated, even when technology is used as a support tool (Chaikovska et al., 2022).

Overall, both Malaysian and international evidence confirms that speaking and writing are persistent weaknesses in technical and vocational education. These skills are not only difficult to master but are also essential for workplace readiness, making their underdevelopment a critical challenge for ESP and TVET curricula.

Studies on Technical English in Malaysia

Most research on English in Malaysian polytechnics and higher education has concentrated on Business English and English for Academic Purposes (EAP) rather than Technical English. For example, Yahaya and Miskam (2024) examined the English needs of business students. They identified persistent weaknesses in oral communication, while Nair et al. (2019) reported that even engineering students struggled to apply the English skills they had acquired in the classroom in workplace practice. Despite these contributions, empirical research on Technical English in ADTECs remains limited, particularly within institutions under the Department of Manpower (Jabatan Tenaga Manusia, JTM), such as ADTEC Kuantan. This gap highlights ADTEC students' need for studies that specifically examine their perceptions, lacks, and wants to inform curriculum enhancement and strengthen employability outcomes.

Several studies emphasise the importance of communication skills and the need to integrate English more meaningfully into vocational training. Jamaludin et al. (2020) proposed a Technical Communication Pedagogical Model (TCPM) for vocational colleges, demonstrating that English proficiency mediates employability outcomes; however, current curricula underemphasise this dimension. Similarly, Suhaili and Mohama (2021) emphasised that English competency remains one of the top five criteria that employers demand from Malaysian TVET graduates; however, the weak integration of English in technical curricula continues to be a barrier.

At the learner level, studies on attitudes and motivation reveal that career aspirations strongly drive the motivation of Malaysian TVET undergraduates to learn English. Still, their levels of engagement vary, indicating the need for more tailored approaches to Business/Technical English (Sulaiman et al., 2024). Entrepreneurship readiness research reinforces this, showing

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that TVET graduates require not only technical expertise but also stronger communication and business-oriented English skills to succeed in technopreneurship and startup ventures (Dahalan et al., 2020). A comparative Malaysia–Indonesia study further highlighted that graduates' business performance depends not just on technical proficiency but also on communication (English and interpersonal) and networking skills, pointing to gaps in existing Business English training (Salman et al., 2020).

Another recurring issue is language anxiety, which hinders the development of productive skills, such as speaking and writing, in TVET ESL classrooms. Since these skills are especially crucial for technical and business communication, targeted pedagogical interventions are needed to reduce anxiety and enhance learner confidence (Ghazali et al., 2020).

Overall, while Malaysian research has advanced understanding of Business English and EAP needs in polytechnics and universities, the specific domain of Technical English in ADTECs remains underexplored. This study aims to address this gap by providing data-driven insights into the communicative necessities, lacks, and wants of ADTEC students, thereby contributing to curriculum development in Technical English and aligning training more closely with industry expectations.

Methodology

This study adopted a descriptive quantitative research design to investigate students' perceptions of the Technical English subject at ADTEC JTM Kampus Kuantan. A structured questionnaire, adapted from Aliki et al. (2021) and developed in Google Forms, served as the primary instrument, incorporating Likert-scale items, categorical questions, and open-ended responses. The instrument was adapted from established needs analysis studies in ESP. It was divided into several sections: demographic information; general attitudes toward English and Technical English; perceptions of relevance; skill preferences and difficulties; employability-related communication; and overall effectiveness. Responses were measured using a five-point Likert scale (ranging from "very poor/not relevant" to "excellent/highly relevant") alongside categorical and short-answer items.

The Adapted Needs Analysis Questionnaire

Figure 1 illustrates how the questionnaire items were categorised into three dimensions of needs analysis: necessities, lacks, and wants. Necessities refer to the knowledge students must possess to function effectively in their technical fields, as measured by items that assess relevance, the use of Technical English in both academic and practical contexts, and the importance of core topics.

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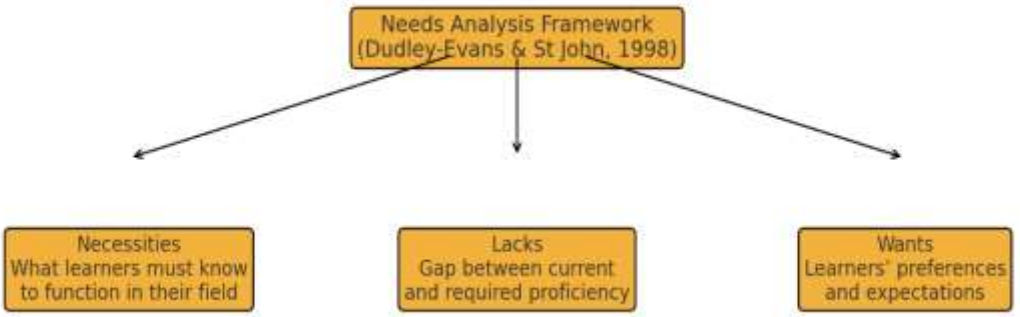

Figure 1: Conceptual Framework of the Needs Analysis (Dudley-Evans & St John, 1998)

Dudley-Evans and St John (1998) explain that lacks represent the gaps between students' current abilities and target requirements, as reflected in items on difficulties in specific skills, confidence in productive tasks, and least-favoured skills. Meanwhile, wants refer to students' preferences and expectations for improvement, measured through items on preferred skills, suggestions for curriculum enhancement, and employability-related communication. Together, these three dimensions provide a holistic view of the Technical English needs of ADTEC JTM Kampus Kuantan students.

The questionnaire was divided into six main sections as presented in Table 1. The first section gathered demographic information, including gender, programme of study, and SPM English results. The second section explored general attitudes toward English and Technical English, asking whether students liked English, liked Technical English, and how relevant they perceived the subject to their technical fields. The third section focused on language skills, asking students to identify their favourite and least favoured skills (reading, writing, speaking, listening) and to rate the frequency of difficulties faced in each area. A series of items then examined sub-skill development, including confidence in presentations, fear of making mistakes, ability to communicate with peers, and difficulties in public speaking.

The fourth section investigated the importance of course topics within Technical English, such as communication theory, presentation skills, conversational skills, listening strategies (signal words, note-taking, information transfer), writing practices (abbreviations, graphic organisers, memos, reports, minutes of meetings), and reading strategies (skimming and scanning, guessing from context, predicting). The fifth section assessed students' employability-related communication skills, including their ability to prepare job applications, cover letters, résumés, and interview materials. Finally, the sixth section evaluated the overall effectiveness of the subject, examining perceptions of teaching methods and teaching materials, as well as students' suggestions for improvement.

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Table 1: Structure of the Questionnaire adapted from Aliki et al. (2021)

Section	Description	Example Focus Areas	Number of Items
A	Demographic Information	Gender, Programme, SPM English grade	3
B	Attitudes Toward English & Technical English	Interest in English, perceived relevance	5
C	Language Skills: Difficulties & Preferences	Speaking, writing, listening, and reading challenges	10
D	Importance of Technical English Components	Presentation skills, reports, and listening strategies	14
E	Employability Communication Skills	Résumés, cover letters, and interviews	6
F	Overall Effectiveness & Improvement Suggestions	Teaching methods, materials, and course improvement	5

Sampling

The participants were 70 students enrolled in various technical programmes at ADTEC JTM Kampus Kuantan, including Electrical Technology, Fabrication (Oil & Gas), CADD Architecture, Manufacturing (Machining), Welding, Mechanical Maintenance, Computer Systems, and Mechatronics. The majority of respondents were male (84%), reflecting the gender distribution commonly found in technical and vocational training institutions. Their English proficiency, as indicated by their SPM results, was mainly in the C-E range, suggesting intermediate to low proficiency. This profile provided a relevant basis for exploring the extent to which Technical English meets students' needs.

Data Procedures and Analysis

Data collection took place in April. A questionnaire link was distributed through class representatives and lecturers, and participation was entirely voluntary. Students were assured that their responses would remain anonymous and confidential, and the survey was not tied to any form of assessment or evaluation. Of the 75 students invited to participate, 70 provided valid responses, yielding a 93% response rate.
The data were later analysed using descriptive statistics in Microsoft Excel and SPSS. Frequency counts, percentages, means, and standard deviations were calculated to summarise responses. To align with ESP theory, the analysis was organised around the three core components of needs analysis: necessities, lacks, and wants.

- Items on the relevance of Technical English and its application in academic or practical work were analysed under the necessities.
- Items measuring students' difficulties with core skills and their least favoured aspects of learning were classified as lacks.

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- Items related to skill preferences, employability communication, and suggestions for improvement were examined as wants.

Open-ended responses were analysed thematically to highlight recurring patterns and recommendations for enhancing the Technical English subject.

Results

The results are organised according to the three main research questions: (1) perceptions of relevance and effectiveness of Technical English, (2) challenges (lacks) and priority skills, and (3) confidence and preferences (wants) in employability-related communication. The section begins by describing demographics and English proficiency before moving on to the specific categories of Lacks and Wants.

Demographics of the Sampling

The sampling demographics are gender, technical programmes, and SPM results. Table 2 below displays the distribution of respondents by gender. Of the 69 respondents, 59 (86%) are male, and 10 (14%) are female, indicating a strong male predominance in the technical programmes.

Table 2: Gender Distribution of Respondents

Gender	Frequency	Percentage (%)
Male	59	86
Female	10	14

Table 3 below shows how respondents are distributed across the technical programmes. The largest groups come from Teknologi Elektrik (Electrical Technology) with 19 students (≈27.5%), Teknologi Fabrikasi Struktur Logam (Minyak & Gas) (Fabrication, Oil & Gas) with 15 (≈21.7%), Teknologi CADD Senibina (CADD Architecture) with 12 (≈17.4%), and Teknologi Pembuatan (Pemesianan) (Manufacturing / Machining) with 11 (≈15.9%). Smaller numbers are represented by Welding, Mechanical Maintenance, Computer Systems, and Mechatronics programmes.

Table 3: Distribution of Respondents by Technical Programme

Programme	Frequency	Percentage (%)
Electrical Technology	19	27.5
Metal Structure Fabrication Technology (Oil & Gas)	15	21.7
Architectural CADD Technology	12	17.4
Machining Technology	11	15.9
Welding Technology	5	7.2
Mechanical Maintenance Technology	3	4.3

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Computer System Technology	2	2.9
Mechatronics Technology	2	2.9

Figure 2 below presents the respondents' SPM English results, which provide a proxy for their baseline English proficiency. Most respondents scored in the C (20 students, ~29%) and D (20 students, ~29%) bands. Next most common was E (14 students, ~20%), followed by F (8 students, ~11.6%), then B (6 students, ~8.7%), and only one respondent scored A (~1.4%).

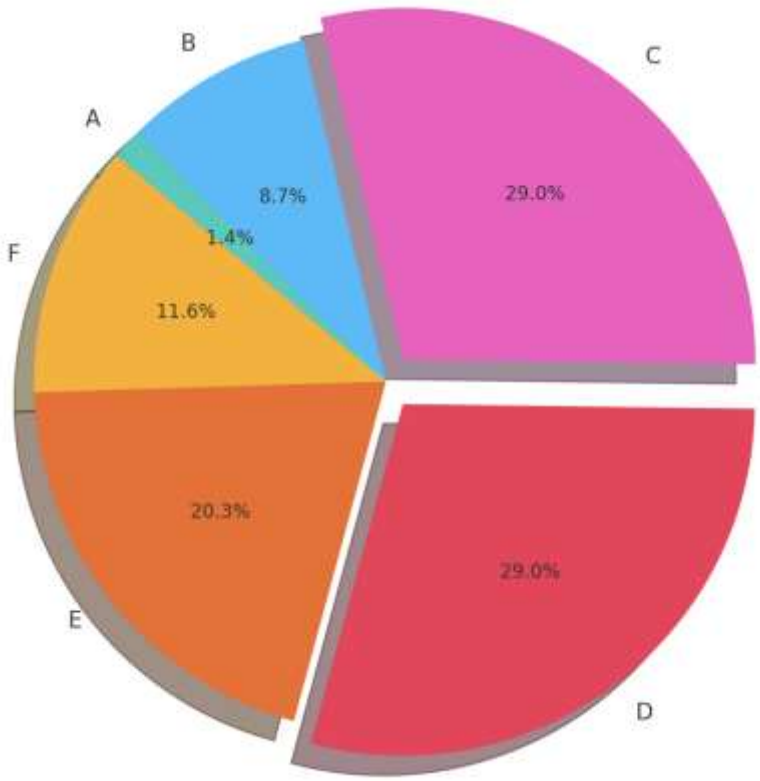

Figure 2: Distribution of Respondents by SPM English Result

Respondents generally perceive Technical English as moderately to highly relevant to their technical fields. For instance, when asked, "How relevant do you find the Technical English subject to your field of study?" the mean score is 3.56 out of 5, indicating a positive valuation. Linked to this, questions about applying Technical English in practical or academic work yield a mean of 3.18, suggesting that while students recognise its relevance, actual usage is somewhat less frequent.

Moreover, programme choices indicate that students are from fields where English for technical communication is essential, such as Electrical, Fabrication (Oil & Gas), and CADD. The demographic data (Table 3) confirm that many students are in programmes where reading technical manuals and safety instructions, and presenting projects, are likely part of the job scope. These findings show precise necessities: students need to be able to use Technical English in real-world tasks aligned with their technical domain, including reading technical documents, writing reports, and delivering presentations in English.

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When asked whether they liked English, the majority of students responded positively, with 87% indicating "Yes." A similar trend was observed for Technical English, with 83% of respondents expressing a positive attitude towards the subject. These findings suggest that students enter the course with generally favourable attitudes, which provides a supportive foundation for teaching and learning. Students rated the relevance of the subject at a mean of 3.56 (SD = 0.76), suggesting that they find it moderately to highly useful for their field of study. However, the frequency of applying skills learned in Technical English in other subjects or practical work was lower, with a mean of 3.18 (SD = 0.99). The finding indicates a gap between recognising relevance and actual application.

Table 4: Perceptions of Relevance and Use of Technical English

Item	Mean	SD
Relevance of Technical English to the field of study	3.56	0.76
Frequency of applying skills in other subjects/practical work	3.18	0.99

Students were also asked to identify their favourite and least favoured skills in Technical English. As shown in Tables 5 and 6, reading (n = 27) was the most favoured skill, while writing (n = 27) was the most disliked. This pattern highlights students' greater comfort with receptive skills (reading and listening) compared to productive skills (speaking and writing).

Table 5: Favourite Skills in Technical English

Skill	Frequency	Percentage (%)
Reading	27	39
Speaking	19	27
Listening	17	24
Writing	6	9
Total	69	100

Table 6: Least Favoured Skills in Technical English

Skill	Frequency	Percentage (%)
Reading	7	10
Speaking	24	34
Listening	11	16
Writing	27	39
Total	69	100

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The findings from Tables 5 and 6 show a meaningful and logically consistent pattern rather than a contradiction. While reading emerges as the most favoured skill (39%), it is also the least disliked (10%), suggesting that students generally feel comfortable and confident with this receptive skill. Conversely, writing is simultaneously the least favoured (9%) and the most disliked skill (39%). This alignment indicates a strong, consistent dislike or difficulty with writing.

The apparent contrast becomes clearer when considering the other two skills—speaking and listening. Speaking appears to be a relatively popular favourite skill (27%), yet it also ranks high as a least-favoured skill (34%). This duality suggests that students' experiences with speaking are mixed: some enjoy the interactive nature of speaking tasks, while many others find them intimidating or challenging. Listening shows a similar, though less pronounced, pattern.

Taken together, the two sets of findings do not contradict each other. Instead, they reinforce the broader trend: students generally prefer receptive skills (reading, listening) and feel less comfortable with productive skills (speaking, writing). The consistency is further supported by the difficulty ratings reported in Table 8, which show that speaking and writing had the highest mean difficulty scores. Conclusively, the two items confirm each other by presenting a coherent pattern:

- Receptive skills = more favoured, less disliked.
- Productive skills = less favoured, more disliked.

It strengthens the conclusion that students' confidence and comfort are shaped by the cognitive demands of different skill types, with productive skills requiring greater language output and complexity, which students often find challenging.

When asked how often they faced difficulties with each skill, students reported the highest challenges in speaking (M = 3.19), writing (M = 3.17), and listening (M = 3.17). Reading (M = 3.09) was reported as the least problematic skill. The finding confirms that productive skills (speaking, writing) remain the weakest areas, consistent with findings from other ESP studies in Malaysia.

Table 7: Mean Scores of Difficulties by Skill

Skills	Mean
Speaking	3.19
Writing	3.17
Listening	3.17
Reading	3.09

Confidence Levels, Employability Support, and Perceptions of Course Components

Students were asked to rate their confidence and perceived effectiveness of Technical English in supporting employability-related tasks. Table 8 summarises the mean scores.

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Table 8: Confidence and Effectiveness in Employability-Related Tasks

	Item	Mean
1.	Confidence in writing technical documents	3.14
2.	Confidence in delivering presentations	3.20
3.	Effectiveness in technical writing	3.28
4.	Confidence in writing cover letters	3.28
5.	Confidence in preparing résumés	3.29
6.	Effectiveness in improving speaking	3.36
7.	Effectiveness in preparing for interviews	3.37
8.	Overall effectiveness for future career	3.46
9.	Effectiveness of teaching methods	3.51
10.	Effectiveness of teaching materials	3.60

These results indicate moderate confidence across employability-related communication tasks. Students feel most supported in preparing for interviews (M = 3.37) and least confident in writing technical documents (M = 3.14). While teaching materials were rated slightly higher than teaching methods, both were perceived as only moderately effective, suggesting room for improvement.

Students were asked about their confidence in oral communication and presentations. Table 9 summarises the findings.

Table 9: Students' Confidence in Presentation and Speaking Skills

	Item	Mean
1.	Confidence in delivering presentations	3.20
2.	Confidence in public speaking	3.22
3.	Fear of making mistakes in speaking	3.30
4.	Ability to communicate with instructors	3.44
5.	Ability to communicate with classmates	3.47

The results indicate that while students feel reasonably comfortable communicating with classmates and teachers, they remain only moderately confident in public speaking and formal presentations. The relatively high rating for "fear of making mistakes" (M = 3.30) suggests that anxiety and self-consciousness are significant barriers to the development of strong speaking skills.

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Students also evaluated the importance of specific Technical English components, such as communication, listening, writing, and reading strategies. Table 10 presents the mean ratings.

Table 10: Perceived Importance of the Technical English Component

Component	Mean
Conversational skills	3.44
Listening: note-taking	3.47
Writing: memos	3.47
Writing: minutes of meetings	3.47
Writing: abbreviations	3.49
Writing: graphic organisers	3.51
Writing: reports	3.51
Communication theory	3.53
Listening: signal words	3.53
Listening: information transfer	3.54
Reading: skimming & scanning	3.54
Reading: guessing from context	3.57
Reading: predicting	3.57
Presentation skills	3.62

Across all components, the means range between 3.44 and 3.62, indicating that students view each element as moderately to highly important. Presentation skills (M = 3.62) and reading strategies, such as guessing from context and predicting (M = 3.57), were rated slightly higher than others, suggesting that students particularly value these areas.

Students' perceptions of how Technical English supports employability tasks were also examined. Table 11 provides the results.

Table 11: Students' Perception of Employability-Related Skills

Item	**Mean**
Writing cover letters	3.28
Preparing résumés	3.29
Attending interviews	3.37
Overall usefulness for future career	3.46

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These findings show that students rate the subject as moderately effective in preparing them for job-seeking tasks. Among the functions, attending interviews was rated slightly higher (M = 3.37), while writing cover letters was perceived as more challenging (M = 3.28). The overall usefulness for career readiness (M = 3.46) reinforces the subject's relevance but also suggests that improvements are needed to meet employability needs fully.

Finally, students were asked to evaluate the teaching methods and materials used in Technical English.

Table 12: Effectiveness of Teaching Methods and Materials

Item	**Mean**
Effectiveness of teaching methods	3.51
Effectiveness of teaching materials	3.60

Discussion and Conclusion

The findings of this study underscore the critical yet complex role of Technical English in student training at ADTEC JTM Kampus Kuantan. Framed within the ESP needs analysis model (Hutchinson & Waters, 2002; Dudley-Evans & St John, 1998), the results reveal that while students recognise the necessity of English for their academic and professional lives, significant gaps remain in its application, particularly in productive skills, and their expectations point to a need for curriculum reform.

First, students' perceptions of relevance and necessity reflect a broad awareness that English is vital to their technical fields. With a mean rating of 3.56, respondents acknowledged that Technical English is moderately to highly relevant to their studies and future work. However, the lower rating for actual use of Technical English in practical or workshop contexts (M = 3.18) highlights a disjuncture between perceived importance and real-world application. This discrepancy is not trivial; it suggests that while the subject is seen as necessary, it risks being compartmentalised as a classroom exercise rather than a transferable professional tool. Similar findings in Malaysian polytechnics (Yahaya & Miskam, 2024) show that students often perceive English as important but fail to integrate it into their daily technical activities. The implication here is that ADTEC's curriculum may not yet sufficiently bridge theory and practice. English is recognised as a necessity in principle but underutilised in practice, which undermines the very employability outcomes it is intended to support.

Second, the study revealed serious lacks in productive skills. Speaking and writing were both rated as the most difficult and least favoured skills, with mean scores (3.19 and 3.17, respectively) suggesting persistent challenges. Confidence in key employability tasks, such as writing cover letters (M = 3.28), preparing résumés (M = 3.29), and attending interviews (M = 3.37), was only moderate. In contrast, confidence in writing technical documents scored even lower (M = 3.14). These results point to a systemic weakness: the very skills most demanded in workplace communication are the ones students feel least prepared to use. Affective barriers exacerbate the problem, as students reported a notable fear of making mistakes when speaking (M = 3.30), indicating that anxiety and a lack of practice opportunities suppress their ability to perform effectively. The finding aligns with broader ESP and EFL research, which consistently finds that oral communication is hindered not only by linguistic competence but also by

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psychological factors such as anxiety and low confidence (Tsui, 1996; Ali & Salih, 2021). Critically, suppose ADTEC graduates enter the labour market without the ability to speak clearly in meetings or write coherent technical reports. In that case, their technical expertise will not be enough to secure career advancement.

Third, the students' responses illuminate explicit wants and expectations that must be taken seriously if Technical English is to serve its purpose. Reading was the most preferred skill (39%), reflecting students' greater comfort with receptive activities. However, their open-ended responses emphasised a desire for more practical, workplace-oriented training. Suggestions included integrating role-plays, simulations, authentic technical documents, and mock job applications. It signals a demand for pedagogy that mirrors real-world communicative practices rather than abstract language drills. While teaching materials were rated slightly higher (M = 3.60) than teaching methods (M = 3.51), the modest difference suggests that dissatisfaction lies more with the pedagogical delivery than with the resources. In other words, students are not asking for more books, but for more relevant, interactive, and applied classroom experiences.

Taken together, these findings carry critical implications for ADTEC's Technical English curriculum. The persistent gap between perceived relevance and actual usage necessitates stronger collaboration between English lecturers and technical instructors to integrate language tasks directly into workshop and project-based learning. Technical instructors could, for example, require reports, presentations, and safety briefings in English as part of coursework, thereby normalising the application of English in technical contexts. Also, the pronounced weaknesses in productive skills highlight the urgent need for targeted interventions in speaking and writing. The notion could include systematic integration of presentation practice, technical writing workshops, and industry-simulated communication tasks. Finally, students' expressed wants indicate that any reform must move beyond textbook-based instruction. ESP theory reminds us that learners are not passive recipients of a syllabus; their preferences, when aligned with workplace needs, are valuable indicators of how a course should evolve (Hutchinson & Waters, 2002).

From a critical standpoint, the study exposes a paradox: ADTEC JTM Kampus Kuantan has successfully established a technically strong curriculum, but the language component that should enable graduates to communicate this expertise effectively remains underdeveloped. Without addressing this imbalance, there is a risk that graduates may remain technically proficient but communicatively disadvantaged—a combination that limits employability in increasingly globalised industries. The challenge, therefore, is not whether Technical English is necessary (students already recognise that it is), but whether the curriculum can transform recognition into practice, and practice into confidence and competence. Unless this transformation occurs, the Technical English subject risks being perceived as a secondary requirement rather than a core enabler of professional success.

This study examined students' perceptions of Technical English at ADTEC JTM Kampus Kuantan using the ESP framework of necessities, lacks, and wants. The findings show that students value Technical English and recognise its relevance to their technical fields, yet the subject remains insufficiently embedded in their academic and practical learning experiences. Students reported moderate challenges with speaking and writing, along with limited confidence in employability-related tasks such as résumé writing, cover letters, and interviews. At the same time, they expressed a clear desire for more practical, authentic, and workplace-

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oriented learning activities. Overall, the results underscore a mismatch between the intended goals of Technical English and how students experience it, underscoring the need for a more integrated, practice-oriented approach to language instruction.

The findings highlight several implications for curriculum development and instructional practice. Greater integration of Technical English into technical subjects is needed to enhance the transferability of communication skills across academic and workplace contexts. Targeted support for productive skills—particularly technical speaking and writing—is essential, along with learner-centred pedagogical strategies such as simulations, role-plays, and industry-based tasks. Strengthening employability-focused communication training, including professional documentation and interview preparation, will further improve students' readiness for Malaysia's evolving labour market. Finally, regular and systematic needs analysis should be institutionalised to ensure ongoing alignment between learner needs, industrial communication demands, and the goals of the Technical English curriculum.

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