



Study of ESP: A Requirement Analysis for AI-Integrated to Automotive Technical Terminology

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ABSTRACT (10 PT)

This research investigates the prerequisites for developing an English for Specific Purposes (ESP) curriculum centered on Automotive Technical Terminology (ATT) within vocational education, utilizing AI-generated text for auditory learning. Although it is anticipated that ESP materials will correspond with professional communication needs, first findings reveal a divergence between academic content and the specialized language used in the sector, particularly with reading skills. This study employed a mixed-methods strategy, collecting information via document examination of lesson plans and syllabi, surveys containing both quantitative and qualitative questions answered by vocational students, and interviews with teachers and industry experts. The examination focuses on the requirements, shortcomings, and aspirations of students. The findings indicate that students require authentic, industry-specific tools, especially those that enhance reading and speaking skills in real industry settings. However, many shortcomings persist, including a lack of authentic reading experiences, limited practice chances, and reduced self-assurance in interacting with foreign guests. Learners prefer structured, flexible, and contextually pertinent materials that feature conversational text and diverse dialects. These results highlight a divergence between the needs of learners and existing pedagogical approaches. The research suggests that AI-generated text offers a feasible alternative by providing tailored and genuine sound output, however its effectiveness depends on its alignment with educational principles and student needs.



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INTRODUCTION

English for Specific Purposes (ESP) aims to prepare learners to effectively use English in professional settings relevant to their field of expertise. ESP seeks to equip learners with specialized linguistic competencies, genres, and phrases relevant to specific occupations (Anthony, 2018; Aisyah & Jumaroh, 2023; Basturkmen, 2021). To meet the increasing need for workplace communication, English for Specific Purposes (ESP) has been widely integrated into higher education and vocational training (Basuki et al., 2023; Ibrahim, 2010). In this context, ESP emphasizes the linguistic use for tangible goals, guaranteeing that vocational schools provide students with sector-specific competencies (Simanjuntak & Ratmanida, 2024).

In universitas Muhammadiyah Purworejo, vocational education and training (PVTO) institutions predominantly emphasize their curricula on the industry, reflecting the area's technical terminologies. The growing enthusiasm for vocational education is driven by students' aspirations for swift employment. Consequently, adherence to industry standards is essential, since perspectives from the tourism sector bridge the gap between academic training and professional demands (Nova & Lastari, 2024). Without such alignment, trainees may encounter significant challenges upon entering professional environments. Initial assessments during an English for Automotive Technical Terminology (ATT) session revealed considerable shortcomings in the existing training resources. The primary educational resource module lacks engaging activities that promote active involvement from learners. Moreover, the material exhibits insufficient coherence with the curriculum and presents a restricted lexicon, limited linguistic phrases, and repetitive tasks. Similar results suggest that contemporary ESP courses often fail to adequately address the requirements of learners (Yuliantini et al., 2024).

This issue is particularly significant as vocational students are expected to develop both productive and receptive abilities (Konstantinidou et al., 2023; Resmayani & Putra, 2022). The current program disproportionately emphasizes speaking and writing, providing limited opportunities for reading and reading, so generating an imbalance that may hinder communication skills. The lack of aural stimuli constitutes a fundamental problem. Discussions with instructors uncover difficulties in acquiring auditory resources that authentically depict true industry and cruise industry environments. This inconsistency limits students' involvement in genuine conversation, which is essential for career readiness. As a result, students could struggle to comprehend different accents, speech rates, and contextual language applications in genuine conversations (Agung Prasajo et al., 2023; Hari Purnomo Asmoro Aji et al., 2023; E. S. M. Masykuri, 2017). Addressing this disparity requires the development of authentic and contextually pertinent reading materials. In this scenario, Generative Artificial Intelligence (GenAI) offers a significant potential for progress (Lv, 2023; Sukmawati et al., 2025). GenAI refers to advanced systems adept at generating original and tailored content, encompassing authentic resources intended for specific educational contexts (Liando et al., 2025; Sunjayanto Masykuri & Basuki, 2022).

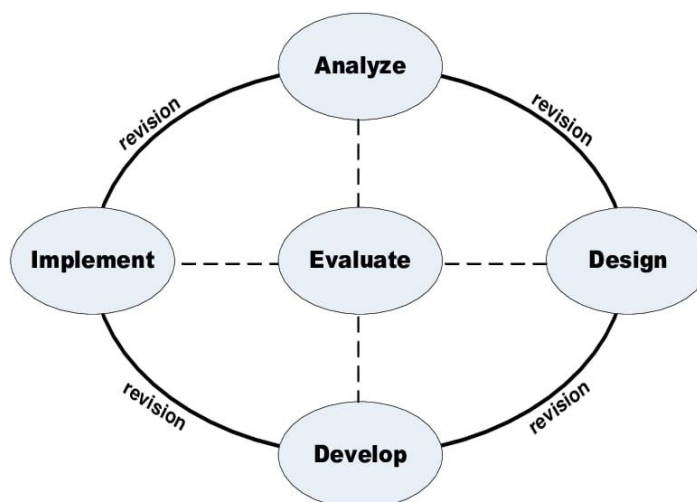
Previous studies have highlighted the promise of AI in language learning, analyzing the viewpoints of both students and educators regarding these tools in asynchronous education and the related difficulties, while additional research demonstrates the effectiveness of AI-generated text resources in enhancing reading instruction (E. Masykuri et al., 2024; E. S. Masykuri & Alekseevna, 2025; Sunjayanto Masykuri et al., 2025). Despite these developments, the application of GenAI in producing auditory resources for English for Specific Purposes, particularly in professional environments, is still insufficiently explored investigated (Fitria, 2023; Maskuri, 2024).

This initiative addresses the current deficiency by conducting a needs analysis to guide the creation of an AI-enhanced English module for Automotive Technical Terminology (ATT). The research focuses on identifying the needs, shortcomings, and aspirations of learners to inform the creation of reading resources using AI-generated text. This study advances the creation of ESP materials by positioning AI as a pedagogically significant resource that corresponds with learners' needs and industry demands, rather than merely a technological advancement.

RESEARCH METHODS

This research employed a mixed-methods strategy within a Research and Development (R&D) context, focusing on the analysis stage of the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The implementation of a mixed-method approach sought to provide a comprehensive understanding of students' requirements by combining the benefits of quantitative and qualitative data (Mackey & Gass, 2016). Quantitative data facilitated the recognition of overarching trends about students' perceived requirements, whereas qualitative data provided more profound understanding of teaching methodologies and industry standards. The research was carried out at a Vocational Automotive Technology Program (PVTO) institution located in Universitas

Muhammadiyah Purworejo. The study concentrated on individuals majoring in Automotive Technic Terminology (ATT), given that this discipline necessitates extensive English proficiency in genuine professional exchanges, particularly for those engaging in overseas internships



(Source : https://www.researchgate.net/figure/Gambar-1-Model-Pengembangan-ADDIE_fig1_337326454)

Picture 1 ADDIE Model

RESULTS AND DISCUSSION

The examined documents included the SKKNI-oriented curriculum, syllabus, lesson plans, and the existing module. A survey was administered to students to determine their requirements, shortcomings, and aspirations, in alignment with the established framework (Hutchinson & Waters, 1987). The tool consisted of 19 closed-ended questions evaluated using a five-point Likert scale; from strongly disagree (1) to strongly agree (5), in addition to six open-ended inquiries to get more detailed feedback. Semi-structured interviews were conducted with educators and industry experts to obtain in-depth perspectives on educational challenges and workplace communication needs. The discussions focused on: (1) the adequacy of existing educational materials; (2) challenges in imparting reading skills; and (3) expected English proficiency in real-world professional settings. This approach aligns with the tenets of qualitative research that emphasize credibility and dependability (Miles et al., 2014). The tool had 19 closed-ended questions assessed by a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), along with six open-ended inquiries aimed at eliciting more comprehensive feedback. Semi-structured interviews were performed with educators and industry professionals to gather in-depth perspectives on educational obstacles and communication requirements in the workplace. The discussions centered on: (1) the sufficiency of current educational materials; (2) difficulties in instructing reading abilities; and (3) anticipated English proficiency in practical job environments. This approach is consistent with qualitative research principles that prioritize trustworthiness and dependability.

Both quantitative and qualitative analytical techniques were employed to provide a comprehensive interpretation of the data. The numerical data obtained from the surveys were analyzed using descriptive statistics, specifically the mean score, to determine the general pattern of students' answers for each question. Utilizing mean scores is appropriate for Likert-scale data to determine the degree of consensus and prioritize the needs of learners. Qualitative data obtained from document analysis, open-ended survey responses, and interviews were analyzed using the interactive model of qualitative analysis, which encompasses data condensation, data display, and the formulation and verification of conclusions (Miles et al., 2014).

The findings of the needs analysis are structured based on the framework of necessities, deficiencies, and desires, with the objective of providing a comprehensive understanding of learners' needs in the realm of Automotive Technic Terminology (ATT). The findings derive from multiple data

sources, including surveys, interviews, and document examination, enabling triangulation and a more thorough study of the data. The results are divided into three main classifications: requirements, shortcomings, and aspirations (Hutchinson & Waters, 1987).

This statistic emphasizes how important it is to match learning resources with industry-demanded competencies. Furthermore, the necessity of exposure to a range of English terms (4.79) and the incorporation of reading resources that reflect authentic resource (4.75) underscore the significance of writing proficiency when interacting with a diverse clientele in authentic service scenarios. The demand for structured vocabulary and phrases (4.73) shows that students need supporting skills to literate effectively, even if it is slightly lower. All things considered, these results support the creation of educational resources that are skill-integrated, contextual, and bolstered by real media input. The results of the open-ended questions show a distinct pattern of target demands that closely match actual Automotive Technical Terminology (ATT) literation. Students recognized important scenarios for reading practice, including preparation tools, the machine and component, the process and maintenance etc. Furthermore, students specifically stated that reading, and reading are the abilities they require the most assistance with, indicating that effective and receptive writing continues to be a top priority in their educational process. Lack of adequate reading comprehension practice in a variety of Automotive Technic Terminology (ATT) scenarios is associated with the highest mean score (4.87). This implies that students believe they are not enough exposed to reading exercises that mimic actual workplace communication, which is crucial for comprehending visitor requirements and reacting suitably.

Consequently, the necessity for authentic text that speaks in multiple accents could not be satisfied by the traditional method of searching for reading text. In a similar vein, students reported feeling unconfident when interacting with foreign visitors (4.85), which may be related to their lack of exposure to a variety of conversational inputs and real-world communication situations. Inadequate learning resources to promote mastery of the necessary English skills in Automotive Technic Terminology (ATT) (4.73) and the belief that current reading text does not resemble genuine materials are two other noteworthy deficiencies. Students also reported a lack of exposure to industrialize standard vocabulary (4.56) and basic material with updated machine (4.65), both of which are still major issues albeit being slightly lower. This result highlights a glaring disconnect between present teaching methods and the communication needs of the industry sector and supports the significant advancements in the current curriculum.

Additionally, using open-ended questions, the students revealed substantial gaps that prevent them from achieving the required competencies. Limited vocabulary, strange accents, fast speech, and poor grammatical comprehension are the main challenges with reading comprehension. These difficulties show that students are not receiving enough diversified and scaffolded reading input, which is essential for improving comprehension abilities in practical settings. Additionally, students voiced their displeasure with the current course materials, pointing to problems including low-quality illustrations, a lack of real content, inadequate language expressions, and few examples. The students' inability to comprehend the fundamentals of service interaction—specifically, how to handle complaints, explain menus, and respond to client requests—further exacerbates this gap.

The necessity for text recordings with a range of English accents—a trait that traditional classroom materials cannot duplicate—is the reason for the highest mean score (4.83). This indicates that students have a strong desire to be exposed to a variety of pronunciation patterns, which is crucial for comprehending foreign visitors in actual industry settings.

Furthermore, pre-reading, while-reading, and post-reading organized reading activities were strongly preferred by students (4.81). This suggests that in order to enhance comprehension, kids require both guided learning processes and authentic input. The need for authentic, industry-specific text (4.75) highlights the need of authenticity in educational resources. In the meantime, students expressed interest in having adaptable materials that could be used for both independent study and classroom settings (4.67), underscoring the necessity of easily available and flexible resources. Learners can experience a variety of pronunciation patterns with AI voice assistants and speech recognition systems, enabling them to learn autonomously at any moment (Asfarini et al., 2024). The incorporation of simulated restaurant dialogues (4.65) and integrated vocabulary with pronunciation support (4.63) earned high agreement while being significantly lower, indicating that students enjoy linguistic support and contextual practice. The opinions of the students are in line with

the recommendations made by industry experts. It indicates that the students understand that they must take the issues they are about to face seriously and learn from real-world situations through in-class simulations.

Open-ended questions in the questionnaire reveal the students' desires in reaction to the gaps. The requirement for interactive and contextualized learning experiences is demonstrated by the students' clear preference for text materials in the form of dialogues and role-plays. This preference implies that learning via simulated real-life is more valuable to pupils than passive input. Additionally, their focus in dialogue-based text emphasizes how crucial exposure to conversational language is for improving speaking and reading comprehension. The need for these resources highlights how important it is to incorporate real-world and scenario-based text into the educational process. Students' demands, deficiencies, and desires in learning English for Automotive Technical Terminology (ATT) are consistently revealed by the study of both closed-ended and open-ended questionnaire responses. The results show that for students to function well in actual job settings, they need to have good practical communication skills, especially in speaking and reading. However, due to students' poor confidence in utilizing English in actual interactions, lack of practice opportunities, and restricted exposure to authentic reading resources, these demands are not sufficiently met. However, realistic, structured, and adaptable learning resources are clearly preferred by students, particularly those that use dialogue-based text and a variety of accents.

The results of this study show a close relationship between students' needs, wants, and deficiencies when studying English for Automotive Technical Terminology (ATT). When taken as a whole, these three factors show that vocational students need not only language proficiency but also real-world communication experience that matches the realities of the industry. It is clear from the regularity of open-ended questions, industry user comments, teacher viewpoints, and questionnaire responses that the current teaching materials have not adequately addressed the communicative demands seen in professional contexts. In terms of requirements, students emphasized the significance of learning resources that mirror real-world business practices, especially reading exercises that mimic workplace interactions like taking reservations, handling complaints, and attending to customer/ visitor requests. This implies that students place a high value on hands-on, professional learning opportunities that closely resemble real-world industry settings [4]. affirms that ESP must be defined by the unique needs of the learners and that teachers should focus on language that helps students' areas of specialty rather than generic English. Because language use is heavily reliant on service encounters and interaction patterns, communication competency in occupational education, especially industry training, cannot be divorced from situational and procedural circumstances.

Because reading is sometimes viewed in ESP situations as only an additional skill rather than a fundamental professional competency, this finding is especially significant. In actuality, workplace communication in the industry sector necessitates quick comprehension, quick interpretation of guests' intents, and suitable verbal responses under time constraints. Consequently, inadequate exposure to reading may have a direct impact on professional confidence and service performance. The use of AI-generated text is especially pertinent since it can offer a variety of accents, realistic circumstances, and repeated reading practice, all of which closely match the needs that the students have indicated (Al-tamimi & Bin-Hady, 2024; Ramendra et al., 2025), and assist the teacher in the classroom in skills development and building confidence (Santosa & Ratminingsih, 2026). This report are consistent with (Praptono et al., 2020) who found that Food and Beverage Students students identified speaking as their most critical skill and required materials containing authentic language expressions specific to their service roles. Speaking skill as a productive skill will influenced by the text inputs, reading (Yuliantini et al., 2024). The perception of the students revealed that they need the integration of the four skills interconnectedly while enriching vocabularies, learning structured to meet the communicative interaction in workplace settings.

The identified lacks further reinforce the urgency of improving instructional materials. Students reported insufficient reading practice, lack of authentic communication exposure, unfamiliarity with diverse accents, and low confidence when interacting with foreign guests. This reinforces the argument that ESP instruction must provide context-specific input to prepare learners for target situations (Basturkmen, 2021). In ESP contexts, this reflects a misalignment between classroom practices and

real-world communication demands (Lasekan et al., 2023). The statements from industry users strengthen this issue, particularly regarding graduates' inability to respond spontaneously during guest interactions due to poor reading comprehension. Such findings suggest that conventional classroom materials may overly prioritize scripted dialogues and isolated language exercises while neglecting authentic interactional complexity. The view about insufficient exposure to meaningful input can hinder the development of communicative competence, particularly in speaking (Chung & Bong, 2024; Huang et al., 2023) justify that AI-generated content such as images, texts, texts, and videos could enhance classroom instructions (Lim et al., 2023; Takale et al., 2024). The statement from (Liando et al., 2025) specifically identified that over-dependence on inadequate tools can limit students' development of authentic communication skills. In this regard, the integration of AI-generated text becomes particularly relevant, as it can provide diverse, scenario-based reading materials, simulate real-life interactions, and offer repeated exposure to authentic language use (Al-tamimi & Bin-Hady, 2024; Hong, 2023). Such features are expected to reduce students' lacks, especially in reading comprehension, confidence, and familiarity with professional communication in Automotive Technic Terminology (ATT).

However, the significance of AI-generated text in this study should not be interpreted merely as technological innovation. One possible weakness in AI-based language learning is the assumption that technology itself automatically improves learning outcomes. The findings of this study instead suggest that technology becomes meaningful only when it addresses pedagogical gaps identified through needs analysis. In other words, the novelty of AI-generated text does not lie solely in the use of artificial intelligence, but in its ability to accommodate authentic, customizable, and context-specific reading exposure that is difficult to achieve through conventional materials. Furthermore, the students' wants reveal that learners are highly aware of the type of instructional support they need. Their preference for structured reading activities involving pre-reading, while-reading, and post-reading stages indicates that students do not simply demand exposure to authentic text, but also require pedagogically guided learning experiences to enrich and train vocabularies (Tananykhina et al., 2021). It reflects that good materials should guide learners through scaffolded experiences rather than simply exposing them to input (Tomlinson, 2014). This finding implies that authentic materials alone are insufficient without instructional sequencing that supports comprehension and language processing.

Students' strong preference for dialogue-based text, role-play activities, and varied accents also indicates that they value experiential and contextual learning. Industry communication is inherently interactional; therefore, students expect learning activities that simulate real communicative pressure rather than passive language reception. The industry users' recommendation regarding role-play and case-study activities further validates the importance of simulation-based learning in vocational ESP classrooms. The absence of reading materials and the need for both formal and informal dialogues suggest that the existing resources do not reflect the diversity and complexity of real communication in the Food and Beverage industry trend. Up-to-date context of reading text make the students fond of learning more about the topic (Humeniuk et al., 2021).

Overall, these findings justify the development of a comprehensive and flexible instructional module that integrates authentic, varied, and structured text materials. Before using AI-Assistance in assessments (Baruna et al., 2025), classroom instructions and learning material and media (Izzah et al., 2023) should be the focus of improvement. The use of AI-generated text is particularly relevant in addressing these wants, as it enables the creation of diverse accents, realistic scenarios, and repeatable reading practice, which are difficult to achieve through conventional materials (Lv & Zhang, 2025; Natalia, 2024). Therefore, it justifies the development of an English for Automotive Technic Terminology (ATT) module integrated with AI-generated text to provide authentic, contextualized, and engaging learning experiences that better prepare students for professional communication.

More importantly, the interconnected pattern between necessities, lacks, and wants reveals a broader pedagogical issue within vocational ESP instruction. Students already understand the

communicative realities of the workplace and are aware of the competencies they need to master; however, the instructional materials currently used in classrooms have not sufficiently bridged the gap between academic learning and workplace communication. This mismatch may potentially limit students' readiness for internships and international employment opportunities, particularly in the industry, where communication quality directly influences service quality and customer satisfaction.

According to the results of the analysis of students' needs, lecturer input, curriculum, syllabus and lesson plans, as well as the existing teaching materials, the developed module is characterized by the following features: (1) varied learning activities incorporating a range of activities; (2) work-related knowledge and skills that provides relevant information about professional skills and workplace contexts; (3) integration of language skills combining reading, speaking, writing, and reading skills comprehensively and supported by AI-generated reading text; (4) clear and supportive illustrations; (5) alignment with syllabus and lesson plan to ensure consistency in the developed module; (6) contextual vocabulary and grammar use; (7) real context-based activities based on authentic situations encountered in the workplace; and (8) ease of accessibility for users, students and instructors. These characteristics indicate that the proposed module is not designed merely as supplementary material, but as a pedagogically grounded ESP resource intended to narrow the gap between vocational education and workplace communication demands.

CONCLUSION

The purpose of this study was to find out what vocational students needed to know in order to learn Automotive Technic Terminology (ATT) in English and to establish a foundation for creating an educational module that included AI-generated reading text. Based on the framework of needs, wants, and lacks, the results show a recurring trend in all data sources. Regarding requirements, students showed a significant need for materials that are realistic, workplace-focused, and mirror actual communication in industry environments. One of the most important aspects of their learning needs was the development of reading skills, especially exposure to a variety of dialects and real-world service interactions. Significant inadequacies in present teaching methods were found by the investigation, including the poor confidence in speaking with foreign visitors, the lack of realistic resources, and the restricted availability of reading input. These results point to a discrepancy between ESP concepts and current instructional resources. The students' preferences for structured, adaptable, and context-specific learning resources—such as dialogue-based text, a variety of accents, and scaffolded reading exercises—are evident. When combined, these results demonstrate that learners' communicative needs, especially those related to speaking and reading, are not well supported by the English teaching materials currently available for Automotive Technic Terminology (ATT). This discrepancy highlights how crucial it is to link material development with needs assessments. As a result, this study suggests creating an English for Automotive Technic Terminology (ATT) module that incorporates sounds produced by artificial intelligence. Practical benefits of integrating AI technology include the capacity to produce a variety of accents, mimic authentic conversation situations, and enable recurrent reading exposure. This study does stress that technology should not be seen as a stand-alone remedy, though. Its efficacy is contingent upon its conformity to educational principles and its capacity to enhance genuine communication practices.

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