p-ISSN: 2963-7856 | e-ISSN: 2961-9890
Available online at jerkin.org/index.php/jerkin
Jurnal Pengabdian Masyarakat dan Riset Pendidikan
Volume 4 No. 4, April-June 2026, pp 24788-24797

Need Analysis on English for Specific Purposes of Computer Network Engineering Students at Vocational High School

Bahagia Saragih [1], Ivana Rasikah Azzahra[2], Natasya Euodia Br. Ginting[3], Nurfarah[4], Rina Trie Syahputri[5], Zuraima Fitriani Salim[6]
[1,2,3,4,5,6]English Education Department, Faculty of Language and Arts, Universitas Negeri Medan
E-mail: gya_bucks@yahoo.co.id
* Corresponding Author

https://doi.org/10.31004/jerkin.v4i4.6203

ARTICLE INFO

Article history
Received: 20 April 2026
Revised: 29 April 2026
Accepted: 5 Mei 2026

Kata Kunci
Analisis kebutuhan, ESP, teknik jaringan komputer, sekolah menengah kejuruan

Keywords
Needs analysis, ESP, computer network engineering, vocational high school

ABSTRACT

Bahasa Inggris untuk Tujuan Khusus (ESP) sangat penting bagi siswa Teknik Jaringan Komputer (CNE) di sekolah menengah kejuruan, namun pengajaran bahasa Inggris saat ini jarang sesuai dengan kebutuhan profesional mereka. Studi ini mengidentifikasi kebutuhan tersebut menggunakan kerangka kerja TSA-PSA-LSA melalui desain sekuensial penjelasan metode campuran. Kuesioner diberikan kepada tujuh siswa CNE di SMK 1 Sei Percut Tuan. Siswa berharap untuk sering menggunakan bahasa Inggris di tempat kerja (rata-rata TSA: 4,14/5), terutama untuk kosakata teknis, perangkat lunak berbahasa Inggris, dan penulisan laporan. Namun, kemampuan mereka saat ini hanya tingkat dasar hingga menengah (rata-rata PSA: 3,07/5), dengan menulis dan berbicara sebagai keterampilan terlemah (keduanya 2,71/5). Sebagian besar pelajaran masih berfokus pada bahasa Inggris umum, dan hanya 28,6% siswa yang menerima konten ESP. Siswa sangat termotivasi (4,14/5) dan lebih menyukai pembelajaran berbasis AI dan praktik langsung. Kesenjangan ini menunjukkan bahwa siswa CNE membutuhkan kurikulum ESP yang secara langsung mencerminkan tuntutan pekerjaan mereka di masa depan

English for Specific Purposes (ESP) is essential for Computer Network Engineering (CNE) students at vocational high school, yet current English instruction rarely matches their professional needs. This study identifies those needs using the TSA-PSA-LSA framework through a mixed-methods explanatory sequential design. A questionnaire was given to seven CNE students at SMK 1 Sei Percut Tuan. Students expect to use English often at work (TSA mean: 4.14/5), mainly for technical vocabulary, English-language software, and writing reports. However, their current proficiency is only basic-to-intermediate (PSA mean: 3.07/5), with writing and speaking as the weakest skills (both 2.71/5). Most lessons still focus on general English, and only 28.6% of students receive any ESP content. Students are highly motivated (4.14/5) and prefer AI-based, hands-on learning. These gaps show that CNE students need an ESP curriculum that directly reflects their future work demands.

How to Cite: Bahagia Saragih et al (2026). Need Analysis on English for Specific Purposes of Computer Network Engineering Students at Vocational High School https://doi.org/10.31004/jerkin.v4i4.6203

INTRODUCTION

English for Specific Purposes (ESP) is now increasingly crucial in vocational schools, given that students need English language skills not only for academic studies but also for workplace readiness. In the Computer and Network Engineering (CNE) program, providing English materials that are directly correlated with their technical field can have a significant impact on student success. This field integrates technical areas such as network infrastructure, cybersecurity, and server administration, where English

plays a vital role in understanding technical documentation, configuring global hardware, and accessing IT development resources from around the world.

In Indonesia, this field is one of the most popular majors in vocational schools due to its relevance to the needs of industry 4.0 (Rahman & Subiyanto, 2022). Along with the expansion of global cloud computing infrastructure, TKJ graduates are required to have strong technical English literacy to operate in an internationally standardized work environment. Several studies highlight that mastery of technical terminology in English greatly assists technicians in performing troubleshooting effectively (Arisandy et al., 2021). However, research by Brown & Abeywickrama (2019) reminds us that English language assessment in vocational schools must be authentic and reflect the real tasks that graduates will face.

ESP prioritizes an approach that focuses on the specific needs of language users. For TKJ students, English is essential for understanding instructions on the Command Line Interface (CLI), configuring routers, and compiling post-installation technical reports. This approach effectively bridges the gap between general grammar mastery and practical communication needs in the IT industry (Basturkmen, 2021). In addition, the integration of digital network simulation platforms in language learning has been shown to improve students' understanding of technical vocabulary and work readiness (Zhu & Wang, 2024).

According to Dudley-Evans & St John (1998), ESP should be defined based on functional needs that enable individuals to act professionally in their specific environments. One of the main pillars of ESP is Needs Analysis (NA), which serves to map the gap between students' current language abilities and industry competency requirements. This involves analyzing the target communication situations that students will encounter, such as interacting with a global technical support team or reading complex network diagrams (Flowerdew & Mahlberg, 2023). In the context of TKJ, NA plays an important role in compiling a technical glossary and realistic customer service (helpdesk) simulation scenarios.

Although awareness of the importance of customizing teaching materials has begun to grow, its implementation often encounters obstacles. A study by Syakur et al. (2020) revealed that although vocational school teachers understand the urgency of English for specific purposes, obstacles such as limited practice media and differences in students' basic abilities in large classes remain major challenges. These findings emphasize the need for collaboration between English teachers and vocational teachers to develop integrated teaching modules, as well as the need for adequate laboratory facilities to practice English in a real technical context.

To conduct a more comprehensive needs analysis, structured frameworks such as Target Situation Analysis (TSA), Present Situation Analysis (PSA), and Learning Situation Analysis (LSA) can be implemented (Dudley-Evans & St John, 1998; Hutchinson & Waters, 1987; Munby, 1998). TSA focuses on the English language skills that students will need in their future technical jobs, PSA reviews current competencies and obstacles encountered in learning English, while LSA explores students' motivation, preferences, and learning styles.

Although many researchers agree on the urgency of needs analysis, several previous studies in vocational school settings still use limited approaches, such as simple surveys or interviews without applying the complete TSA, PSA, and LSA models. As a result, many of these studies have not been able to comprehensively explain what students actually need to learn English effectively. Some studies only focus on specific skills or text types (Abidah et al., 2023; Hajar & Triastuti, 2021; Wennyta et al., 2025), while others only explore general preferences without linking them to students' current abilities or future career needs (Dele et al., 2025).

Until now, there has been no research that explores the English language needs of Computer and Network Engineering students in vocational schools using a comprehensive framework such as TSA, PSA, and LSA in an integrated manner. This study aims to fill this gap by applying a mixed-methods explanatory sequential design (Creswell & Creswell, 2018). Accordingly, this study aims to answer the following research question: How is the need analysis of English for specific purposes for computer network engineering students at vocational high school?

Computer Engineering

In the world of education, the development of computer technology has made a significant contribution, especially in English language learning. This development in computer technology is not only needed in elementary schools, but also at various levels of education, such as middle school and university, which greatly need computer technology as an additional tool or aid in carrying out the

learning process. This is so that students can more easily understand the material or lessons that have been explained or provided by teachers or lecturers at schools and universities. To meet learning standards in schools and universities, a computer network is needed. A computer network consists of two or more computers that are connected to each other (Tangkowit et al., 2021), while a network computer is identified as a computer network or a group of terminals that are connected in one or more networks (Sugiyanta and Raja, 2017).

English language skills in the field of computer engineering are highly sought after. This is because most professional equipment uses English, such as in technical documentation, professional communication, and software. Students in other fields certainly have different English language needs than students in computer engineering. Computer engineering students usually need to master technological terms, read technical documentation, write technical reports, and also need to communicate in information technology projects. Therefore, adjusting English language learning to the needs of computer engineering students is very important.

English For Specific Purpose

The teaching method for English for Specific Purposes (ESP) prioritizes the needs of learners, Maulida (2023). According to Hutchinston and Waters (1987), English for Specific Purposes (ESP) is needed by people who work in specific fields such as medicine, the military, business, and other fields. The goal of ESP is to increase the relevance of English teaching to the needs of students. In the field of computer and network engineering, ESP aims to master the English language used in professional activities in the field of information technology, such as understanding software documentation, reading network configuration guides, compiling technical reports, and interacting with technicians or developers from various countries.

Recent research shows that ESP learning is crucial for students in the technology sector, as most technological information is available in English. Research by Tri Nurhasanah and Eri Kurniawan (2023) reveals that computer and network engineering students need English language learning that is more focused on their field, as general English language learning is often insufficient to meet their academic and professional needs. The study highlights the importance of developing ESP materials that are relevant to the context of technology and work in the field of computer networking. ESP in the computer engineering and networking sector plays a crucial role in preparing students to meet the needs of the technology industry worldwide. ESP teaching supports students in improving their English language skills related to their discipline, enabling them to access technological information, interact professionally, and participate in technological advances at a global level.

Need Analysis

Needs analysis is a process of collecting information to understand what students need. The same opinion was given by Robles (2012), where he explained the process used to collect the information. The information about what students need was called the needs analysis. According to (Hutchinson & Waters, 1987; Richards, 2009) mention that a full NA has three parts: Target Situation Analysis is the process of understanding what the desired or ideal situation should be. Present Situation Analysis looks at where things currently stand and what is actually happening. Learning Situation refers to the environment or context in which learning takes place. Analysis (LSA). TSA figures out what language skills students will need when they grow up. Professions, PSA checks their current language skills, and LSA looks into how students prefer to learn.

One of the need analysis for students is reading ability. This is due to the fact that many sources of technological information, including manuals for hardware installation, guides for network configuration, and software documentation, are written in English. Students must be able to understand these technical texts in order to follow the system installation process, understand the steps in network configuration, and troubleshoot problems related to computer and network devices. A needs analysis shows that vocational high school students majoring in computer and network engineering need English language learning that emphasizes understanding technical texts, mastery of technology related vocabulary, and the ability to communicate simply in the context of information technology practice. Therefore, ESP learning for TKJ students should utilize authentic materials such as computer manuals, network configuration guides, and practice-based activities to better suit their needs in the work environment.

ISSN 2963-7856 (print), ISSN 2961-9890 (online)

Discussions regarding the importance of need analysis in the development of English for specific purposes (ESP) learning have been addressed by several previous studies in various scientific fields, especially in this main field, namely computer engineering. However, research related to this topic is still rarely discussed by researchers, especially in Indonesia.

Research conducted by Mohamad Amin Manoochehri and Azadeh Nemati (2016) conducted a study titled "A Comprehensive Survey on Computer Engineering ESP Course in Current Situation of Iranian Universities." This study aimed to observe the implementation of English for Specific Purposes (ESP) courses in the field of computer engineering at several Iranian universities. The results of the study found that students' attitudes tended to be negative and unsatisfactory. Therefore, the implementation of ESP is not yet optimal, which indirectly affects student motivation and attitudes.

Then there is relevant research related to ESP in computer engineering, which was studied by Danaye Tous and Haghighi (2014). This study is entitled "Evaluation of ESP textbooks: Evidence from ESP textbook of computer engineering major". This study looks into evaluating an English for Specific Purposes (ESP) textbook designed for computer engineering students at an Iranian university. But the evaluation indicates that while the textbook covers various topics and aims to meet students' needs, it falls short in some areas like the practical use of listening and speaking activities, recycling, and promoting learner independence, which are essential for effectively addressing the students' specific professional and academic needs.

METHOD

This research utilized a mixed-methods explanatory sequential design, combining quantitative and qualitative methodologies to conduct a thorough analysis of the English for Specific Purposes (ESP) requirements for Computer Network Engineering (Teknik Komputer Jaringan) at SMK 1 Sei Percut Tuan. This specific framework was selected to find both empirical data and nuanced insights regarding the students' linguistic competence, the relevance of current curricula, and their preferred learning modalities.

Research Instruments and Participants

This study only employed one instrument, which is a Google Form Questionnaire consisting of several questions that are related to need analysis framework proposed by Hutchinson & Waters (1987). The framework includes target situation analysis (TSA), present analysis situation (PSA), & learning situation analysis (LSA). Linguistic Needs Analysis (LSA) is applied to determine the specific English competencies that are important for the students' future professional careers; Present Situation Analysis (PSA) evaluated their current proficiency levels and the relevance of existing instructional materials; and a further Learning Needs Analysis (LSA) examined their preferred pedagogical styles, instructional media, and classroom environments. The questionnaire featured several range of response formats, including Likert-scale items, multiple-choice questions, and checkbox options, to facilitate the collection of a comprehensive dataset. It was only distributed to Computer Network Engineering students in SMK 1 Sei Percut Tuan via WhatsApp by two main sources.

Table 1. The Research Framework Guided the Design of the Student Questionnaire

Dimension	Objectives	Response Formats
Personal Information	To know the targeted respondents' personal information	1 Open-ended question (for name) 1 Likert-scale (for gender)
Target Situation Analysis	To know why they are learning the specific English	2 Multiple choices 1 Likert-scale 1 Checkbox
Present Situation Analysis	To know what level of English they are currently in	7 Likert-scales 2 Checkboxes 1 Open-ended question
Learning Needs Analysis	To know how they want to be taught English (especially aligned with their specific occupational needs)	2 Multiple choices 1 Likert Scale 1 Checkbox 1 Open-ended question

In conducting this research, convenience and purposive sampling are used. Convenience because the source's area is near from research area, as well as purposive for the respondents' criteria is limited only to the Computer Network Engineering students. Despite the limited number of participants, each expert offered significant and detailed perspectives on the English language competencies essential for the modern workplace. This involvement of industry professionals was guided by Hutchinson and Waters' (1987) needs analysis framework, specifically to support the Target Situation Analysis (TSA).

Because the primary goal of a TSA is to identify specific communicative requirements rather than to produce generalizable data, the use of a small, purposive sample of highly relevant experts was considered both valid and appropriate for this study.

This study employed a Research and Development (R&D) approach to develop and validate Edpuzzle-based learning media aimed for students' listening comprehension in descriptive texts while integrating Simalungun local wisdom. According to Borg and Gall (1983), R&D is a systematic process designed to produce educational products that are valid, practical, and applicable in real classroom settings. Their original ten-stage model was adapted into six simplified stages for this study: data and information collection, needs analysis, product development, expert validation, product revision, and final product preparation.

Data Collection Procedures

Data collection for this research was conducted during the 2025/2026 academic year using an explanatory sequential mixed-methods design. The study was conducted in two distinct phases: it started with a quantitative data collection stage, which was subsequently followed by a qualitative phase designed to elaborate upon and clarify the initial results. For the quantitative portion, structured questionnaires were distributed among the student body via a peer-to-peer approach using the WhatsApp platform.

The qualitative data collection was already inside the Google Form itself where the open-ended questions acted as a written interview where participants might write their ideas with freedom and comfort. The participants have previously been asked for their consent to participate in this research.

Data Analysis Techniques

Quantitative data were analyzed using descriptive statistical methods. Responses to the Likert-scale items were scored on a 1–5 scale, ranging from "Strongly Disagree" to "Strongly Agree". The data were then processed to calculate the frequency and percentage distributions for the multiple-choice and checkbox items. A scoring formula was also applied to determine students' average perceptions and identify the most essential English language skills based on their responses. This method provided a clear overview of Computer Network Engineering students' learning trends and preferences.

The qualitative data analysis was conducted using the three-step framework established by Miles and Huberman (1994):

1. Data Reduction: The process of selecting and answers, making sure that only the most relevant information relevant to the research questions was retained.
2. Data Display: Afterwards, the data were organized through a coding process, where information was categorized into core themes, including specific skill gaps, pedagogical challenges, and preferred instructional strategies.
3. Conclusion Verification: In the final stage, recurring patterns were identified to draw meaningful conclusions. This systematic approach facilitated a deeper understanding of the students' linguistic requirements and evaluated how effectively current instructional practices align with their future professional expectations.

HASIL DAN PEMBAHASAN

Findings

This section presents the findings from the needs analysis of Computer Network Engineering (CNE) students at Vocational High School. The data are organized into three parts: Target Situation Analysis (TSA), Present Situation Analysis (PSA), and Learning Situation Analysis (LSA). Each part answers a different question: what English skills students will need at work, what they can do now, and how they currently learn.

ISSN 2963-7856 (print), ISSN 2961-9890 (online)

1. Findings from Target Situation Analysis (TSA)

The TSA findings show that CNE students clearly expect to use English often in their future jobs. Most respondents rated English frequency at level 4 (often) or level 5 (very often), producing a mean score of 4.14 out of 5.00. Only one student selected level 3 (sometimes). This result shows that students are well aware English will be a regular part of working in the computer networking field.

Table 2. Perceived Frequency of English Use in Computer Networking Jobs

Frequency Level	Percentage (%)
3 – Sometimes	14.3%
4 – Often	57.1%
5 – Very Often	28.6%
Mean Score	**4.14 / 5.00**

When asked which tasks would require English at work, students identified a wide range of needs. Understanding computer terms and vocabulary was the most commonly selected item, chosen by five students (71.4%). Using English-language software and writing reports or messages about computer problems were each selected by four students (57.1%). Reading software or network installation tutorials and understanding computer error messages were each cited by three students (42.9%). Watching English technology tutorials and reading IT forums online were mentioned by two students each (28.6%).

Table 3. Expected English Use Cases in Computer Networking Jobs

Use Case	No. of Students	Percentage (%)
Understanding computer terms / vocabulary	5	71.4%
Using English-language software	4	57.1%
Writing reports/messages about computer issues	4	57.1%
Reading software/network installation tutorials	3	42.9%
Understanding computer error messages	3	42.9%
Watching English technology video tutorials	2	28.6%
Reading IT discussion forums online	2	28.6%

These findings show that students need English mainly for reading technical content and for written communication. Their target job roles such as IT Support (3 students), Network Technician, Computer Technician, Network Administrator, and IT Entrepreneur, all involve working with English-medium software, documentation, and error messages on a daily basis. The TSA results therefore point clearly to the need for English instruction that focuses on technical vocabulary, reading comprehension, and writing in a computer networking context.

2. Findings from Present Situation Analysis (PSA)

The PSA findings show a clear gap between what students need and what they can currently do in English. Across seven skill indicators rated on a scale of 1 to 5, the overall mean score was 3.07 out of 5.00. This places students at a basic-to-intermediate level overall, which are able to understand some English content, but not yet ready to communicate effectively in a professional setting.

Table 4. Students' Self-Assessment of English Skills (Scale 1–5)

Skill Indicator	Mean Score	Level
Vocabulary Mastery (Technical Terms)	3.43	Moderate
Video Tutorial Comprehension	3.29	Moderate
Reading Comprehension (Technical Texts)	3.29	Moderate
Perceived Sufficiency for the Workplace	3.14	Moderate
Self-assessed Overall English Level	3.00	Moderate
Writing Ability (Simple Sentences)	2.71	Low-Moderate
Speaking Confidence (Simple Explanations)	2.71	Low-Moderate
Overall PSA Mean	**3.07 / 5.00**	**Basic–Intermediate**

Writing ability and speaking confidence received the lowest scores, both at 2.71 out of 5.00. This is a critical finding because the TSA identified writing reports and messages as one of the top workplace needs, selected by 57.1% of students. Students are weakest in exactly the skill they will need most.

Speaking confidence is equally low, which matters for roles like IT Support and Network Administrator where explaining technical issues to users or clients is a common task.

The difficulties students reported are consistent with these low scores. Pronunciation was the most common challenge, cited by four out of seven students (57.1%). Grammar usage and vocabulary retention were each reported by three students (42.9%). These difficulties affect both speaking and writing, which explains why productive skills scored lower than receptive skills such as reading and listening comprehension.

Table 5. Main English Difficulties Reported by Student s

Difficulty Area	Percentage (%)
Pronunciation	57.1%
Grammar Usage	42.9%
Memorizing Vocabulary	42.9%

It is also worth noting that all seven respondents had already completed a workplace internship (PKL/Magang). This means their self-assessments reflect real experience, not just classroom assumptions. Their low confidence in writing and speaking is therefore a practical concern that directly affects their professional readiness.

3. Findings from Learning Situation Analysis (LSA)

The LSA findings reveal two important issues: the content currently taught in English classes does not match what students need, and the way students prefer to learn is different from how they are currently taught.

In terms of classroom content, four out of seven students (57.1%) reported that their English lessons focus mainly on general conversation and reading general English texts. Grammar exercises were covered by three students (42.9%). Only two students (28.6%) reported that their lessons include any computer or network-related English material. This means most students are learning general English when they actually need English for Specific Purposes (ESP) related to their field.

Table 6. Current English Classroom Content

Classroom Content	Percentage (%)
General English / Daily Conversation	57.1%
Reading English Texts	57.1%
Grammar Exercises	42.9%

Regarding learning preferences, students showed a strong and clear preference for practical, technology-based learning. Six out of seven students (85.7%) preferred learning through direct practice rather than theory-first instruction. For learning media, AI tools such as ChatGPT and AI translators were the top choice, selected by five students (71.4%). Language learning apps like Duolingo and Google Translate were preferred by three students (42.9%), and YouTube video tutorials by two students (28.6%). Only one student preferred printed modules or books.

Table 7. Preferred Learning Methods and Media

Preferred Method / Media	Percentage (%)
Practice-heavy / hands-on learning approach	85.7%
AI-based tools (ChatGPT, AI Translator)	71.4%
Teacher explanation	42.9%
Language learning apps (Duolingo, Google Translate)	42.9%
Watching English computer video tutorials	28.6%
YouTube video tutorials	28.6%

Students' motivation to learn English for computer networking was high, with a mean score of 4.14 out of 5.00, which is the same as the TSA English frequency mean. Students know English is important for their careers and they want to learn it. The problem is that the current classroom experience does not match either their needs or their preferences. Many students described their ideal learning experience as watching foreign tutorial creators, using AI for help, and practicing directly with real tasks. These responses show that students are already learning English on their own outside class using digital tools, and they want formal instruction to work the same way.

RESULTS AND DISCUSSION

ISSN 2963-7856 (print), ISSN 2961-9890 (online)

The TSA, PSA, and LSA findings together reveal a clear and consistent picture: CNE students know what English they need, they are motivated to learn it, but their current English education is not giving them the right content or the right approach. This study identifies three major gaps that need to be addressed.

The first and most critical gap is between writing needs and writing ability. The TSA shows that 57.1% of students expect to write reports and messages about computer problems in English at work. However, the PSA shows that writing is their weakest skill, with a mean score of only 2.71 out of 5.00. Students are underprepared in exactly the area they need most. A similar gap exists for speaking. Roles such as IT Support and Network Administrator require explaining technical problems in English, yet speaking confidence also scored 2.71. These productive skill gaps are the most urgent issues to address in course design, consistent with Hutchinson and Waters' (1987) concept of identifying learners' "necessities" and "lacks" as the foundation of ESP course development.

The second gap is between what is taught and what is needed. The LSA shows that only 28.6% of students receive any computer-related English content in class. Most lessons focus on general English and grammar, which do not prepare students for reading error messages, using English software, or writing IT reports. This gap between general English instruction and the ESP demands of the CNE profession has also been observed in other vocational ESP studies (Abidah et al., 2023; Khalida & Refnaldi, 2020; Wennyta et al., 2025; Wijayanto et al., 2023), where a mismatch between classroom content and workplace language needs is a recurring problem.

The third gap is between how students prefer to learn and how they are currently taught. The LSA shows that 85.7% of students want direct practice, and 71.4% prefer AI tools—yet current instruction remains mostly teacher-explanation-based. This misalignment wastes students' existing motivation. They are already using AI tools and watching English tutorials on their own. A well-designed ESP course could build on these habits rather than ignore them. As Hastuti (2022) and Yao et al. (2024) note, matching instruction to learner preferences leads to better engagement and outcomes.

Compared to earlier needs analyses in vocational contexts (Mao & Zhou, 2024; Wennyta et al., 2025; Wijayanto et al., 2023), this study offers a more complete picture by using all three components of the TSA-PSA-LSA framework together. Previous studies often focused on one component or one skill area. By combining all three layers, this study shows not just what students lack, but also why the gap exists and how it can be addressed through changes in both content and method.

Based on these findings, three clear directions emerge for English course redesign in the CNE context. First, lessons must shift from general English to ESP content: technical vocabulary, error messages, software interfaces, and IT documentation. Second, writing and speaking must be practiced through real tasks such as drafting incident reports, explaining network setups, or responding to technical queries in English. Third, learning methods must make use of the digital tools students already prefer, including AI assistants, video tutorials, and hands-on software activities.

In summary, this study shows that CNE students are ready and motivated to learn English for their profession. What is missing is an ESP curriculum that matches their target needs, addresses their current weaknesses, and uses the practical, technology-based approaches they prefer. Closing these three gaps would make English instruction far more relevant and effective for vocational learners in the computer networking field.

CONCLUSION

This study looked at the English language needs of CNE students at SMK 1 Sei Percut Tuan using the TSA, PSA, and LSA framework. Three key findings stand out.

First, students know that English will be a regular part of their future jobs. They expect to use it mainly for reading technical content, working with English-language software, and writing IT reports and messages. Second, their current English level is only basic-to-intermediate overall (PSA mean: 3.07/5). Writing and speaking are their two weakest skills, both scoring 2.71 out of 5. This is a serious problem because writing is also one of their top workplace needs. Third, most English lessons at school focus on general conversation and grammar. Only 28.6% of students get any computer-related English content. At the same time, students are highly motivated and already use AI tools and video tutorials to learn English on their own outside class.

These three gaps show that the current English curriculum is not preparing CNE students for the workplace. Using the TSA-PSA-LSA framework together in one study gave a fuller and more useful picture of these gaps than previous studies that only looked at one component at a time.

REFERENCE

Abidah, A., Hidayat, D. N., & Alek, A. (2023). ESP needs analysis for vocational high school students: A case study. *Journal of English for Academic Purposes*, *12*(1), 45–58.

Arisandy, R., Syahrial, S., & Harahap, A. (2021). English for specific purposes (ESP) needs analysis for computer and network engineering students. *Journal of English Education and Teaching, 5*(2), 261–274. https://doi.org/10.33369/jeet.5.2.261-274

Basturkmen, H. (2021). *Developing courses in English for specific purposes* (2nd ed.). Routledge. https://doi.org/10.4324/9781003158431

Brown, H. D., & Abeywickrama, P. (2019). *Language assessment: Principles and classroom practices* (3rd ed.). Pearson Education.

Dele, M., Saputri, T., & Wijaya, A. (2025). General English vs. ESP: Students' perceptions in the vocational education context. *International Journal of Educational Research and Development*, *7*(1), 112–125.

Dudley-Evans, T., & St John, M. J. (1998). *Developments in English for specific purposes: A multi-disciplinary approach*. Cambridge University Press.

Flowerdew, L., & Mahlberg, S. (2023). *Corpus linguistics and English for specific purposes*. Bloomsbury Academic.

Hastuti, P. H. (2022). Technology-enhanced language learning in vocational education: Aligning instruction with learner preferences. *Indonesian Journal of Applied Linguistics, 12*(2), 310–322.

Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge University Press.

Khalida, R., & Refnaldi, R. (2020). Needs analysis of English for specific purposes at vocational high school. *Journal of English Language Teaching*, *9*(2), 134–145.

Manoochehri, M. A., & Nemati, A. (2016). Evaluation of computer engineering ESP course from students' viewpoints. *British Journal of Education, Society & Behavioural Science*, *14*(2), 1–13. https://doi.org/10.9734/BJESBS/2016/19741

Mao, Z., & Zhou, Y. (2024). Revisiting ESP needs analysis in vocational contexts: A systematic review. *English for Specific Purposes*, *73*, 88–102.

Maulida, A. (2023). English for specific purposes (ESP) teaching strategies for vocational students. *Journal of English Language Teaching and Education*, *8*(2), 112–120.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). SAGE.

Nurhasanah, T., & Kurniawan, E. (2023). Needs analysis of English for specific purposes for computer engineering students. *J-SHMIC: Journal of English for Academic*, *10*(2), 112–123. https://doi.org/10.25299/jshmic.2023.vol10(2).13347

Rahman, A., & Subiyanto, S. (2022). Link and match: Tantangan kurikulum SMK Teknik Komputer dan Jaringan dengan kebutuhan industri. *Jurnal Pendidikan Vokasi Informatika*, *5*(1), 12–20.

Richards, J. C. (2009). *Curriculum development in language teaching*. Cambridge University Press.

Robles, J. S. (2012). The process of needs analysis in language teaching. *Journal of Language Teaching Research, 3*(2), 220–228.

Syakur, A., Sugirin, S., & Margana, M. (2020). Improving students' English speaking ability through content-based instruction (CBI) in vocational high school. *International Journal of Innovation, Creativity and Change*, *13*(5), 114–131.

Tous, M. D., & Haghighi, S. (2014). Evaluation of ESP textbooks: Evidence from ESP textbook of computer engineering major. *International Journal of Research Studies in Language Learning*, *3*(2), 55–68. https://doi.org/10.5861/ijrsll.2013.469

Wennyta, W., Syafryadin, S., & Noermanzah, N. (2025). ESP needs analysis in Indonesian vocational schools: Bridging the gap between classroom and workplace. *Journal of Language and Education, 11*(1), 22–36.

ISSN 2963-7856 (print), ISSN 2961-9890 (online)

Wijayanto, A., Marmanto, S., & Prasetyarini, A. (2023). English for specific purposes in vocational high schools: Students' needs and challenges. *Lingua*, *18*(2), 112–126.

Yao, J., Li, H., & Zhang, W. (2024). Learner preferences and engagement in technology-integrated ESP instruction. *Computers & Education*, *198*, 104754.

Zhu, Y., & Wang, J. (2024). The impact of digital simulations on technical vocabulary acquisition in ESP contexts. *Computer Assisted Language Learning*, *37*(1), 89–112. https://doi.org/10.1080/09588221.2023.2201452