



An Analysis of Students' Difficulties in Understanding English Vocabulary for The Mining Industry at State Vocational High School

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Received: 2026-04-07 Revised: 2026-05-19 Accepted: 2026-08-08 Keywords: <i>English for Specific Purposes (ESP), mining-related vocabulary, vocational high school, qualitative research, students' difficulties</i> DOI: 10.24256/ideas.v14i1.11689 Corresponding Author: Hariadi Syam hariadisyam@usn.ac.id Pendidikan Bahasa Inggris, Universitas Sembilanbelas November, Kolaka, Sulawesi Tenggara	<i>The increasing demand for vocational graduates in the mining sector requires mastery of technical English vocabulary. However, research investigating students' specific difficulties with mining-related English vocabulary at the vocational level remains limited. This study addresses that gap by exploring the types and causes of students' difficulties in understanding mining-related English vocabulary at SMKN 2 Pomalaa. Employing a qualitative phenomenological approach, data were collected from five tenth-grade Heavy Equipment Engineering students through semi-structured interviews, classroom observation, and field notes, then analyzed using the interactive model of Miles, Huberman, and Saldaña. The findings reveal that students struggle with pronunciation, remembering, understanding, and using technical vocabulary because the vocabulary is unfamiliar, highly technical, and rarely used in daily communication. Internal factors include limited vocabulary knowledge, low confidence, and low motivation, while external factors include limited learning resources, lack of exposure to technical English, and minimal opportunities to practice English outside the classroom. Theoretically, this study highlights the need for contextualized English for Specific Purposes (ESP) materials in vocational education to better support students' readiness for employment in the mining industry.</i>

1. Introduction

The mining industry has become increasingly globalized, requiring workers to communicate effectively across linguistic and cultural boundaries. English has become the dominant language for technical documentation, operational manuals, safety regulations, equipment specifications, and workplace communication in multinational mining companies. Consequently, vocational graduates entering the mining sector are expected not only to possess technical competencies but also to demonstrate sufficient English proficiency, particularly in understanding and using mining-related technical vocabulary. For vocational high school students, mastery of English is therefore an important component of work readiness, as it enables them to participate more effectively in industrial training and professional communication.

Vocational education is designed to prepare students for employment by aligning learning with the knowledge and skills required in the workplace. In Indonesia, vocational schools are expected to develop graduates who are capable of responding to industrial demands through competency-based education. Industrial work practice, authentic learning experiences, and collaboration with industry partners are essential components in developing students' employability (Huda et al., 2023). Besides technical competence, students are increasingly expected to understand occupational English because many workplace instructions, safety procedures, and technical documents are presented in English. Therefore, English instruction in vocational education should reflect the linguistic demands of students' future professions.

One approach that addresses these occupational language needs is English for Specific Purposes (ESP). Unlike General English, ESP emphasizes language learning that is directly related to learners' academic or professional contexts (Hutchinson & Waters, 1987). Basturkmen (2010) further explains that ESP focuses on developing learners' communicative competence for specific workplace or disciplinary purposes rather than merely improving general language proficiency. More recently, Hyland (2019) argues that ESP should prepare learners to participate effectively within professional discourse communities by integrating authentic communication practices and discipline-specific language into classroom instruction. These perspectives suggest that English instruction in vocational schools should not only develop general language competence but also equip students with the specialized language required in their future occupations.

An essential component of ESP is the acquisition of technical vocabulary. Technical vocabulary differs from general vocabulary because its meanings are closely associated with particular disciplines and professional practices. Chung and Nation (2004) explain that technical vocabulary consists of lexical items that occur frequently within a specialized field but are relatively uncommon in general language use. Consequently, learners often experience greater difficulty in understanding, remembering, pronouncing, and applying technical terms because these words are unfamiliar, conceptually complex, and highly dependent on contextual knowledge.

Nation (2001) also emphasizes that successful vocabulary acquisition requires repeated exposure, meaningful use, and contextualized learning experiences. Without sufficient opportunities to encounter and practice technical vocabulary, learners may struggle to retain and appropriately use specialized terminology.

These challenges are particularly relevant in mining education, where students are required to understand terminology related to heavy equipment, operational procedures, occupational safety, geological processes, and mining technology. Many mining-related English terms possess specialized meanings that differ from their general English usage, requiring students to interpret vocabulary according to professional contexts rather than everyday communication. Consequently, learning mining-related vocabulary involves not only memorizing word meanings but also understanding how technical terminology functions within authentic industrial situations. This complexity makes mining-related vocabulary substantially more demanding than general English vocabulary and highlights the need for contextualized ESP instruction.

Previous studies have consistently reported that vocabulary mastery remains one of the major challenges for vocational students learning English. Research has shown that students frequently experience difficulties in remembering vocabulary, understanding word meanings, pronouncing unfamiliar terms, and applying vocabulary appropriately because of limited learning resources, insufficient exposure, and ineffective learning strategies (Nation, 2001). Studies on ESP have also demonstrated the importance of contextualized instruction for improving students' occupational language competence.

Nevertheless, most previous studies have examined vocabulary learning in general English or broad vocational contexts, while relatively few have specifically investigated mining-related English vocabulary within vocational schools. Consequently, limited empirical evidence is available regarding how vocational students experience difficulties in learning technical English vocabulary required by the mining industry.

This research was conducted at SMKN 2 Pomalaa because the school is situated in one of Indonesia's major mining areas and offers vocational programs closely related to the mining industry, including the Heavy Equipment Engineering program. The geographical and industrial characteristics of Pomalaa provide students with direct exposure to mining activities and create substantial employment opportunities within the sector. As a result, students are expected to acquire not only technical competencies but also English language skills that support communication in mining workplaces. Investigating students' vocabulary learning difficulties in this setting therefore provides valuable insights into the language needs of vocational students preparing for employment in mining industries.

Based on the issues discussed above, this study addresses the existing research gap by exploring students' difficulties in understanding mining-related English vocabulary and identifying the internal and external factors contributing to these difficulties. Specifically, the study investigates the experiences of tenth-grade students

in the Heavy Equipment Engineering program at SMKN 2 Pomalaa. The findings are expected to contribute theoretically to the development of English for Specific Purposes (ESP), particularly in the area of technical vocabulary acquisition for vocational education, while also providing practical recommendations for designing contextualized English instruction that better prepares vocational students for careers in the mining industry.

2. Method

This study employed a qualitative phenomenological approach to explore students' lived experiences in learning mining-related English vocabulary and to understand the factors contributing to their learning difficulties. A phenomenological approach was considered appropriate because the study sought to investigate how students perceived, experienced, and interpreted the challenges they encountered while learning technical English vocabulary in a vocational education context. According to Creswell and Poth (2018), phenomenology aims to describe the common meaning of individuals' lived experiences regarding a particular phenomenon, making it suitable for examining students' experiences in understanding mining-related English vocabulary.

No	Name	Gender	Class
1.	Ainun	Female	X (Tenth) Grade of Heavy Equipment Engineering
2.	Aanzar	Male	X (Tenth) Grade of Heavy Equipment Engineering
3.	Akil	Male	X (Tenth) Grade of Heavy Equipment Engineering
4.	Akbar	Male	X (Tenth) Grade of Heavy Equipment Engineering
5.	Fira	Female	X (Tenth) Grade of Heavy Equipment Engineering

Data were collected through semi-structured interviews, classroom observations, and field notes. Semi-structured interviews were selected because they allowed participants to describe their learning experiences freely while enabling the researcher to explore issues related to mining-related English vocabulary in greater depth. The interview protocol consisted of open-ended questions concerning students' experiences in learning mining-related vocabulary, the difficulties they encountered, and the factors influencing those difficulties.

Each interview lasted approximately 20–30 minutes. Classroom observations were conducted to obtain contextual information regarding students' participation during English lessons, their responses to mining-related vocabulary instruction, and their interaction with teachers and classmates. Observation findings were used to complement and confirm the interview data. Field notes were also prepared throughout the research process to document classroom situations, students' learning behaviour, and other contextual information that supported data interpretation.

Prior to data collection, permission to conduct the research was obtained from the school. All participants voluntarily agreed to participate after receiving information about the purpose of the study. Informed consent was obtained before interviews were conducted. Participants were assured that their identities would remain confidential and that the information collected would be used solely for academic purposes. To protect participants' privacy, pseudonyms (P1–P5) were used throughout the study.

For data analysis, the interactive model of Miles and Huberman (2014) was employed, which includes data collection, data condensation, data display, and conclusion drawing. Coding was conducted systematically to identify recurring themes related to vocabulary difficulties and their contributing factors. Triangulation of data sources (interviews, observations, field notes) was used to enhance the credibility of the findings, and researcher bias was minimized through reflective journaling and peer debriefing.

To enhance the trustworthiness of the findings, methodological triangulation was employed by integrating data obtained from interviews, classroom observations, and field notes. The use of multiple data sources enabled the researcher to compare participants' reported experiences with their actual classroom behaviour. In addition, reflective journaling was maintained throughout the research process to minimize researcher bias and promote reflexivity during data analysis. These strategies enhanced the credibility and dependability of the research findings.

3. Result

Types of Difficulties faced by Students in Understanding English Mining Vocabulary

The interviews in this study focused on two main aspects: linguistic factors (such as difficulties in understanding and applying mining-related vocabulary) and non-linguistic factors (such as student motivation and persistence in learning mining vocabulary). This approach enabled the researcher to systematically analyze the relationship between students' language barriers and their motivational levels at SMKN 2 Pomalaa. Most students reported that mining-related English vocabulary is difficult to learn because many terms are unfamiliar, highly technical, and seldom used in daily communication. One student expressed:

"Menurutku kak, kosakata bahasa Inggris yang berkaitan dengan pertambangan agak susah karena ada beberapa istilah masih asing baru jarang kita pelajari hari-hari kak. Sebelum masuk SMK juga belum pernah sa pelajari kosakata yang berhubungan dengan dunia pertambangan atau alat berat. Makanya banyak istilah yang baru sa tahu dan sulit mau diingat. Terus, ada juga kosakata yang cara pengucapannya berbeda dengan cara penulisannya makanya kadang masih bingung pas dibaca atau kita coba ucapkan kak (I think mining-related English vocabulary is difficult because most of the words are unfamiliar and rarely used in daily communication. Before studying at vocational school, I never learned vocabulary related to mining industries or heavy equipment, so many of the words are completely new to me. Some vocabulary words are also difficult because the pronunciation and spelling are different, which often makes me confused when reading or pronouncing them)".



Figure 1. Researcher conducting an interview with a student of the Heavy Equipment Engineering Program at SMKN 2 Pomalaa

Students also identified certain vocabulary that was hard to pronounce and remember, such as *hydraulic*, *lubrication*, *troubleshooting*, *excavator*, and *preventive maintenance*. These words are not only long and technical, but also rarely used outside of the classroom. Based on the results of an interview with students, Aanzar said:

"Beberapa kosakata bahasa Inggris yang berkaitan dengan pertambangan yang sulit saya ucapkan atau ingat adalah *hydraulic*, *lubrication*, *troubleshooting*, *excavator*, dan *preventive maintenance*. Menurut saya, kata-kata itu cukup sulit karena pengucapannya berbeda dengan cara penulisannya, cukup panjang, dan belum pernah saya gunakan dalam kehidupan sehari-hari. Saya biasanya hanya menemui kosakata tersebut saat pelajaran Bahasa Inggris atau ketika membahas materi tentang alat berat dan pertambangan. Kadang saya bisa mengingat artinya setelah dijelaskan oleh guru, tetapi setelah beberapa hari saya sering lupa lagi karena jarang menggunakannya dalam percakapan atau latihan. (Some mining-related English vocabulary words that are difficult for me to pronounce or remember are 'hydraulic,' 'lubrication,' 'troubleshooting,' 'excavator,' and 'preventive maintenance.' I think those words are difficult because they are long, unfamiliar, and rarely used in daily communication. Sometimes I can remember the meaning for a short time, but I easily forget it because I do not use the vocabulary regularly outside the classroom".

In some cases, students found that English words they previously recognized could have different meanings in a mining context. This led to confusion and required extra explanation from teachers. For example. Another results of an interview with students, Akil said:

"Ya, pernah. Terkadang saya merasa bingung karena ada beberapa kosakata bahasa Inggris yang memiliki arti berbeda ketika digunakan dalam konteks pertambangan. Biasanya saya memahami kosakata tersebut berdasarkan arti umum dalam bahasa Inggris, tetapi ketika digunakan dalam materi pertambangan, maknanya bisa berubah tergantung pada situasi atau kegiatan teknis yang sedang dibahas. Misalnya, ada beberapa kata yang terlihat familiar dalam bahasa Inggris umum, tetapi memiliki makna yang lebih khusus dalam dunia pertambangan. Karena itu, saya sering membutuhkan penjelasan tambahan dari guru agar dapat memahami arti yang sebenarnya. Kondisi ini terkadang membuat saya lebih sulit memahami materi pelajaran karena saya tidak hanya harus menghafal kosakatanya, tetapi juga memahami bagaimana kosakata tersebut digunakan dalam kegiatan atau pekerjaan di industri pertambangan (Yes, I have. Sometimes I feel confused because several English vocabulary words have different meanings when they are used in mining contexts. I usually understand the vocabulary based on general English meaning, but in mining lessons the meaning can change depending on the situation or technical activity being discussed. For example, some words that seem familiar in general

English become more technical in mining contexts, so I need additional explanation from the teacher to understand the correct meaning. This condition sometimes makes it difficult for me to understand the lesson because I must learn not only the vocabulary itself but also how the vocabulary is used in mining industries).’.

Classroom observations supported these interview findings: most students focused more on memorizing vocabulary meanings than on practicing communication. Participation in speaking activities, discussions, or role-plays related to mining situations was rare. Many students relied on direct translation to understand technical vocabulary and frequently asked the teacher to explain meanings multiple times.

Regarding the factors causing these difficulties, students reported both internal and external influences. Internally, limited vocabulary knowledge and lack of confidence were significant barriers. One of the students, Ainun said that:

“Saya merasa penguasaan kosakata bahasa Inggris saya masih belum cukup, terutama untuk kosakata bahasa Inggris yang berkaitan dengan pertambangan. Saya masih kesulitan memahami banyak istilah teknis karena sebagian besar kosakata tersebut masih terasa asing dan jarang digunakan dalam kehidupan sehari-hari. Terkadang saya bisa mengingat artinya saat pelajaran berlangsung, tetapi setelah pelajaran selesai saya sering lupa lagi karena tidak terbiasa menggunakan kosakata tersebut secara rutin. Oleh karena itu, saya merasa masih perlu banyak belajar dan berlatih agar penguasaan kosakata bahasa Inggris saya, khususnya yang berkaitan dengan dunia pertambangan, bisa menjadi lebih baik. (I do not think my English vocabulary mastery is sufficient yet, especially for mining-related English vocabulary. I still have difficulties understanding many technical words because most of the vocabulary is unfamiliar and rarely used in daily communication. Sometimes I can remember the meaning during the lesson, but I easily forget it after the class because I do not practice the vocabulary regularly).’.

From an external perspective, the limited opportunity to practice mining-related English vocabulary, both inside and outside the classroom, was also a major contributing factor. Another student remarked, Fira said that :

“Sa jarang latihan bahasa Inggris di luar kelas. Paling pas belajar atau harus pake bahasa Inggris kalo lagi mata pelajaran bahasa Inggris di sekolah. Kalo di luar, hampir nda pernah pake kalo komunikasi sehari-hari karena pasti pake bahasa Indonesia sama bahasa daerah kak. Makanya jarang ada kesempatanku praktekan bahasa Inggris yang sa pelajari baru gampang lupa, mana sa nda pede (percaya diri) kalo mo bicara pake bahasa Inggris. (I rarely practice English outside the classroom. Usually, I only study or use English during English lessons at school. Outside the

classroom, I do not often use English in daily communication because most of my friends and family communicate in Indonesian or local languages)."

Overall, the results indicate that students' difficulties in understanding mining-related English vocabulary are influenced by a combination of unfamiliar technical terms, limited practice, and lack of exposure both inside and outside of the classroom. Internal and external factors collectively affect students' motivation, retention, and ability to apply mining vocabulary in practice.

4. Discussion

Types of Difficulties Faced by Students in Understanding English Mining Vocabulary

Based on the findings, one of the factors contributing to students' low grades is their limited understanding of the meaning of English words and a lack of vocabulary mastery. As stated by Richards and Renandya (2002), vocabulary is a core component of language proficiency and provides much of the basis for how learners speak, listen, read, and write. Mastery of vocabulary is essential for students who wish to be proficient in English, as it forms the foundation before learning the four language skills.

However, some students encounter specific obstacles in mastering vocabulary. Thornbury (2002) identifies common problems such as difficulties in pronunciation, spelling, word length and complexity, grammatical usage, meaning, and the range and idiomaticity of words. The results of this research at the tenth grade of Heavy Equipment Engineering at SMKN 2 Pomalaa indicate that not all these problems were experienced, but several key difficulties emerged.

The first difficulty faced by students was dealing with vocabulary that had long spelling forms, unfamiliar pronunciation, and technical meanings. Several students admitted that they often forgot the meanings of vocabulary because the words were not used repeatedly during classroom activities. Students appeared confused and took a long time to translate English words into Indonesian because a single English word can have multiple meanings in different texts, and sometimes the context does not match the basic meaning of the word. This is in line with Thornbury (2002), who noted that when two words overlap in meaning, learners are likely to confuse them. In addition to translating individual words, students also needed to understand the overall meaning of sentences.

The second problem was difficulty with pronunciation. This occurred because students did not get appropriate pronunciation models from native English speakers. When appointed by the teacher to read a text aloud, many students mispronounced mining-related words such as "excavator," "bulldozer," "hydraulic system," and "undercarriage," often using Indonesian pronunciation. Similar mistakes occurred with words like "drilling," "blasting," and "hauling," where students pronounced the words as they were written.

These findings are consistent with Salawazo and Simbolon (2020), who found that differences between spoken and written English are a major factor in students' difficulties with vocabulary, especially for words containing silent letters such as "muscle," "listen," "write," "honestly," "judge," and "science."

The last difficulty was in remembering vocabulary. Thornbury (2002) emphasizes that learning vocabulary is not just about learning new words, but also about remembering them, and repetition is essential. The students at SMKN 2 Pomalaa struggled to retain vocabulary over time. When they tried to remember new words, they often forgot previously learned vocabulary, partly because they did not practice or reinforce their vocabulary outside of school.

Factors Causing Students' Difficulties in Learning English Mining Vocabulary

The difficulties in learning mining-related English vocabulary are influenced by both internal and external factors. Djamarah (2002) describes learning difficulties as conditions where students cannot learn optimally due to obstacles or disturbances in the learning process.

The first factor is a lack of interest and motivation among students to learn vocabulary. According to Harmer (2007), motivation is an internal drive that pushes someone to achieve something. Students who lack motivation tend to pay less attention in class, become passive, and are less likely to participate actively in English lessons.

The second factor is the lack of regular practice in speaking English. Students generally only practice speaking in class and rarely use English at home or in daily life, which limits their exposure and confidence. These findings are in line with Widyasworo (2019), who found that students often face speaking difficulties due to inhibition, lack of ideas, anxiety, low self-confidence, and low motivation.

The last factor comprises external aspects such as inadequate facilities and negative peer influence. As stated by Mulyasa (2004), educational facilities like classrooms, teaching media, and supporting materials are crucial for the learning process. At SMKN 2 Pomalaa, limited resources for learning mining-related English vocabulary, as well as the predominance of Indonesian or local language usage outside class, further hinder vocabulary mastery and reduce students' confidence in using English.

5. Conclusion

This study aimed to analyze the difficulties experienced by tenth-grade students of the Heavy Equipment Engineering Program at SMKN 2 Pomalaa in learning mining-related English vocabulary and to identify the contributing factors. The findings revealed that students faced three major challenges: understanding the meanings of mining-related vocabulary, pronouncing technical terms accurately, and remembering newly learned vocabulary. These results indicate that mastering mining-related English vocabulary requires not

only knowledge of word meanings but also continuous exposure and meaningful practice in authentic learning contexts.

Several factors contributed to these difficulties. Internal factors included students' low interest and motivation in learning English. External factors involved limited opportunities to practice English, inadequate learning resources, and the influence of an environment where English is rarely used in daily communication. These conditions reduced students' confidence and hindered vocabulary development.

Based on these findings, it can be concluded that improving students' mastery of mining-related English vocabulary requires more contextual and communicative learning approaches. The integration of English for Specific Purposes (ESP) materials, authentic mining-related resources, and interactive classroom activities is expected to provide greater opportunities for students to practice and apply technical vocabulary. Such improvements may enhance students' English competence and better prepare them to meet the language demands of the mining industry.

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