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Contextual ESP Learning Through Digital Comics in Occupational Safety and Health Education

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Abstract

English for Specific Purposes (ESP) plays a crucial role in preparing Occupational Safety and Health (OSH) students to communicate effectively in professional and industrial contexts. However, ESP instruction in higher education often remains text-based and lacks contextual relevance, resulting in low student engagement and limited comprehension of technical language. This study explores the use of digital comics as a contextual learning medium for ESP instruction in the Occupational Safety and Health (OSH) program. Employing a mixed-method research design, this study involved 40 first-year OSH students at Universitas Muhammadiyah Lamongan. Data were collected through classroom observations, student reflections, semi-structured interviews, and documentation of learning outcomes. The findings indicate that digital comics enhance students' comprehension of technical vocabulary, improve engagement, and facilitate contextual understanding of workplace communication, such as safety procedures, hazard reporting, and emergency response. Students perceived the digital comics as engaging, relevant, and helpful in bridging theoretical knowledge with real-world occupational scenarios. This study concludes that digital comics are an effective pedagogical medium for contextual ESP learning and recommends their integration into vocational and health-related language instruction.

Keywords: Digital Comics; English for Specific Purposes; Occupational Safety and Health

INTRODUCTION

In the era of globalization and rapid technological advancement, English proficiency has become an essential competency for professionals across disciplines, including Occupational Safety and Health (OSH). As workplaces become increasingly interconnected and regulated by international standards, professionals in the OSH sector are required not only to understand technical procedures but also to communicate safety-related information effectively in English. This includes interpreting safety manuals, understanding standard operating procedures (SOPs), reporting incidents, and participating in cross-national safety discussions. Consequently, English for Specific Purposes (ESP) plays a strategic role in preparing students to meet the linguistic and communicative demands of their future professions.

ESP is designed to address the specific communicative needs of learners within particular professional or academic contexts. Unlike general English instruction, ESP emphasizes authenticity, relevance, and task-based language use aligned with real workplace situations (Dudley-Evans & St John, 1998). In the context of Occupational Safety and Health (OSH), ESP learning involves mastering specialized vocabulary, functional expressions, and discourse patterns related to safety procedures, hazard identification, emergency response, and risk communication. Previous studies have emphasized that effective ESP instruction must integrate

domain-specific content with meaningful language use to ensure learners can transfer classroom knowledge into professional practice (Haryati et al., 2018; Hati, 2015).
Despite its importance, ESP instruction in many higher education institutions, particularly in vocational and health-related programs, remains predominantly text-based and teacher-centered. Recent studies indicate that ESP learning materials often rely heavily on decontextualized texts and grammar-focused activities, which limit student engagement and reduce opportunities for meaningful communication (Basturkmen & Elder, 2004). This challenge is especially evident in Occupational Safety and Health (OSH) education, where learners are expected to understand complex workplace situations that involve dynamic risk assessment, procedural decision-making, and situational communication. Text-based instruction alone is often insufficient to represent these realities, resulting in difficulties for students in comprehending technical vocabulary, safety procedures, and professional interaction patterns (Rachmawati & Irawan, 2024; Zeng & Della, 2024). Consequently, researchers have emphasized the need for contextualized, multimodal, and practice-oriented ESP instruction that better reflects authentic workplace environments and supports functional language use in professional settings (Khazratova, 2025).

Recent pedagogical research highlights the importance of contextualized and multimodal learning environments in addressing these challenges. Visual-based learning media, such as digital comics, have gained attention for their potential to enhance comprehension, motivation, and learner engagement. Digital comics combine images, text, and narrative structures to represent authentic situations in a sequential, meaningful way. This multimodal nature aligns with cognitive theories suggesting that learners process information more effectively when verbal and visual elements are integrated (Mayer, 2017). In language education, such integration supports comprehension, retention, and contextual understanding. Furthermore, empirical studies have demonstrated the effectiveness of digital comics in language learning contexts. Ahsanah (2020) found that comic-based materials significantly improved learners' English competencies by providing contextual cues that supported meaning-making. Similarly, Utomo (2022) reported that digital comics enhanced the use of language learning strategies by the learners; therefore, it is beneficial to learn English more easily. Furthermore, Cuesta (2019) emphasized that digital comics help learners enhance the richness of the English vocabulary during the Pandemic situation.

However, despite growing evidence supporting the pedagogical value of digital comics, their application within ESP, particularly in the field of Occupational Safety and Health, remains underexplored. Most existing studies focus on general English or vocational English without integrating the specific communicative demands of OSH professions, such as safety briefings, hazard reporting, or emergency response communication (Sari & Wirza, 2021). This gap indicates a need for research that not only employs digital media but also situates it within authentic OSH contexts. The novelty of this study lies in its integration of digital comics into a contextual ESP framework specifically designed for Occupational Safety and Health (OSH) education. Unlike previous studies that tend to apply digital media in general or non-specialized language learning settings, this research focuses on aligning digital storytelling with the communicative and professional demands of the OSH field.

In response to this gap, the present study explores the use of digital comics as a contextual learning medium for ESP instruction in an Occupational Safety and Health program. By embedding language learning within realistic workplace scenarios, this study seeks to examine how digital comics support students' comprehension of technical language, enhance engagement, and facilitate meaningful communication practice. The study also aims to

contribute to the growing body of research on innovative ESP pedagogy by offering empirical insights into how digital storytelling tools can be aligned with professional competency development. Specifically, this study addresses the following research objectives: to explore how digital comics can be implemented as a contextual learning medium in ESP for OSH students, and to examine students' perceptions of digital comics in supporting their understanding of safety-related English. By addressing these objectives, this research is expected to contribute theoretically to ESP pedagogy and practically to the development of innovative, context-based learning media for occupational education.

METHOD

This study employed a mixed-methods research design to examine the implementation and educational impact of digital comics in English for Specific Purposes (ESP) for Occupational Safety and Health (OSH) students. The research design follows the outline by Creswell, 2014, which highlights the value of combining quantitative and qualitative data to understand complex educational settings better. In this study, both types of data were collected and analyzed to complement each other. This also helps strengthen the validity of the findings and supports a more balanced analysis of students' cognitive and communicative learning outcomes.

Participants

The participants in this study were 40 first-year undergraduate students enrolled in the Occupational Safety and Health (OSH) program at Universitas Muhammadiyah Lamongan. All participants were taking the compulsory English course during the semester in which the study was conducted.

A purposive sampling technique was used because the selected students were directly involved in learning activities that incorporated digital comics and were therefore relevant to the research objectives. The inclusion criteria were: (1) students were officially registered in the English for OSH course, (2) students actively participated in learning activities using digital comics, and (3) students agreed to take part in observations, interviews, and reflective learning activities.

Development of Digital Comic-Based Learning Media

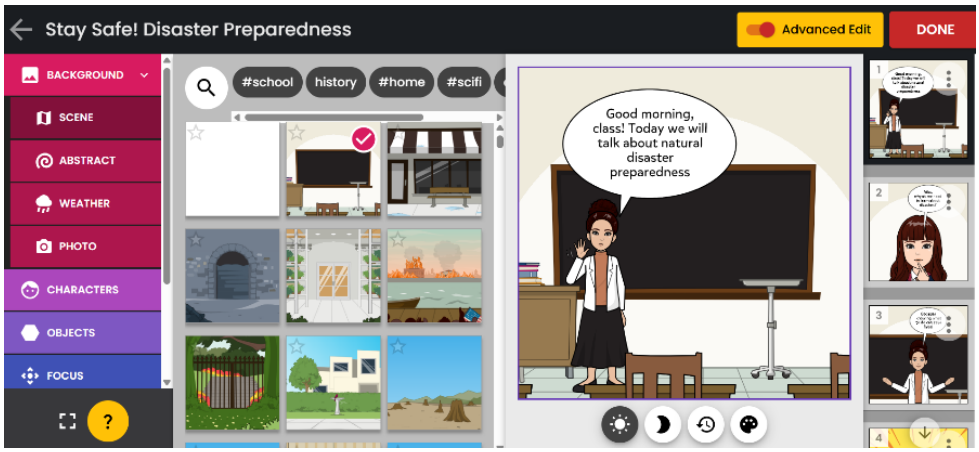

Figure 1. The Process of Creating Digital Comics by Using Pixton

Figure 1 illustrates the process of developing the digital comic used in this study. The comic was created using *Pixton*, a digital comic authoring platform, where learning scenarios related

to disaster preparedness and workplace safety were designed through the selection of backgrounds, characters, and dialogue elements. Each scene was structured to represent realistic occupational situations and to guide students through problem identification, decision-making, and appropriate safety responses. The visual and textual elements were intentionally aligned with the learning objectives to support comprehension, engagement, and meaningful communication in English for Occupational Safety and Health (OSH) contexts.

Instruments and Expert Validation

Multiple qualitative instruments were employed to ensure data:

1. Observation

Classroom observations were conducted during the implementation of digital comic–based instruction. An observation guide was used to document student engagement, interaction patterns, responsiveness to learning tasks, and the use of English during activities. Field notes focused on students' participation, collaborative behavior, and responses to visual and contextual elements of the comics.

2. Interviews

Semi-structured interviews were conducted with selected students to explore their perceptions, experiences, and challenges related to learning English through digital comics. Interview questions addressed aspects such as perceived usefulness, clarity of content, relevance to OSH contexts, and learning motivation. This flexible format allowed participants to elaborate on their experiences while ensuring consistency across interviews.

3. Questionnaires

A reflective questionnaire was administered at the end of the learning sessions to gather students' perceptions of the learning process. The questionnaire consisted of a combination of Likert-scale items and open-ended questions focusing on engagement, comprehension, relevance of content, and perceived benefits of digital comics for ESP learning.

Table 1. The Sample Items of the Questionnaire Instrument

No	Statement – Understanding of OSH Concepts	1	2	3	4	5
A1	Digital comics help me understand OSH concepts more clearly.	☐	☐	☐	☐	☐
A2	The visual illustrations help me recognize workplace hazards.	☐	☐	☐	☐	☐
No	**Statement - Learning Motivation and Engagement**	**1**	**2**	**3**	**4**	**5**
B1	Learning with digital comics makes the class more interesting.	☐	☐	☐	☐	☐
B2	Digital comics motivate me to participate actively in learning activities.	☐	☐	☐	☐	☐
No	**Statement - Functional Communication Skills (ESP)**	**1**	**2**	**3**	**4**	**5**
C1	Digital comics help me communicate safety instructions in English.	☐	☐	☐	☐	☐
C2	I can give warnings or advice more confidently after using digital comics.	☐	☐	☐	☐	☐
No	**Statement - Overall Evaluation**	**1**	**2**	**3**	**4**	**5**
D1	Digital comics are an effective learning tool for OSH subjects.	☐	☐	☐	☐	☐
D2	I prefer learning OSH using digital comics rather than only textbooks.	☐	☐	☐	☐	☐

4. Learning Outputs and Documentation

Learning outputs and documentation provided concrete evidence of students' engagement and understanding during the digital comic–based learning activities. Students completed specific tasks such as identifying hazards in illustrated workplace scenarios, rewriting safety dialogues,

creating short role-play scripts, and explaining correct safety procedures based on the comic scenes. These tasks demonstrated gradual improvement in students' ability to use English accurately and appropriately to describe risks, give warnings, and propose preventive actions.

Expert Validation

Prior to the implementation of the research instruments and learning media, an expert validation process was conducted to ensure the content validity, clarity, and relevance of the instruments to the objectives of the study. The validation involved three experts with relevant academic and professional backgrounds, including one expert in English for Specific Purposes (ESP), one expert in Occupational Safety and Health (OSH), and one expert in instructional design. Each expert evaluated the instruments and digital comic materials based on several criteria, including content accuracy, relevance to learning outcomes, clarity of language, appropriateness of visual design, and suitability for the target learners. The evaluation used a five-point Likert scale ranging from 1 (not valid) to 5 (very valid). The results of the expert validation are presented in Table 2.

Table 2. Expert Validation Results

No	Validation Aspect	Expert 1 (ESP)	Expert 2 (OSH)	Expert 3 (Instructional Design)	Average Score	Category
1	Relevance of content to ESP learning objectives	4.5	4.7	4.6	4.60	Very Valid
2	Accuracy of OSH concepts and terminology	4.6	4.8	4.5	4.63	Very Valid
3	Clarity of language and instructions	4.4	4.5	4.6	4.50	Very Valid
4	Appropriateness of digital comic visuals	4.3	4.6	4.5	4.47	Very Valid
5	Relevance of scenarios to real workplace situations	4.6	4.7	4.6	4.63	Very Valid
6	Alignment with learning objectives and outcomes	4.5	4.6	4.7	4.60	Very Valid
7	Suitability for student level and learning context	4.4	4.5	4.6	4.50	Very Valid

The expert validation results indicate that both the research instruments and digital comic learning materials achieved a high level of validity. The average scores across all evaluation aspects ranged from 4.47 to 4.63, which fall within the *very valid* category. This suggests that the content, language use, visual design, and alignment with ESP–OSH learning objectives were appropriate and suitable for implementation. Minor revisions recommended by the experts, such as refining terminology and improving visual clarity, were incorporated prior to data collection to enhance the overall quality of the instruments.

Procedures

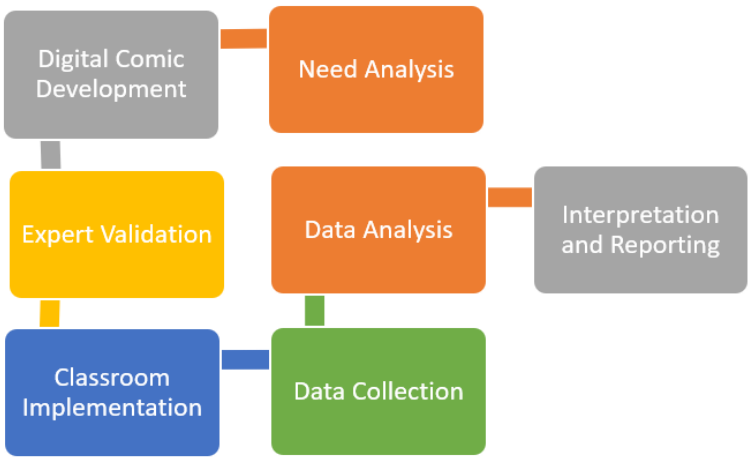

Diagram 1. Research Procedures

The diagram above was a series of systematic stages designed to explore the implementation and effectiveness of digital comics in ESP learning for Occupational Safety and Health students. *First*, a needs analysis was conducted to identify the communicative demands of OSH students, particularly in relation to workplace English, such as safety instructions, hazard communication, emergency responses, and procedural explanations. Relevant literature and course documents were also reviewed to determine appropriate learning objectives and content scope. *Second*, based on the identified needs, digital comics were developed using the Pixton platform. The comics presented realistic workplace scenarios commonly encountered in OSH settings, incorporating technical vocabulary, functional expressions, and situational dialogues. The content was designed to support contextual learning and professional communication.

Third, the developed digital comics underwent expert validation by a subject-matter expert in Occupational Safety and Health. The validation process focused on the accuracy of safety procedures, relevance of scenarios, and appropriateness of language use. Revisions were made based on expert feedback to ensure content validity and contextual authenticity. *Fourth*, the validated digital comics were implemented in classroom instruction during ESP sessions. Students engaged in guided reading activities, discussion of workplace scenarios, vocabulary exploration, and role-play tasks derived from the comic narratives. This stage aimed to facilitate contextual understanding and active language use. *Fifth*, data collection was conducted throughout the implementation process. Classroom observations were carried out to capture student engagement and interaction patterns. Semi-structured interviews were conducted with selected students to explore their perceptions and learning experiences. Additionally, reflective questionnaires and learning outcomes, such as student-written dialogues and role-play scripts, were collected to support data.

Finally, data analysis was conducted using thematic analysis following the interactive model of Miles and Huberman. Data were reduced through coding and categorization, displayed in organized thematic matrices, and interpreted to identify recurring patterns related to engagement, comprehension, and contextual learning. The findings were then synthesized to generate conclusions regarding the effectiveness of digital comics in supporting ESP learning for OSH students.

Data analysis

The data obtained in this study were analyzed using a qualitative thematic analysis approach, following the interactive model proposed by Miles, Huberman, and Saldaña (2014). This approach was selected because it allows for systematic interpretation of complex qualitative data derived from multiple sources, including observations, interviews, reflective questionnaires, and learning artifacts. The analysis process was iterative and cyclical, enabling continuous refinement of emerging patterns and meanings. Data analysis followed an adaptation of Miles and Huberman's interactive model, consisting of three main stages:

1. Data Reduction

The data from observations, interviews, questionnaires, and documents were carefully reviewed and condensed. Irrelevant information was eliminated, while meaningful segments related to engagement, comprehension, contextual understanding, and learning experience were coded.

2. Data Display

Organized data were presented in a narrative thematic summary. This process facilitated comparison across data sources and supported pattern identification.

3. Conclusion Drawing and Verification

Themes were developed by interpreting recurring patterns across data sources, such as enhanced comprehension through visualization, increased learner motivation, and improved contextual understanding of OSH communication. Verification was conducted through triangulation among observations, interviews, and learning outcomes to ensure credibility and consistency.

RESULTS AND DISCUSSION

Results

This section presents the findings derived from classroom observations, student interviews, reflective questionnaires, and learning outcomes generated during the implementation of digital comic–based ESP instruction in the Occupational Safety and Health (OSH) program. The discussion integrates qualitative and quantitative data to explain how digital comics influenced students' comprehension, engagement, and communication skills in learning English for occupational contexts.

Table 3. Summary of students' learning outcomes based on questionnaire, observation, interview, and test results.

Instrument	Indicator	Result (%) / Score	Interpretation
Questionnaire	Improved understanding of learning materials	87%	Very Positive
	Easier vocabulary retention	83%	Positive
	Increased learning motivation	90%	Very Positive
	Learning process is more enjoyable	85%	Positive
Observation	Student activeness during learning	84%	High
	Participation in discussions	80%	High
	Enthusiasm during learning activities	86%	Very High
	Overall student engagement	83%	High

Interview	Students' perceived improvement in understanding	82.7	Good
	Highest perceived learning improvement	92	Very Good
	Lowest perceived learning improvement	74	Fair
	Overall competency achievement (perception-based)	92%	Majority Achieved Competency
Test	Average test score	82.7	Good
	Highest test score	92	Very Good
	Lowest test score	74	Fair
	Percentage of students achieving competency	92%	Competency Achieved

Digital Comics as a Tool for Contextual Understanding of OSH Concepts

One of the most significant findings of this study is the role of digital comics in enhancing students' understanding of Occupational Safety and Health (OSH) concepts. Observational data showed that students were better able to interpret technical procedures when learning materials were presented through visual narratives rather than text-only explanations. During classroom activities, students frequently referred to the visual elements of the comics to explain sequences of actions, such as identifying hazards, using personal protective equipment (PPE), or responding to emergency situations. For example, during a lesson on chemical hazard reporting, several students pointed to the illustrated steps in the comic while explaining the correct reporting procedure.

"Students pointed at specific panels in the comic when explaining the danger of a chemical spill, indicating that visual cues supported their comprehension." (OBS-03)

This finding was reinforced by questionnaire data. Out of 40 participants, 34 students (85%) agreed or strongly agreed that digital comics helped them understand OSH concepts more clearly than traditional text-based materials. Only 2 students (5%) expressed disagreement, while the remaining students selected neutral responses. These findings suggest that digital comics function as cognitive scaffolding tools, helping learners visualize abstract or unfamiliar safety concepts. This aligns with multimedia learning theory, which posits that learners process information more effectively when verbal explanations are paired with relevant visual representations (Mayer, 2017).

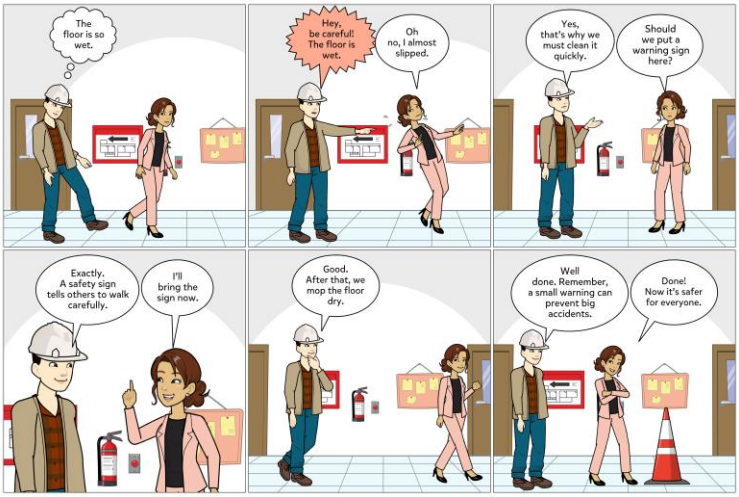

Figure 2. Sample Comic Panel- Wet Floor Hazard and Preventive Action

Figure 2 was the sample comic of hazards and their prevention. The comics support both Occupational Safety and Health (OSH) and English for Specific Purposes (ESP) learning by showing how safety knowledge and workplace communication are used together in real situations. From an OSH perspective, the comic illustrates key safety principles such as hazard identification, risk prevention, and shared responsibility in maintaining a safe work environment. From an ESP perspective, it provides learners with meaningful exposure to workplace English, including warning expressions, instructions, and safety-related vocabulary used in authentic contexts.

Student Engagement and Motivation in ESP Learning

One of the most significant findings of this study is the noticeable increase in student engagement and learning motivation following the integration of digital comics into ESP instruction. Classroom observations revealed a noticeable shift in student engagement patterns after the introduction of digital comics. Students demonstrated increased attentiveness, more frequent participation in discussions, and greater willingness to engage in communicative tasks such as role-plays and group problem-solving activities. Unlike traditional text-based instruction, which often resulted in passive participation, comic-based learning encouraged students to interact with both the content and their peers.

Figure 3. Sample of Comic Panel – Earthquake Mitigation

The sample comic panel about earthquake mitigation strengthens student motivation by presenting safety learning in a realistic and meaningful context. By depicting a sudden earthquake scenario and clearly illustrating safety actions, such as taking cover and following instructions, the comic helps students understand not only why disaster preparedness is important but also what to do. The visual storyline and simple dialogue reduce fear and confusion, allowing students to focus on understanding and communicating safety actions in English. As a result, students become more motivated to participate, ask questions, and practice language because they see its direct value in protecting themselves and others during emergencies. The combination of images, dialogue, and situational context in the comics allowed students to construct meaning more efficiently than through text alone. Observation data recorded the following:

"Students actively discussed the situation shown in the comic and referred to visual cues when explaining natural disaster mitigation. Participation was noticeably higher than in previous text-based lessons." (OBS-04)

The questionnaire results further support this observation. When asked whether digital comics made learning more engaging, 36 out of 40 students (90%) agreed or strongly agreed, while only 1 student (2.5%) disagreed. This indicates a strong motivational impact of visual and narrative-based learning materials. Beyond behavioral engagement, digital comics also influenced students' affective responses to learning English. Many students reported feeling more confident and less anxious when using English in comic-based activities. This is particularly significant in ESP contexts, where learners often experience anxiety due to the technical and professional nature of the language. Interview data revealed that students perceived the comic format as supportive rather than intimidating:

"When I see the pictures, I understand the situation first, so I'm not afraid to speak English." (INT-03)
"The comic helps me imagine the real workplace, so I feel more confident to talk." (INT-07)

The quantitative data further reinforce this trend. In response to the statement *"I feel more confident using English during comic-based activities,"* 33 students (82.5%) selected *agree* or *strongly agree*. Only 2 students (5%) expressed disagreement, while the remainder were neutral. These findings can be interpreted as the digital comic format appears to lower affective barriers by providing contextual support and reducing the perceived risk of making mistakes. The use of digital comics also aligns with situated learning theory, which emphasizes learning through participation in meaningful, context-rich activities. The comic scenarios represented realistic workplace situations, such as identifying hazards, issuing warnings, and responding to safety incidents, allowing students to practice language in contexts closely resembling real occupational environments. This authenticity was reflected in student responses. One participant noted:

"The comic feels like a real situation. I know what I should say and do." (INT-06)

Additionally, questionnaire results showed that 77.5% of students agreed that digital comics helped them use English more effectively in safety-related communication. This indicates that learning extended beyond vocabulary acquisition toward functional language use, a core goal of ESP instruction (Dudley-Evans & St John, 1998). Another important aspect of engagement observed in this study was increased peer interaction. Digital comics encouraged collaborative discussion, joint problem-solving, and peer explanation. During group activities, students negotiated meaning, corrected each other's language use, and jointly decided on appropriate safety actions. Observation notes highlighted this dynamic:

"Students discussed possible responses before performing the role-play and corrected each other's language use." (OBS-06)

This collaborative interaction supports sociocultural learning theory, which emphasizes the role of social interaction in cognitive development. Through peer collaboration, learners were able to co-construct knowledge and reinforce understanding of both language and safety concepts.

Development of Functional Communication Skills in OSH Contexts

One of the most significant outcomes of the implementation of digital comics in this study is the development of students' functional communication skills within Occupational Safety and Health (OSH) contexts. The findings indicate that digital comics supported students in using English meaningfully to convey safety-related information, respond to hazards, and participate in workplace communication.

Observation data showed that, prior to the use of digital comics, students tended to rely on isolated vocabulary or short, incomplete sentences when discussing safety issues. For example, early classroom interactions were limited to expressions such as *"danger here"* or *"be careful."* These utterances indicated awareness of risk but lacked clarity, structure, and communicative intent. However, after exposure to comic-based learning activities, students began to produce more complete and purposeful statements, such as *"A worker is entering the work area without wearing a safety helmet. Please remind them to wear the helmet and report the situation to the safety officer.."* This progression demonstrates an improvement in both linguistic accuracy and communicative function.

Figure 4. Sample of Comic Panel – PPE and Ergonomics at the Workplace

The two comic scenarios, one focusing on personal protective equipment (PPE) compliance and the other on ergonomic posture in the workplace, further strengthen the findings discussed in the previous sections regarding student engagement, motivation, and the development of functional communication skills in ESP learning.

In the PPE comic, students observe a workplace interaction in which a worker forgets to wear a safety helmet and is reminded by a colleague. This scenario directly reflects earlier findings on hazard awareness and peer communication, where students learned that safety is maintained not only through rules but also through interpersonal communication. Similarly, the ergonomics comic strengthens the discussion on student engagement and motivation. The interaction shows a worker being advised to adjust posture while working at a computer, emphasizing prevention of long-term health risks. This scenario connects closely with earlier findings that students are more motivated when learning materials reflect realistic and relatable situations.

In conclusion, learning English by using digital comics, students were not simply memorizing vocabulary; instead, they were observing how language is used to perform specific actions such as warning others, giving instructions, and responding to emergencies. This aligns with the principles of English for Specific Purposes (ESP), which emphasize contextualized language use and communicative relevance (Dudley-Evans & St John, 1998). Questionnaire data further support this finding. When asked whether digital comics helped them communicate more effectively in safety-related situations, 77.5% of students agreed or strongly agreed. This suggests that learners perceived a direct connection between the learning materials and their

ability to communicate in professional contexts. Moreover, 82.5% of students reported feeling more confident using English during role-play activities. Interviews provided deeper insight into this development. One student stated:

"Before using the comic, I only knew some words. After seeing the situations, I know how to say things properly when something is dangerous." (INT-05)
Another student stated:
"The comic shows what to say and when to say it. It helps me speak more naturally." (INT-08)

These responses highlight how visual storytelling supports pragmatic competence, knowing not just what to say, but when and how to say it appropriately. This aligns with communicative language teaching principles, which emphasize meaningful interaction and contextualized use of language. Overall, the findings indicate that digital comics serve as an effective pedagogical bridge between language learning and occupational practice. By situating communication within realistic safety scenarios, digital comics enable students to develop functional, context-appropriate language skills that are essential for professional performance in OSH settings.

All of the findings of this study are strongly aligned with existing research on English for Specific Purposes (ESP), multimedia learning, and occupational safety education, while also extending previous work by situating digital comics within an OSH-specific instructional context. Consistent with the principles of English for Specific Purposes, this study confirms that language learning is most effective when it is embedded in authentic professional contexts (Dudley-Evans & St John, 1998). The digital comics used in this study presented realistic workplace scenarios such as hazard identification, emergency response, and ergonomic awareness. These contexts allowed students to practice language that is directly relevant to their future professional roles, rather than learning decontextualized vocabulary or grammatical structures.

Furthermore, the increased student engagement observed in this study supports research on multimedia learning and cognitive theory, particularly Mayer (2017) Cognitive Theory of Multimedia Learning. According to this theory, learners process information more effectively when verbal and visual elements are integrated. The combination of images, dialogue, and situational cues in digital comics enabled students to construct meaning more efficiently, reducing cognitive overload and supporting comprehension. The motivational impact observed in this study is also consistent with affective learning theories, particularly Krashen's Affective Filter Hypothesis (1982), which suggests that low anxiety and high motivation facilitate language acquisition. Students reported feeling more confident and less anxious when using English in comic-based activities, indicating that visual narratives help lower affective barriers. This finding echoes previous studies demonstrating that visual and narrative-based materials can reduce speaking anxiety and promote learner confidence in ESP contexts (Utomo & Ahsanah, 2020). In addition, the collaborative interactions observed during comic-based activities support sociocultural learning theory, which emphasizes learning as a socially mediated process (Vygotsky, 1978). Through peer discussions, role-plays, and joint problem-solving activities, students were able to co-construct meaning and negotiate understanding of safety procedures. This finding is consistent with previous studies indicating that collaborative learning environments enhance language development and promote deeper engagement through shared meaning-making and social interaction (Lantolf et al., 2014).

Overall, the findings confirm and extend prior research by demonstrating that digital comics serve as an effective pedagogical bridge between language learning and occupational practice.

By integrating visual storytelling, authentic scenarios, and communicative interaction, digital comics support the dual objectives of ESP instruction: developing language proficiency and preparing learners for real-world professional communication. This study, therefore, contributes to the growing body of literature advocating for multimodal, context-driven approaches in ESP and occupational education.

CONCLUSION

This study investigated the use of digital comics as a learning medium for English for Specific Purposes (ESP) in the context of Occupational Safety and Health (OSH). The findings demonstrate that digital comics are an effective pedagogical tool for enhancing students' understanding of safety concepts, increasing learning motivation, and developing functional communication skills required in professional workplace settings. The results indicate that integrating visual narratives into ESP instruction supports students' comprehension of complex OSH concepts by presenting them in realistic and meaningful contexts. Through comic-based scenarios, students were able to identify hazards, understand safety procedures, and practice appropriate communication strategies such as giving warnings, providing instructions, and responding to emergency situations. This confirms that contextualized learning plays a crucial role in improving both conceptual understanding and practical language use.

In addition, the study shows that digital comics significantly enhance student engagement and motivation. The visual and narrative format reduced anxiety, increased participation, and encouraged active involvement in classroom activities. Students demonstrated greater confidence when communicating in English, particularly during role-play and discussion tasks, indicating that digital comics help lower affective barriers often associated with ESP learning. From an Occupational Safety and Health perspective, the use of digital comics contributes to the development of safety awareness and preventive behavior. By simulating real workplace situations, the comics support the internalization of safety values and promote a proactive safety culture. This integration of safety education with language learning reflects the dual function of ESP: developing linguistic competence while preparing students for real professional responsibilities.

Overall, this study concludes that digital comics are a pedagogically effective and engaging medium for ESP instruction in OSH education. Their use supports meaningful learning, strengthens communication skills, and enhances students' readiness to apply safety principles in real-world contexts. Therefore, incorporating digital comics into ESP is strongly recommended as an innovative and practical approach to preparing students for future professional environments.

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