



Developing an ESP-Based Flipbook Integrated with Wayground to Support Reading Comprehension for Computer and Networking Engineering Students

Amanda Isna Nur Satifah Rohim¹, Arik Susanti^{2*}

¹²Prodi Pendidikan Bahasa Inggris, Universitas Negeri Surabaya, Jawa Timur, Indonesia

*E-mail: ariksusanti@unesa.ac.id

ABSTRACT

This study aimed to develop and evaluate an ESP-based flipbook integrated with Wayground to support reading comprehension of Grade XI Computer and Networking Engineering students. The research was conducted at a vocational high school in East Java, Indonesia, during the 2025/2026 academic year. The participants consisted of one class of Grade XI Computer and Networking Engineering students. This study employed a Research and Development (R&D) study with the ADDIE model, which included the Analysis, Design, Development, Implementation, and Evaluation stages. The research instruments included guided interview questions for English teachers, an expert validation sheet to assess the content and media quality of the product, and a students' questionnaire to obtain learners' responses toward the developed flipbook. The collected qualitative data were analyzed thematically, while the quantitative data from the validation sheets and questionnaires were analyzed descriptively using percentages and mean scores. The results indicate that developed product of flipbook was considered valid and appropriate for use as an English learning medium for CNE students. The product successfully combined vocationally relevant content, clear learning activities, and interactive digital features based on expert validation. Students also responded positively to the accessibility, attractiveness, and usefulness of the flipbook. Therefore, this study concludes that the ESP-based flipbook integrated with Wayground can serve as a suitable learning resource to support reading comprehension in vocational English classes.

Keywords: flipbook, reading comprehension, computer and networking

INTRODUCTION

The rapid transition from the Industrial Revolution 4.0 to Society 5.0 has transformed the competencies required in the global workforce. Beyond technical expertise, today's industries demand graduates who possess digital literacy, critical thinking, problem-solving, and effective communication skills. As institutions responsible for preparing work-ready graduates, vocational high schools are expected to equip students with both occupational competencies and English language proficiency relevant to their future professions. Consequently, English instruction in vocational

education should not merely emphasize general language knowledge but should also provide learning experiences that reflect students' vocational contexts and workplace demands.

Among the four language skills, reading comprehension plays a particularly significant role for students in Computer and Networking Engineering (CNE). These students are frequently required to read technical manuals, network configuration guides, troubleshooting procedures, software documentation, and other authentic resources predominantly written in English.

Submitted
07/09/2026

Accepted
19/09/2026

Published
30/09/2026

Citation	Rohim, A. I. N. S., & Susanti, A. (2026). Developing an ESP-Based Flipbook Integrated with Wayground to Support Reading Comprehension for Computer and Networking Engineering Students. <i>Jurnal Pembelajaran Bahasa dan Sastra</i> , Volume 5, Nomor 5, September 2026, 4435-4448. DOI: https://doi.org/10.55909/jpbs.v5i5.1831
----------	---

Publisher
Raja Zulkarnain Education Foundation

However, English learning in many vocational high schools continues to rely on General English textbooks that provide limited opportunities for students to engage with texts related to their field of specialization. As a result, students often struggle to understand technical vocabulary, identify important information, interpret procedural instructions, and apply their reading skills to authentic vocational situations (Butarbutar, 2021; Rahmawati, Hanifa; Rochsantiningsih, Dewi; Handayani, 2021)

English for Specific Purposes (ESP) has been widely recognized as an appropriate approach for vocational education because it emphasizes learners' academic and professional needs rather than general language proficiency. Hutchinson and Waters (1987) argue that ESP materials should be designed based on learners' target needs and learning needs to ensure that language instruction is relevant to the contexts in which English will be used. In vocational settings, contextualized reading materials enable students to acquire language skills while simultaneously developing professional knowledge related to their field. Furthermore, digital learning materials such as flipbooks provide flexible, multimedia-supported learning experiences that enhance students' engagement and independent learning. When combined with interactive digital platforms such as Wayground, learning activities can be further enriched through gamified quizzes, immediate feedback, and interactive assessments that encourage active participation and reading practice.

Several previous studies have explored the development of digital learning materials for vocational education. Radyuli (2022) developed a Flipbook Maker Pro-based e-module for Computer and Networking Engineering students and reported that the product was valid, practical, and effective for independent learning. Agustini et al. (2022) also developed an interactive flipbook for vocational students and demonstrated its feasibility as a digital

learning resource. Meanwhile, Ulumi et al. (2025) developed an ESP-based English module integrated with Quizizz for vocational students and found that the module effectively supported contextual English learning and increased student engagement. Despite these positive findings, previous studies mainly focused on either digital flipbooks or ESP materials separately. Few studies have integrated ESP-oriented content with Wayground in a digital flipbook specifically designed to improve reading comprehension for Computer and Networking Engineering students. This gap indicates the need for instructional materials that not only address vocational English needs but also integrate interactive digital technologies capable of supporting students' reading comprehension. Therefore, this study aims to develop and evaluate an ESP digital flipbook integrated with Wayground for Computer and Networking Engineering students. The developed product is expected to provide contextual reading materials, authentic vocational learning activities, and interactive assessments that support students' reading comprehension while aligning English learning with the demands of vocational education and the digital workplace.

Based on the background, this research report formulates two research questions as follows:

- 1) What are the target needs based on textbook analysis and teacher interviews for Computer and Networking Engineering students?
- 2) How is an ESP-based English Flipbook integrating Wayground developed to support reading comprehension?

In line with the research questions above, this research report formulates two purposes, such as:

- 1) To identify the students' needs based on textbook content analysis and teacher interviews for Computer and Networking Engineering students.
- 2) To develop an ESP-based flipbook integrated with Wayground to support reading comprehension.



The results from this study provide various practical benefits for groups involved:

- 1) For teachers: The flipbook integrated with Wayground serve as reference that may support teachers in preparing digital learning material that is relevant to vocational students' needs and engages the learning experience.
- 2) For students: The flipbook integrated with Wayground serve as an English resource in computer-networking context-oriented tool that improves their reading comprehension skill that related with their competencies. By incorporating computer-networking context into English reading materials, the flipbook provides a more practical, accessible, and technology-integrated learning.
- 3) The vocational school: Vocational schools can benefits from this study with providing a model of computer-network system based English learning resource that suits with CNE student, also support the vision of vocational institution vision to prepare students for readiness to work that align with students' program.
- 4) The material developers: The flipbook integrated with Wayground can serve as a reference for conducting further research on ESP material development or digital module design. Future studies may extend this research to different grade levels, learning materials, or language skills.

In this research, the main variables are English for Specific Purposes, reading comprehension, digital learning materials, flipbooks, and Wayground. According to Hutchinson and Waters (1987), ESP is an approach to language teaching in which all decisions about content and method are based on the learner's reason for learning. This means that ESP materials should be designed according to students' specific needs, especially in vocational contexts where English is used for technical and professional

purposes. Reading comprehension is an important skill in ESP because vocational students must understand texts related to their field, such as manuals, procedures, instructions, and technical explanations. Brown (2015) explains that reading is not just recognizing words, but also constructing meaning from a text through interaction between prior knowledge and written information. Reading comprehension is also described as the ability to identify main ideas, infer meaning, understand vocabulary in context, and interpret supporting details, especially in technical texts used by Computer and Networking Engineering students. Needs analysis is the foundation of ESP material development. Hutchinson and Waters (1987) divide needs into target needs and learning needs. Target needs include necessities, lacks, and wants, while learning needs concern how learners learn, including materials, activities, roles, and learning settings. This framework is used to analyze the needs of Computer and Networking Engineering students through textbook analysis and teacher interviews before developing the flipbook.

Digital learning materials are electronic teaching resources that support flexible and interactive learning. Digital learning materials are explained as resources that can combine text, images, audio, video, and links, making learning more attractive and accessible for students. For vocational learners, this kind of material is useful because it supports independent learning and matches students' digital habits. A flipbook is one of the digital learning media used in this study. Flipbook is electronic books that imitate printed books but can include multimedia elements and interactive navigation. Rahayu (2020) states that flipbooks are systematic and can support student learning independently, while Agustini et al. (2022) show that flipbooks are useful in vocational learning because they present relevant content in an attractive digital format. Wayground is also used as an interactive digital platform to strengthen learning activities through quizzes and feedback,

making the flipbook more engaging for students (Syam et al., 2025).

Several previous research supports the use of digital media for reading instruction, which relevant to the present research. The first study by Lidaini et al. (2026) examined the needs for developing an interactive flipbook based on local wisdom to improve students' reading skills of observation report texts. The study found that students and teachers strongly needed engaging and contextual digital learning media, especially interactive flipbooks that match learner characteristics and support reading interest. This study is relevant because it shows that flipbooks can be developed through needs analysis and can support reading comprehension in a meaningful way.

The second study by Suciatty et al. (2026) investigated first-year students' perspectives on digital flashcards for learning French reading skills. The results showed that most students had difficulty understanding texts, especially vocabulary and sentence structure, and they strongly needed visual digital media to support reading. This study is relevant because it confirms that digital media can help reading comprehension and that learners respond positively to interactive learning resources.

The third study by Radyuli (2022), which developed a Flipbook Maker Pro-based e-module for basic computer and networking learning. The product was reported as valid, practical, and effective for vocational students' independent learning, but it did not focus on ESP or integrate a platform like Wayground. Another related study is Agustini et al. (2022), which developed an interactive flipbook for TKJ students using the ADDIE model and found that the product was valid for supporting vocational content, although it was limited to reading materials and did not include an interactive digital platform.

This study has novelty in the development of an ESP-based flipbook integrated with Wayground for Computer and Networking Engineering students. Unlike previous studies, which mainly

developed flipbooks, digital flashcards, or ESP materials separately, this research combines vocationally relevant English content, reading comprehension support, and interactive digital activities in one learning product. Therefore, the present study contributes a new instructional model that is more contextual, practical, and engaging for vocational students, especially in supporting their reading comprehension in English for Specific Purposes.

METHOD

This study employed a research and development (R&D) design to develop a digital flipbook for vocational students using the ADDIE model, which consists of five phases: analysis, design, development, implementation, and evaluation. The use of the ADDIE model supports creating a specific product and evaluating the product's effectiveness. The analysis stage was conducted to identify the students' needs through textbook analysis and teacher interviews; the design stage was used to plan the content structure, learning objectives, activities, and integration of Wayground; the development stage focused on producing the ESP-based flipbook and revising it according to expert validation results; the implementation stage focused on the process of applying the developed flipbook in a real classroom setting, and the evaluation stage to assessing the effectiveness, practicality and overall quality of the ESP-Based Flipbook after being implemented in the learning process.

In the analysis stage, the researcher used textbook analysis and interviews with English teachers to identify students' learning needs, challenges, and contextual demands for reading comprehension in vocational settings. The results indicated that students require an additional ESP-based module relevant to their vocational background and potential future fieldwork. This stage also includes a curriculum review and student profile to ensure that the medium material is appropriate for the students' characteristics and goals.



In the design stage, the researcher developed the learning objectives, selected relevant learning activities, and designed the content structure and layout of the ESP flipbook. Each unit of the ESP flipbook is organised with sample texts, vocabulary lists, grammatical explanations, and writing activities on technological issues relevant to CNE students. The researcher also created tests for Wayground as interactive tasks to assess students' reading comprehension.

In the development stage, the researcher produced the first draft of the ESP flipbook integrated with Wayground and submitted it to validation. The validation process involves two categories of experts: content validity experts, who assess the materials' relevance to the curriculum and learning objectives; and media validity experts, who assess the design's visual clarity, practical layout, and usability. To enhance the accuracy and quality of the flipbook, both categories of experts offered suggestions for product revision.

In the Implementation stage, the researcher applied the ESP flipbook integrated with Wayground in a real classroom setting. It was applied to examine the practicality and usability in supporting students' reading comprehension in procedure and descriptive texts. In this stage, the flipbook is used as the main instructional medium in English learning activities. The implementation is carried out through structured learning activities that follow the instructional design embedded in the flipbook. The researcher acts as a facilitator, guiding students through each stage of learning, starting with pre-teaching activities (introducing learning objectives and activating prior knowledge), then-teaching activities (exploring vocabulary using Wayground, analyzing model texts and comprehending using Wayground, and practicing writing), and finally post-teaching activities (reflection and evaluation).

During the implementation process, students are actively engaged in completing the tasks provided in the flipbook through their smartphone, including vocabulary exercises using Wayground, text analysis, guided writing, and independent

writing. The use of contextual and computer-networking-based content, particularly related to the Computer and Network engineering topics, supports students in understanding the detailed information and in completing their tasks in the field, like procedures and troubleshooting. In addition, the implementation stage allows the researcher to observe how the flipbook functions in actual learning conditions, including students' participation, engagement, and difficulties encountered during the learning process. It also provides insights into the practicality of the flipbook in terms of clarity of instructions, suitability of tasks, and time allocation within classroom activities.

The evaluation stage aims to assess the effectiveness, practicality, and overall quality of the flipbook after being implemented in the learning process. This stage includes both formative and summative evaluation to ensure that the developed product meets instructional objectives and supports students' learning outcomes. Formative evaluation is conducted throughout the implementation process by observing students' responses, participation, and performance during learning activities. Feedback from students is also collected to identify strengths and weaknesses of the flipbook, particularly in terms of content clarity, task difficulty, and visual presentation. This ongoing evaluation helps in identifying areas that require further revision and improvement. Summative evaluation focuses on measuring students' learning outcomes, particularly their ability to comprehend the information in the reading text after using the flipbook. The assessment evaluates several aspects, including content relevance, vocabulary use, grammatical accuracy, organization, and coherence of the text. Overall, the evaluation stage provides comprehensive evidence regarding the feasibility, practicality, and effectiveness of the ESP-based flipbook as an English learning medium. The results of this stage can be used as a basis for further refinement and for broader implementation in different educational contexts.

The data collection used experts' validation sheets that contain content and media validation. The final result of this stage is a digital version of the ESP-based flipbook. This flipbook combines real-world innovation with English instruction, helping students improve their reading comprehension ability.

RESULTS

1. Analysis

At the analysis stage, needs analysis was conducted through existed textbook analysis and teacher interviews to identify students' problems in reading comprehension and learning preference of computer and network engineering student at a vocational high school in East Java, Indonesia. The results indicates that the textbook partially meets general pedagogical standards but does not sufficiently fulfil the criteria of ESP-based material, particularly in terms of relevance to students' field, authenticity, and practical application. In addition, students often struggle to comprehend long reading texts and unfamiliar English vocabulary. These challenges were mainly caused by the learning materials designed for general senior high school and were not contextual and not aligned with students' vocational backgrounds. Furthermore, the analysis revealed that students' motivation tends to decrease when the materials are not relevant to their field of study, then students showed higher interest when learning materials and the vocabulary was related to Computer and Networking Engineering topics because it was more relevant with their field. In this study, computer-networking topics were identified as relevant themes because they reflect students' field of study and daily experiences. Therefore, students required an ESP-based learning medium that is relevant to the CNE field, supports reading comprehension, and incorporates interactive digital features. These findings are in line with ESP principles, which emphasize the use of contextualized learning materials for vocational students.



Figure 1

Teacher Interview 1

Figure 2

Teacher Interview 2

2. Design

Based on the analysis results, the design stage focused on implementing students' needs into instruction planning and product design of the flipbook. The results show that learning objectives were formulated to guide students in understanding descriptive and procedure texts to comprehending the information in the written texts independently. The researcher designed an ESP-based flipbook entitled "NETSTEPS: English for Computer and Networking". This flipbook is developed to support students' reading comprehension by providing relevant, interactive, and field-specific learning materials for Computer and Networking Engineering (CNE) students.

The ESP flipbook is divided into two instructional units designed based on Bloom's taxonomy. The learning activities progress from remembering and understanding vocabulary and text information, then to analyzing, evaluating, and creating texts related to descriptive and procedure texts within Computer and Networking Engineering contexts.

Unit 1: "Wired or Wireless?"

Introduces students to basic computer networking concepts, particularly wireless and wired networks, including their functions, characteristics, usage, advantages, and limitations. The activities are designed to progress from pre-teaching discussions, reading comprehension, vocabulary recognition, generic structure identification, language feature identification, comparison activities to simple writing and reflection tasks.

These are the specific structures of ESP-based Flipbook integrated with Wayground for Computer and Networking Engineering students in Unit 1:



Figure 3
Unit 1: Wired or Wireless? and Lear



Figure 4
Pre-Teaching Question and Whilst Teaching Session: Listening



Figure 5
Whilst Teaching Session: Reading Comprehension



Figure 6
Whilst Teaching Session: Vocabulary recognition



Figure 7
Whilst Teaching Session: Generic Structure Identification



Figure 8
Post-teaching: Students' Reflection

Unit 2: "Set Up, Fix It and Secure It!"

Introduces students to procedure texts related to computer networking configuration and simulation activities. The learning activities are designed to develop students' reading comprehension through authentic procedure texts that reflect real-world tasks in the Computer and Networking Engineering field. The learning activities are organized systematically, beginning with pre-teaching discussions to activate students' background knowledge, followed by listening activities focusing on technical terms commonly used in networking contexts. Students are then guided to read and analyze procedure texts, answer comprehension questions, identify the generic structure and language features of procedure texts, arrange sequencing activities, and create a summary and simple procedure text. Furthermore, the unit includes interactive activities using Wayground to enhance students' engagement and understanding. The learning process concludes with students' reflection that addresses difficulties encountered during the learning activities, their feelings and their learning experience. This unit also ended with a glossary. These are the specific structures of the ESP-based Flipbook integrated with Wayground for Computer and Networking Engineering students in Unit 2:



Figure 9
Unit 1: Set up, Fix it and Secure it! and Learning Objectives



Figure 10
Pre-Teaching Question and Whilst Teaching Session: Listening



Figure 11
Whilst Teaching Session: Reading Comprehension



Figure 12
Whilst Teaching Session: Vocabulary recognition



Figure 13
Whilst Teaching Session: Generic Structure Identification



Figure 14
Post-teaching: Students' Reflection

Therefore, it can be highlighted that this flipbook is designed with a balance of text and imagery to facilitate comprehension among visual learners. The integration of Wayground was designed to support students' reading comprehension through digital and gamified learning activities that align with the learning characteristics and preferences of vocational students.

3. Development

At the development stage, an ESP flipbook prototype was systematically organized into two instructional units designed to support students' reading comprehension through contextualized, meaningful, and computer-networking-related learning materials. The contents of the flipbook focus on descriptive and procedure texts relevant to the field of Computer and Networking Engineering, including topics such as wired and wireless networks, network devices, and basic network configuration using Cisco Packet Tracer. The learning materials were sequenced from understanding fundamental networking concepts to interpreting procedural instructions, enabling students to gradually develop their comprehension of technical texts while engaging with authentic vocational contexts.

In this development stage, two validation processes, such as material and design validations, were conducted to ensure the product's quality, relevance, and appropriateness as an ESP-based learning medium by expert validators.

3.1 Material Validation

The content material validation was validated by a lecturer who served as an English-language subject-matter expert to evaluate the feasibility and quality of the flipbook titled "NETSTEPS: English for Computer and Networking Engineering" for vocational high school students. The material validation focused on three major aspects: pedagogical quality, ESP content relevance, and language and presentation quality. The pedagogical

aspect assessed curriculum alignment, reading comprehension, interactivity, and instructional completeness. The ESP content aspect assessed the relevance of the materials to Computer and Networking Engineering contexts, the authenticity of networking-related topics, and the suitability of the materials for vocational students. Then, the language and presentation aspect assessed the clarity of language and the effectiveness of visual elements in supporting students' understanding. Based on the validation results, the material obtained a total score of 80 out of 100, which was categorized as "Good" category. This result indicates that the developed material was considered appropriate for vocational English learning and could be used with minor revisions. Overall, the validator approved that the flipbook had successfully integrated with vocationally relevant topics, reading comprehension activities, and interactive learning features through Wayground. The material was also considered suitable for supporting the learning needs of Computer and Networking Engineering students. In addition, the validator provided several suggestions for improvement by adding more analysis and evaluation activities, making the ESP characteristics more explicit, and enriching the learning materials with additional multimedia elements such as audio or video resources. The validator also suggested providing more communicative visual support to further enhance students' engagement and understanding.

Based on these suggestions, revisions were made to improve several parts of the flipbook. Additional activities requiring students to analyze and evaluate information were included in the learning units. Furthermore, visual elements and supporting learning resources were refined to better accommodate students' learning preferences and promote more interactive learning experiences. After seeing the overall material quality and the revisions made, the validator concluded that the product was feasible and appropriate for use in the development stage.



3.2 Design Validation

The design validation was validated by a lecturer with expertise in design and instructional media to evaluate the visual and instructional design feasibility of the flipbook titled “NETSTEPS: English for Computer and Networking Engineering” for vocational high school students. This validation is intended to assess whether the visual design elements supported the learning objectives and were appropriate for the target readers’ characteristics. The design validation process focused on three aspects: media design, instructional presentation, and learner suitability. The media design assessed visual clarity, readability, colour harmony, illustration quality, and layout suitability. The instructional presentation aspect assessed the creativity of assignments and integration between materials and visuals. Then, the learner suitability aspect assessed the appropriateness of the design for Computer and Networking Engineering students.

The design validation result obtained a total score 86,8 out of 100, which falls into the “Very Good” category. This result indicates that the developed flipbook is highly feasible in terms of visual design, instructional presentation, and learner suitability. The validator considered the visual elements, readability, color harmony, and integration between text and illustration to be appropriate for Computer and Networking Engineering students. However, there are two parts of the design that do not suit, so it can be a suggestion from the validator to make a small revision. Based on these suggestions, revisions were made to improve these parts of the flipbook. After seeing the overall media design quality and the revisions made, the validator concluded that the product was feasible and appropriate for use in the development stage and for implementation among Computer and Networking Engineering students.

4. Implementation

The implementation stage involved applying the developed flipbook in real classroom learning at a vocational high school in East Java, Indonesia, to evaluate its practicality and usability. The flipbook was used as the main instructional medium in the learning and teaching process. The implementation process was conducted through three stages:

- a. Pre-teaching: introducing learning objectives and activating prior knowledge with listening activities
- b. While-teaching: vocabulary identification, descriptive and procedure analysis, comprehension question activities, generic and language features analysis and writing practice.
- c. Post-teaching: students’ reflection

During the implementation, students actively participated in interactive digital activities, opening the flipbook through their smartphone. In addition, the students used Wayground to practice their comprehension through assessment features:

- a. Unit 1: Students completed interactive quizzes such as true-or-false activities, multiple-choice questions, and multiple-select questions to identify main ideas based on descriptive texts about wired and wireless networks, and compare the differences between networking systems through interactive tasks and quizzes.
- b. Unit 2: During the listening activities, students completed quizzes after watching instructional videos related to computer setup through interactive video activities available on Wayground. Vocabulary games were also integrated to help students recognize procedural expressions, sequence connectors, and technical verbs commonly used in procedure texts through fill-in-the blank activity. Also, students completed interactive quizzes to analyze language features of procedure texts.

The results indicate that students were more motivated when the learning material aligned with their needs, which is related to computer-networking content. Students also actively participated while using the digital interactive game during the learning activities. Therefore, students showed excitement using the flipbook in comprehending the information in the reading text of descriptive and procedure texts.

3. Evaluation

The evaluation stage was conducted through formative and summative evaluation. Formative evaluation was carried out during the development stages through material and design expert validation. The results show that revisions significantly improved the quality of the flipbook in terms of content clarity, instructional effectiveness, and visual design presentation. Summative evaluation was carried out during the implementation stages through students' questionnaires. The questionnaire focused on capturing students' perception of the flipbook, including whether it helped them to comprehend the information from the reading text and learn the technical vocabulary. For the student questionnaire, the researcher distributed a Google Form containing ten yes/no questions covering interest, vocabulary learning, clarity of instructions, difficulty, and motivation. The results show that students responded very positively to the flipbook. They reported learning new technical vocabulary, enjoying the movement of the flipbook through a smartphone, and feeling more interest with quizzess through Wayground.



Figure 15
Class situation during
implementation and
evaluation

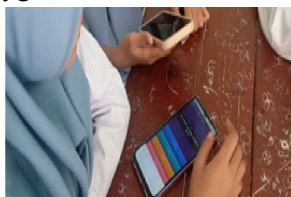


Figure 16
The use of Wayground
quizzess

DISCUSSION

Based on the results of the study, the results indicate that the ESP-based flipbook integrated with Wayground is a relevant and appropriate digital learning medium for supporting reading comprehension among Computer and Networking Engineering (CNE) students. The findings from the analysis, design, development, implementation and evaluation stages demonstrate that the developed flipbook is appropriate to address students' vocational learning needs by integrating ESP-based materials, contextual topics, and interactive digital learning activities. In addition, the integration of Wayground within the flipbook provided technology-enhanced and gamified learning experiences that aligned with students' learning characteristics as vocational learners.

Target Needs for Computer and Networking Engineering Students

The findings from the textbook analysis and teacher interviews showed that the existing English textbook used by Computer and Networking Engineering students remained general and had not fully met students' specific vocational needs. The textbook analysis also indicated that the materials lacked ESP characteristics, field-specific vocabulary, and authentic computer and networking content. In addition, the learning activities are not fully contextualized, and the reading texts do not fully support vocational purposes. On the other hand, teachers reported that students were more interested in learning materials related to their vocational field, preferred smartphone-based learning, and engaged with digital interactive and game-based activities. These findings are consistent with the English for Specific Purposes (ESP) approach proposed by Hutchinson and Waters (Hutchinson & Waters, 1987), which emphasizes that English learning materials should be developed based on learners' target needs and learning situations. In the present study, the identified needs indicate that Computer and Networking Engineering students require



learning materials that directly support students' future academic and vocational contexts.

The findings from the interviews also revealed, through the Present Situation Analysis, that students have experienced difficulties understanding unfamiliar vocabulary and comprehending materials unrelated to their field. It also indicated that the existing materials were mostly general and lacked networking-related content. It means students and teachers need ESP material that is related with CNE field. These findings align with Tri Nurhasanah (Tri Nurhasanah & Eri Kurniawan, 2023), who reported that vocational students and teachers need ESP materials specifically designed for the Computer and Networking Engineering program. Teachers explained that students were more interested and motivated when the learning materials included topics related to networking systems, computer setup, programming, and technical instructions. This finding is aligned with Tomlinson's (Tomlinson, 2011) principles of material development, which emphasize that language learning materials should provide meaningful, authentic, and relevant content to students' real-life contexts. Therefore, to meet the specific needs of Computer and Networking Engineering students, the developed flipbook must include computer networking-related topics, relevant vocational vocabulary, and practical learning activities.

The Target Situation Analysis (TSA) findings also indicated that Computer and Networking Engineering students need English skills to support workplace communication, technical understanding, and future career preparation. The interview data show that students required technical vocabulary and field-related texts, especially procedure and descriptive texts. English teachers explained that students frequently encounter English vocabulary in computer systems, networking configuration, programming, and technical documentation. Therefore, ESP-based materials are necessary to prepare students for authentic communication in vocational

contexts. Meanwhile, the Learning Situation Analysis (LSA) revealed that students learn better through visually engaging materials and prefer digital or interactive learning activities. Students were more enthusiastic when learning involved quizzes, digital platforms, and visual learning resources. It confirms that ESP-based materials should be both field-specific and designed in a learner-friendly digital format. These findings are in line with a previous study that found ESP in Computer and Networking Engineering vocational classes is necessary because general English materials do not fully meet students' major-related needs and teachers still face limitations in resources and implementation. (Tri Nurhasanah & Eri Kurniawan, 2023).

Thus, the analysis stage demonstrated that vocational students need contextual, interactive, and technology-based English learning materials that support reading comprehension and vocational language development.

Development of the ESP Flipbook Integrated with Wayground

The results show that the flipbook was developed through a systematic instructional design process using the ADDIE model up to the Development stage. This finding was consistent with a previous study on developing a flipbook based on students' needs, and digital learning concepts should be developed through structured stages to provide relevance and feasibility of the product. (Agustini et al., 2022).

After the needs analysis was conducted, the design and development stage translated the needs into clear learning objectives, structured learning units, contextual material, and visually-digital supported activities. The developed flipbook consisted of two units focusing on descriptive and procedure texts related to computer and networking contexts. The use of contextual materials reflects ESP principles, which emphasize the importance of integrating language learning with learners' professional and academic needs.

The structure of the flipbook was designed systematically to guide students gradually from vocabulary understanding to reading comprehension and practical language use. Each unit included vocabulary-building activities, reading texts, comprehension questions, language features sections, and students' reflections. The visual design of the flipbook also played an important role in supporting students' learning experiences. Previous studies on digital learning materials suggest that visual digital support can improve students' attention, comprehension, and learning engagement. (Nasution et al., 2024). In addition, the integration of Wayground was an important aspect of the design process to support reading comprehension activities. Sari (2021) states that the use of Quizizz or Wayground supported the students' reading comprehension skills.

The result of this study suggests that the ESP-based flipbook is a valid, relevant, and appropriate learning medium to support reading comprehension of Computer and Networking Engineering students. These results are consistent with previous studies on the development of English learning materials (Karurukan & Ervianti, 2024; Radyuli et al., 2022). Overall, the ESP-based flipbook integrated with Wayground entitled "NETSTEPS: English for Computer and Networking Engineering" contributes to the development of English learning media by providing computer-networking content. Therefore, the flipbook can serve as an English material to support reading comprehension of CNE students and can be considered as a reference for future studies on media and materials development.

CONCLUSION

In response to the first research question concerning the analysis of the English learning needs of Computer and Networking Engineering (CNE) students, this study found that the existing English textbooks and materials used in vocational high schools have not fully fulfilled the students' specific needs in learning English. The findings

from the textbook analysis and semi-structured interviews with English teachers indicated that the materials remain general, less contextual, and are insufficiently linked to the Computer and Networking Engineering field. Consequently, students often struggle with long reading texts and technical vocabulary when the material is not connected to their vocational context. The findings also revealed that students were more interested in interactive and technology-based learning activities, particularly those integrated with digital platforms and game-based learning. Therefore, the analysis stage highlights the need for ESP-based English materials that are contextualized, interactive, and closely aligned with students' vocational needs.

In addressing the second research question on the development of an ESP flipbook integrated with Wayground, this study reports that the flipbook was developed through a systematic Research and Development process based on the ADDIE model, focusing on the Analysis, Design, and Development stages. The process started with identifying students' needs through textbook evaluation and English teacher interviews, which guided the design of the flipbook's structure, learning objectives, content selection, and interactive activities. In the design stage, continuous from the previous stages, the learning units were organized, appropriate learning activities were selected, and integrated interactive digital features through Wayground. The development stage resulted in a digital flipbook entitled *NETSTEPS: English for Computer and Networking*, containing descriptive and procedure texts on computer and networking topics.

Moreover, the developed flipbook was designed systematically to support students' reading comprehension through contextual and ESP-based materials. Each unit includes learning objectives, reading passages, vocabulary activities, comprehension exercises, language focus activities, reflection sections, and interactive quizzes accessible through QR codes and digital links to Wayground. The integration of Wayground



provides interactive learning experiences that encourage students' engagement and participation during the learning process. In addition, the visual layout, concise materials, and digital accessibility of the flipbook were designed to match students' learning preferences and characteristics as vocational learners.

In summary, the ESP-based flipbook integrated with Wayground is a relevant and interactive digital resource that supports the learning of reading comprehension for Computer and Networking Engineering students.

REFERENCES

- Agustini, K., Wahyuni, D. S., Mertayasa, I. N. E., Sugihartini, N., & Subawa, I. G. B. (2022). Digital Learning Media Innovation and Learning Experience: Creating Interactive Flipbook for Vocational Student. *EAI Endorsed Transactions on Industrial Networks and Intelligent Systems*. <https://doi.org/10.4108/eai.27-11-2021.2315537>
- Butarbutar, E. R. J. (2021). Reading comprehension difficulties among tenth grade students of vocational high school. *Journal of Applied Linguistics*, 10(1), 1–16.
- Hutchinson, T., & Waters, A. (1987). English for Specific Purposes: A learning-centred approach. In *New directions in language teaching*. Cambridge: Cambridge University Press.
- Karurukan, D. G., & Ervianti, E. (2024). *Development of E-Books As Teaching Materials in the Computer and Network Engineering Department*. 03(02), 20–31.
- Li'idaini, Ifflah; Afnita; Satria, D. (2026). *Needs Study of Interactive Flipbook of Local Wisdom for Reading Skills of Observation Report Text*. 5, 573–580.
- Nasution, Y. P., Rizal, F., Irfan, D., Refdinal, R., & Sari, A. K. (2024). Developing Flipbook-Based on Competency for Vocational High School Teacher. *AL-ISHLAH: Jurnal Pendidikan*, 16(3), 3322–3334. <https://doi.org/10.35445/alishlah.v16i3.5044>
- Nurhasanah, T., & Kurniawan, E. (2023). ESP Need Analysis of Computer and Network Engineering in Vocational High School. *J-SHMIC: Journal of English for Academic*, 10(2), 139–154. [https://doi.org/10.25299/jshmic.2023.vol10\(2\).13347](https://doi.org/10.25299/jshmic.2023.vol10(2).13347)
- Radyuli, P., Menrisal, & Diati, L. S. (2022). Design of E-Learning Media Modules Based on FlipBook Maker Pro in Basic Computer Networking Subjects at SMKN 1 Tanjung Raya Even Semester Academic Year 2021/2022. *Journal of Digital Learning and Distance Education*, 1(3), 87–93. <https://doi.org/10.56778/jdlde.v1i3.19>
- Rahayu, I. (2020). *The Development Of E-Modules Project Based Learning for Students of Computer and Basic Networks at Vocational*. 4, 398–403.
- Rahmawati, Hanifa; Rochsantiningsih, Dewi; Handayani, E. (2021). *Process and Challenges in Material Development: A Case Study at Vocational High School in Surakarta*. 10(1), 52–62.
- Sari, D. P., & Putra, A. S. (2021). The use of Quizizz application in improving students' reading comprehension skill. *Journal of English Language Teaching*, 10(2), 123–131.
- Suciaty, W. N., Aprilia, & Widyastuti, W. T. (2026). First-Year Students' Perspectives on the Use of Digital Flashcards in Learning French Reading Skills at the A1 Level. *Jurnal Pembelajaran Bahasa Dan Sastra*, 5(2), 1417–1426. <https://doi.org/10.55909/jpbs.v5i2.1310>

- Syam, A. T., Mahriati, D., Thayyib, M., Said, Y. R., & Muin, F. R. (2025). Developing English Material in the Form of a Digital Flipbook as a Medium for Teaching English. *IDEAS: Journal of Language Teaching and Learning, Linguistics and Literature*, 13(1), 3110–3120. <https://doi.org/10.24256/ideas.v13i1.6296>
- Tomlinson, B. (2011). Materials Development in Language Teaching. In *Cambridge Language Teaching Library* (2nd ed.). Cambridge: Cambridge University Press.
- Ulumi, R., Sujana, I. M., Apgrianto, K., Melani, B. Z., & Munandar, L. O. A. H. (2025). Developing an Interactive English Teaching Module for Fashion Students at Grade X SMKN 1 Mataram by Using Quizizz Application. *JSRET (Journal of Scientific, Research, Education, and Technology)*, 4(1), 126–137. <https://jsret.knpub.com>