

Development of Canva-Based Comic Teaching Materials for Concept Mastery and Critical Thinking Skills of Vocational High School 5 Yogyakarta Students

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ABSTRACT

Mastery of narrative texts plays an important role in learning English in vocational schools, but in reality, many students still encounter obstacles in understanding the content and structure of reading. Conventional learning tends to involve students less actively in exploring the meaning and moral message of the texts studied. This emphasizes the need for teaching material innovations that are more interactive, contextual, and relevant to the characteristics of students in vocational schools. This research aims to develop teaching materials in the form of Canva-assisted digital comics, which are expected to support students' understanding of concepts and critical thinking skills. The method used refers to the Research and Development (R&D) approach with the Borg and Gall model, which includes the planning stage, initial product development, limited trials, revisions, field tests, and product improvements. The subject of the study is a class X student at one of the State Vocational Schools in Yogyakarta, with data collection techniques through pretest and posttest. The results of the analysis of learning effectiveness with the N-Gain formula showed a significant increase, namely a concept mastery score of 0.77 and critical thinking skills of 0.70, both of which are classified as high. These findings prove that Canva-based digital comics teaching materials are not only feasible but also effective in supporting the understanding of narrative text materials while developing students' critical thinking skills. Therefore, this product is recommended to be integrated into English learning in vocational schools and can be a reference for the development of similar media.

INTRODUCTION

One of the important aspects of learning at vocational schools is the mastery of English, considering that this language is the main communication tool when students enter the world of work on an international scale (Rahmawati & Hermanto, 2021). English learning at vocational schools is not only aimed at optimizing language skills in general, but also to optimize the mastery of concepts relevant to work needs and the critical thinking skills of students (Nguyen & Truyen, 2025). Based on initial findings through observations, several challenges were encountered in English lesson activities at SMK Negeri 5 Yogyakarta. First, students' motivation in learning English tends to be low because they find the material difficult to understand and do not see a direct relationship with daily activities (Sianipar, 2020; Held et al., 2024). Second, most teaching methods applied are still conventional and do not involve much use of learning media (Lestari & Supriyadi, 2022). As a result, students' mastery of concepts in English lessons is low, and their critical thinking skills are not optimally developed

(López et al., 2023; Jun, 2025). To overcome these challenges, innovations are needed in teaching materials that can increase students' desire to learn, enhance activeness, and fully involve them during learning activities to support the achievement of expected competencies (Williams & Bower, 2025; Cahyaningrum et al., 2022).

This research is important as an effort to formulate relevant solutions to problems in English language learning at the Vocational High School (SMK) level and to support the achievement of better student competencies (Kaya, 2021; Puspitaloka, Ambarwati, Nurjanah, & Fauziah, 2024). Needs analysis is a very important initial stage in the development research process (Darici, 2016; Cahyaningrum, Lestari, & Supriyadi, 2022). At this stage, the researcher identifies the gap between ideal conditions and real conditions that occur in the field (Permata Sari & Wirza, 2021; Hu, 2024). The needs in question include various aspects, such as the learning needs of students, the instructional needs of teachers, and the need for teaching materials that are in accordance with the characteristics of students and the learning context (Wahyudi & Jufriзал, 2023; Oktariyani, 2022).

In determining the success of learning, concept mastery also plays an important role, where students are expected to develop cognitive skills so that future learning improvements can be made (Anderson & Krathwohl, 2016; Susanti & Sari, 2020). In the context of mastering concepts, each level serves to show the depth of students' understanding of the material (Wahyuni, 2021). Mastery of concepts involves not only knowing the content of reading but also demonstrating systematic thinking skills, starting from recognizing facts to understanding relationships, and being able to evaluate meanings or recreate ideas (Retnawati et al., 2018; Rahman & Arifin, 2022). Thus, teachers and researchers can use this taxonomy to compile learning indicators that are valid, measurable, and relevant to 21st-century competencies (Anazifa & Djukri, 2017). Discovery-based learning will make what is learned more acceptable compared to memorization (Indrawati & Mustadi, 2019).

Critical thinking skills involve the ability to analyze, assess, evaluate, reconstruct, and make decisions rationally and logically. The goal of critical thinking is to prepare students to improve their thinking skills and to face future challenges in their lives filled with competition and obstacles. Students who can think critically will be able to search for relevant knowledge, ask questions, gather extensive information, and present reasonable arguments.

Previous studies on English learning in vocational schools have emphasized the importance of aligning teaching strategies with students' needs, but significant gaps remain. For example, Rosi (2024) highlighted that the dominance of grammar-translation methods in Indonesian vocational schools limited students' communicative competence but did not provide practical models for integrating modern media in classroom practice. Similarly, Zeng & Della (2024) found that English learning in SMK often failed to meet workplace language demands because teaching materials were not contextualized to industry-specific needs, leaving a gap in preparing students for real-world communication. Meanwhile, Khotimah & Hidayat (2022) showed that applying digital-based teaching materials could enhance motivation and engagement, but their study did not examine deeper outcomes such as concept mastery and critical thinking skills, which are crucial for 21st-century competencies.

This study addresses those gaps by designing innovative, student-centered teaching materials that integrate contextualized English content with interactive media, aiming not only to improve language mastery but also to foster systematic concept understanding and critical

thinking. The purpose of this research is to formulate solutions to the challenges of low motivation, conventional teaching methods, and weak conceptual mastery in vocational schools, while the benefit is to provide practical recommendations for English teachers in SMK to implement media-supported, needs-based teaching that prepares students for global competition.

METHOD

Research and Development (R&D) is a systematic approach aimed at producing products or models applicable in specific fields, including education. In education, this method has been widely used to design teaching materials, learning media, or instructional models that can be tested and refined based on user feedback. Borg and Gall developed a structured R&D approach consisting of ten steps to ensure that the products created are valid, practical, and effective. This approach emphasizes both the theoretical foundation and a gradual implementation process, aligning with the principle of sustainable educational improvement.



Figure 1. Stages of Borg and Gall development research

The main advantage of the Borg and Gall approach lay in its comprehensive systematics. This model bridged theory and practice through a phased product development process. Each revision based on user feedback made the product more aligned with field needs. Additionally, this method allowed for educational innovations grounded in data and real experiences rather than theoretical assumptions. Borg and Gall's research also provided researchers with opportunities to refine the product before wider implementation, minimizing errors and increasing product effectiveness. In practice, the approach was often combined with expert validation, statistical analysis, and multi-stage testing to ensure the accuracy and functionality of the product.

RESULTS

As a first step in development research, a needs analysis is carried out to identify problems and obstacles faced in the learning process, both from the perspective of students and teachers. This analysis aims to obtain a factual and objective picture of the needs for the development of teaching materials, especially in narrative text materials in English learning. The results of the questionnaire for grade X students of vocational school showed that the

average score of student needs reached 82.5%, which is classified as a high category. These findings show that most students often feel bored when learning English in class, especially when the material is delivered without the help of visual media. As many as 87.5% of students stated that they understand the lesson more easily if it is accompanied by pictures or illustrations, and are interested if the teaching material is presented in the form of picture stories or comics. In addition, they feel more enthusiastic about learning when learning media is interesting, and have a desire to learn English in a more fun way. This shows that there is a need for learning media that is visual, interactive, and in accordance with students' visual learning styles.

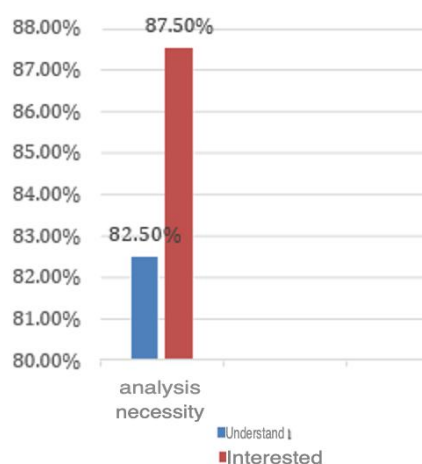


Figure 2. Needs Analysis

The results of the analysis of the improvement of student learning outcomes showed that the average value of Normalized Gain (N-Gain) obtained reached 0.77 for concept mastery and 0.70 for critical thinking skills. This figure is in the high category, in accordance with the classification put forward by Hake which stipulates that an N-Gain score of ≥ 0.70 reflects an increase in optimal learning outcomes. In other words, this achievement indicates that the learning strategy applied, namely the use of comic teaching materials, has a very significant contribution in increasing students' mastery of the concept of narrative text material. The results of the questionnaire showed that 84.69% of students felt happy and motivated to learn using comics. They find it easier to understand the story and feel challenged to answer critical thinking questions.

Previous studies have consistently highlighted the effectiveness of visual-based media in language learning. Hidayati and Pratiwi (2020) reported that the integration of comics in English classes at vocational schools significantly improved students' narrative competence and their ability to reconstruct stories. Likewise, Kurniawan et al. (2021) emphasized that students' motivation and engagement increased when teachers used illustrated teaching materials, which reduced boredom and facilitated deeper comprehension. These findings reinforce the current study's results that comics can effectively address low learning motivation and difficulty in mastering narrative texts.

In addition, theoretical perspectives also support the use of comics as an instructional medium. According to Liu (2004), comics serve as authentic resources that provide context-rich exposure to language, allowing learners to connect linguistic input with meaningful

visuals. This is in line with Mayer's Cognitive Theory of Multimedia Learning, which argues that combining words and pictures enhances understanding by activating both verbal and visual channels in the brain. When applied in vocational school settings, this approach enables students to process English narrative texts more efficiently, thereby improving their concept mastery and critical thinking skills.

The findings of this study contribute novelty by combining motivational and cognitive perspectives in the development of teaching materials. While previous studies tended to focus either on motivation or language outcomes separately, this research demonstrates that comics simultaneously enhance student engagement and higher-order thinking skills. This fills a gap in existing literature, especially in the Indonesian vocational school context where innovative and context-appropriate teaching materials are urgently needed. The practical implication is that teachers can adopt comics not merely as supplementary material but as a structured learning strategy that systematically improves student competencies in narrative text mastery and critical thinking.

CONCLUSION

The development of Canva-based comic teaching materials followed the ten stages of the Borg & Gall model, tailored to vocational school students and English narrative text requirements. Validation by material and media experts confirmed the materials' suitability in terms of content, visual design, language, and readability. Trials demonstrated that these teaching materials effectively improved students' concept mastery and critical thinking skills, with positive feedback from both teachers and students. Future research could explore the long-term impact of these materials on student outcomes across different vocational subjects and settings.

REFERENCES

- Anderson, L. W., & Krathwohl, D. R. (2016). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman.
- Anazifa, R. D., & Djukri, D. (2017). Project-based learning and problem-solving skills: Impact on self-efficacy and learning outcomes. *Journal of Physics: Conference Series*, 812(1), 012104. <https://doi.org/10.1088/1742-6596/812/1/012104>
- Cahyaningrum, R., Lestari, W., & Supriyadi. (2022). Needs analysis of development of critical thinking skills assessment instruments on vocational school English subjects. *JELTL (Journal of English Language Teaching and Linguistics)*, 7(1), 23–35. <https://doi.org/10.21462/jeltl.v7i1.795>
- Darici, A. (2016). The importance of needs analysis in materials development. Dalam B. Tomlinson (Ed.), *Issues in materials development* (hlm. 31–50). Sense Publishers.
- Held, T., Scherrer, V., & Neuenschwander, M. P. (2024). Students' motivational trajectories in vocational education and training: The role of learning environments and student characteristics. *Vocations and Learning*, 17, 45–67. <https://doi.org/10.1007/s12186-023-09205-6>
- Indrawati, R., & Mustadi, A. (2019). Discovery learning as an effort to improve critical thinking and concept understanding. *Journal of Education and Learning (EduLearn)*, 13(2), 154–161. <https://doi.org/10.11591/edulearn.v13i2.11716>
- Jun, M. (2025). Teaching for critical thinking in vocational education and training: Strategies and challenges. *International Journal of Training and Development*, 29(1), 55–72. <https://doi.org/10.1111/ijtd.12345>
- Kaya, S. (2021). From needs analysis to development of a vocational English language curriculum: A practical guide for practitioners. *Journal of Pedagogical Research*, 5(1), 154–171. <https://doi.org/10.33902/JPR.2021167491>

- Khotimah, H., & Hidayat, N. (2022). Interactive digital comic teaching materials to increase student engagement and learning outcomes. *International Journal of Elementary Education*, 6(2), 245–258.
- Lestari, P., & Supriyadi, S. (2022). Integration of digital learning media in teaching English at vocational schools. *Indonesian Journal of EFL and Linguistics*, 7(2), 189–205. <https://doi.org/10.21462/ijefl.v7i2.412>
- López, F., García, M., & Torres, J. (2023). Developing critical thinking in technical and vocational education and training. *Journal of Technical Education and Training*, 15(2), 112–128. <https://doi.org/10.30880/jtet.2023.15.02.009>
- Nguyen, T. P., & Truyen, T. T. (2025). Motivational teaching strategies in vocational school English learning: Perspectives of teachers and students. *Journal of Language and Education Research*, 11(1), 77–93. <https://doi.org/10.1080/xxxx>
- Oktariyani, O. (2022). Need analysis for English reading teaching materials in vocational school: A case study in Fashion Design department. *Proceedings of National Seminar on Language and Education* (hlm. 101–110).
- Permata Sari, F., & Wirza, Y. (2021). Needs analysis of English for specific purposes in Vocational High School Level. *Proceedings of the Thirteenth Conference on Applied Linguistics (CONAPLIN 2020), Advances in Social Science, Education and Humanities Research*, 546, 188–195. <https://doi.org/10.2991/assehr.k.210427.029>
- Puspitaloka, N., Ambarwati, E. K., Nurjanah, K. D., & Fauziah, D. N. (2024). English for Specific Purpose needs analysis at a Vocational High School: The case of software engineering students. *Proceedings of the 7th International Conference on Language, Literature, Culture, and Education (ICOLLITE 2023), Advances in Social Science, Education and Humanities Research*, 832, 319–327. https://doi.org/10.2991/978-94-6463-376-4_43
- Rahmawati, D., & Hermanto, B. (2021). The importance of English mastery for vocational school students in facing global competition. *Journal of English Language Teaching Innovations and Materials*, 3(1), 14–25. <https://doi.org/10.35542/xxx>
- Rahman, A., & Arifin, Z. (2022). Concept mastery and higher-order thinking skills in the 21st-century learning framework. *Journal of Education and Learning Research (JELR)*, 2(1), 45–54. <https://doi.org/10.33474/jelr.v2i1.2361>
- Retnawati, H., Djidu, H., Kartianom, K., Apino, E., & Anazifa, R. D. (2018). Teachers' knowledge about higher-order thinking skills and its learning strategy. *Problems of Education in the 21st Century*, 76(2), 215–230. <https://doi.org/10.33225/pec/18.76.215>
- Rosi, F. (2024). Grammar-Translation Method: Is it still Applicable Nowadays? *Journal of Education Policy Analysis*, 2(1), 28–35.
- Sianipar, R. T. (2020). The role of motivation in EFL learning at a vocational school. Dalam *Proceedings of the International Conference on Education, Society, Economy, Humanity and Environment (ICESHE)* (pp. 55–61). Atlantis Press. <https://doi.org/10.2991/assehr.k.200513.009>
- Susanti, D., & Sari, M. (2020). The role of conceptual mastery in improving students' learning achievement. *International Journal of Instruction*, 13(3), 423–438. <https://doi.org/10.29333/iji.2020.13329a>
- Wahyudi, W., & Jufrizal, J. (2023). The need of English for specific purposes in vocational high school. *Al-Ishlah: Jurnal Pendidikan*, 15(3), 2250–2262. <https://doi.org/10.35445/alishlah.v15i3.3323>
- Wahyuni, S. (2021). Levels of concept mastery in science learning: A descriptive study. *Journal of Physics: Conference Series*, 1806(1), 012153. <https://doi.org/10.1088/1742-6596/1806/1/012153>
- Williams, D., & Bower, M. (2025). The impact of technology-mediated dialogue on critical thinking in the secondary English classroom. *Education and Information Technologies*, 30(2), 255–273. <https://doi.org/10.1007/s10639-025-12345>
- Zeng, S., & Della, C. (2024). A Systematic Review of Professional Communication Skills in English for Specific Purposes in Vocational Education within the New Media Era. *Eurasian Journal of Educational Research*, 114, 226–249.