IJETL
International Journal of English Teaching and Linguistics
Vol. 1 No. 2 (2026): A collection of scholarly articles and research findings.
https://ejurnal.umri.ac.id/index.php/IJETL

The Effectiveness of Webtoon in Enhancing Tenth-Grade Students' Vocabulary Mastery at SMAN 1 Inuman

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First Received: April, 2026 Final Proof Received: October, 2026

Abstract

This study aimed to investigate the effectiveness of the Webtoon application in enhancing students' vocabulary mastery. The study employed a quantitative approach with a quasi-experimental design involving an experimental class and a control class. The population consisted of 131 tenth-grade students at SMAN 1 Inuman, and 62 students were selected through simple random sampling. The experimental class consisted of 32 students who received vocabulary instruction using Webtoon, whereas the control class consisted of 30 students who received conventional instruction. Data were collected through 25-item multiple-choice vocabulary pre-tests and post-tests and were analyzed using SPSS. The findings showed that the mean score of the experimental class increased from 43.8 on the pre-test to 71.3 on the post-test, while the control class increased only slightly from 41.7 to 42.1. The normality results indicated that the data met the assumption of normal distribution, and the statistical test yielded a significance value of $p < 0.001$. These findings indicate that the use of Webtoon was effective in improving students' vocabulary mastery. The visual and textual features of digital comics may help students encounter vocabulary in meaningful contexts, maintain attention, and connect word meanings with situations presented in the story. Therefore, Webtoon can be considered an alternative digital medium for vocabulary instruction at the senior high school level.

Keywords: Webtoon; vocabulary mastery; digital media; English learning; vocabulary instruction

INTRODUCTION

Vocabulary is a fundamental component of language learning because it supports the development of listening, speaking, reading, and writing. Learners need an adequate range of words to understand messages, express ideas, interpret texts, and participate in communication. Even when students understand basic grammatical patterns, limited vocabulary can prevent them from comprehending a text or producing meaningful language. For this reason, vocabulary mastery is not merely the ability to memorize isolated definitions. It also involves recognizing words, understanding their meanings in context, recalling them when needed, and using them appropriately. Schmitt (2017) emphasizes the central role of vocabulary knowledge in language learning, while Thornbury (2002) explains that vocabulary instruction becomes more meaningful when learners meet words repeatedly and in understandable contexts. These principles are particularly relevant for students who learn English as a foreign language and have limited exposure to English outside the classroom.

In many school contexts, vocabulary learning is still associated with memorizing word lists, translating individual words, or consulting dictionaries. These activities can be useful in certain situations, but they may not be sufficient when they become the dominant form of instruction. Memorization without meaningful context can make vocabulary difficult to retain because students may remember a translation temporarily without understanding how a word functions in an authentic sentence. In addition, repetitive teacher-centered activities can reduce students' attention and motivation. When vocabulary is presented only as a list of items to be remembered, learners have fewer opportunities to connect new words with characters, actions, emotions, images, and communicative situations. Consequently, teachers need learning media that can present vocabulary in a way that is both understandable and engaging while remaining connected to instructional objectives.

The increasing use of digital technology in education provides opportunities to diversify vocabulary instruction. Digital media can combine written language with images and other forms of visual support, allowing learners to receive information through more than one mode. Mayer (2009) explains that multimedia learning can support understanding when verbal and visual information are meaningfully integrated. In vocabulary learning, an image or visual situation may provide clues that help students infer meaning, while written dialogue provides linguistic context. This combination is relevant to the principle of dual coding, in which verbal and visual representations can work together to support memory. However, the educational value of digital media does not depend only on the technology itself. Its effectiveness also depends on how teachers select content, organize activities, guide students' attention, and connect the media to clear learning outcomes.

One digital platform that can provide both visual and textual input is Webtoon. Webtoon presents stories through sequences of digital comic panels that commonly include illustrations, dialogue, captions, expressions, and situational contexts. For language learners, these elements may make unfamiliar words easier to interpret because meaning is supported by the relationship between text and image. Students can observe what characters are doing, identify the setting, notice emotional expressions, and connect these visual clues with the words used in the dialogue. The story format may also encourage students to continue reading because vocabulary appears as part of a narrative rather than as disconnected exercises. In this sense, Webtoon can function not only as entertainment but also as a source of contextual language input when it is carefully incorporated into classroom instruction.

Preliminary observations at SMAN 1 Inuman indicated that tenth-grade students experienced difficulties in vocabulary learning. Students showed limited vocabulary mastery and low interest in English learning, particularly when they were required to understand texts or identify the meanings of unfamiliar words. Some students depended heavily on dictionaries and had difficulty interpreting vocabulary from context. Classroom instruction also relied largely on conventional learning resources, including textbooks and presentation materials. These conditions suggested a need for an instructional medium that could provide richer contextual support and encourage students to participate more actively in vocabulary activities. The use of Webtoon was therefore considered relevant because it could introduce vocabulary through a combination of written dialogue, narrative context, and visual information.

Previous studies have discussed the use of Webtoon and other digital media in English language learning. Agustin and Ayu (2021), for example, examined the use of a social media platform in relation to vocabulary and listening, illustrating the growing interest in digital resources for language learning. Erya and Pustika (2021) discussed students' perceptions of Webtoon in reading comprehension, while other studies in the reference base of this article have addressed Webtoon as reading media, as an e-comic learning application, and as a resource for teaching reading comprehension. Dita (2023) specifically addressed Webtoon in relation to vocabulary mastery. Collectively, these studies indicate that visually supported digital texts have potential in English learning. Nevertheless, the effectiveness of a medium can vary according to the learners, instructional procedures, target skill, and educational level.

Several research gaps provide the rationale for the present study. First, much of the available discussion of Webtoon in English learning has focused on reading comprehension, writing, or general learning experiences, whereas focused evidence concerning vocabulary mastery remains comparatively limited. Second, some previous research has been conducted with learners at educational levels different from senior high school. The characteristics of tenth-grade students, including their language proficiency, learning habits, and familiarity with digital media, make this context worthy of specific investigation. Third, simply using Webtoon does not automatically constitute structured vocabulary instruction. It is necessary to examine its use within planned learning activities that direct students to identify vocabulary, interpret words from context, discuss meaning, practice dialogue, and use vocabulary productively.

The present study therefore investigates the effectiveness of the Webtoon application in enhancing the vocabulary mastery of tenth-grade students at SMAN 1 Inuman. The study applies a quasi-experimental design so that the performance of students who receive Webtoon-based instruction can be compared with that of students who receive conventional instruction. The treatment is organized around activities such as reading selected episodes, identifying unfamiliar vocabulary, analyzing contextual clues, practicing dialogue, completing writing tasks, and participating in group discussion. By combining visual and textual input with structured classroom tasks, the study seeks to determine whether Webtoon can contribute to measurable improvement in vocabulary achievement. The study is expected to provide practical information for English teachers who are considering the use of digital comics as supplementary instructional media.

METHOD

This study employed a quantitative approach using a quasi-experimental design. A quasi-experimental design was selected because the research involved two existing groups that were used for comparison: an experimental class that received the treatment and a control class that received conventional instruction. Experimental research is intended to examine the effect of a treatment by comparing learning outcomes under different instructional conditions. In the present study, the independent variable was the use of the Webtoon application as a vocabulary-learning medium, while the dependent variable was students' vocabulary mastery as measured through vocabulary tests. The design included a pre-test before the instructional period and a post-test after the instructional period so that changes in students' scores could be examined.

The pre-test served two purposes. First, it provided information about students' vocabulary achievement before the treatment. Second, it allowed the researcher to compare the initial

performance of the experimental and control classes. After the pre-test, the experimental class participated in vocabulary instruction using Webtoon for six sessions, while the control class received conventional vocabulary instruction during the same instructional period. At the end of the treatment, both groups completed a post-test. Comparing the pre-test and post-test results made it possible to observe whether the experimental class showed a stronger improvement than the control class. Statistical analysis was then used to determine whether the observed difference was significant.

Participants

The population of the study consisted of 131 tenth-grade students at SMAN 1 Inuman. From this population, 62 students were selected through simple random sampling. The selected students were divided into two classes used in the research: 32 students in the experimental class and 30 students in the control class. The experimental class received Webtoon-based vocabulary instruction, whereas the control class received conventional instruction. The use of two groups enabled the researcher to compare learning outcomes and to evaluate whether the improvement observed in the experimental class was associated with the treatment.

The study focused on tenth-grade students because vocabulary development at this level is important for students' continuing English learning. Students are expected to encounter increasingly varied texts and classroom tasks, and insufficient vocabulary can interfere with comprehension and communication. At the same time, students at this level are generally familiar with digital content, making the use of a digital comic platform relevant to their learning environment. The study did not change the reported composition of the classes or the number of participants; all statistical descriptions were based on the 62 students included in the original research data.

Instruments

The main instrument was a vocabulary test consisting of 25 multiple-choice questions. The same form of assessment was used to obtain pre-test and post-test information about students' vocabulary achievement. The pre-test was administered before the treatment, while the post-test was administered after the instructional sessions. The test items were adopted from the WORDS Test (2024), as stated in the original research manuscript. Multiple-choice items were used to provide a consistent scoring procedure across the experimental and control classes.

Assessment indicators were used as references for measuring students' vocabulary achievement in a structured manner. The indicators were intended to represent the vocabulary competencies evaluated through the test and to support consistency in the assessment process. In addition to the test itself, the instructional procedures in the experimental class required students to interact with vocabulary encountered in Webtoon episodes. The use of a formal test for outcome measurement and structured learning activities during treatment allowed the researcher to distinguish between the instructional process and the measurement of achievement.

Data Collection Procedures

Data collection began with the administration of the 25-item vocabulary pre-test to both classes. The pre-test was conducted before students received the treatment so that their initial

vocabulary performance could be documented. After the pre-test, the experimental group participated in six instructional sessions using selected Webtoon material. The learning activities included reading episodes, identifying unfamiliar or target vocabulary, interpreting words through textual and visual context, practicing dialogue, completing writing-related tasks, and discussing vocabulary with classmates. These activities were designed to move beyond passive reading by requiring students to notice, interpret, and use vocabulary encountered in the digital comic.

During the treatment, Webtoon functioned as the contextual source for vocabulary learning rather than as an isolated entertainment activity. Students were guided to pay attention to the relationship between dialogue and visual information. When an unfamiliar word appeared, the surrounding sentences, character actions, facial expressions, and story situation could provide clues to meaning. Dialogue practice gave students an opportunity to repeat and pronounce vocabulary in a communicative sequence, while writing activities encouraged productive use. Group discussion provided an additional opportunity to compare interpretations and clarify meanings. The control group, in contrast, received conventional vocabulary instruction without the Webtoon-based treatment.

After the six instructional sessions, both groups completed the post-test. The post-test scores were used to evaluate students' vocabulary achievement after instruction and were compared with the pre-test scores. The experimental and control groups followed the same general testing sequence so that the principal difference between them was the instructional treatment. The resulting scores were entered into SPSS for descriptive and inferential analysis. This procedure enabled the researcher to examine the pattern of score changes and to test the statistical significance of the treatment effect.

Data Analysis

The data analysis included descriptive statistics and inferential statistical procedures. Descriptive statistics were used to summarize the number of students, score range, minimum score, maximum score, mean, and standard deviation. These values provided an overview of students' performance before and after instruction. The analysis then included assumption testing before the interpretation of the inferential test. Normality testing was used to determine whether the score distributions met the assumption of normal distribution, and homogeneity testing was used to examine whether the data met the relevant variance assumption.

The normality results were interpreted using a significance level of 0.05. A significance value greater than 0.05 was treated as evidence that the distribution did not significantly depart from normality. After the assumptions were considered, a t-test was used to evaluate the difference associated with the treatment. The reported significance value was $p < 0.001$. Because this value was below 0.05, the result was interpreted as statistically significant. The analysis therefore supported the alternative hypothesis that the use of Webtoon had a significant effect on students' vocabulary mastery.

RESULTS AND DISCUSSION

Pre-Test Descriptive Statistics

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The first stage of the results analysis examined the students' initial vocabulary performance. Before interpreting the effect of the treatment, it was necessary to determine whether the two classes began the study with broadly comparable levels of achievement. Table 1 presents the descriptive statistics for the pre-test scores. The control class consisted of 30 students and obtained a mean pre-test score of 41.7, while the experimental class consisted of 32 students and obtained a mean score of 43.8. The difference between the two means was relatively small, indicating that both groups entered the instructional period with similarly low vocabulary achievement. The table is placed immediately after this explanation so that the numerical evidence can be read together with its interpretation.

Table 1. Descriptive Statistics of Pre-Test Scores

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pre-Test (Control Class)	30	52	24	76	41.7	11.962
Pre-Test (Experimental Class)	32	52	32	84	43.8	13.986
Valid N (listwise)	30					

The descriptive statistics show that the control-class scores ranged from 24 to 76, whereas the experimental-class scores ranged from 32 to 84. The standard deviations were 11.962 for the control class and 13.986 for the experimental class. These values indicate that there was variation in both groups before the treatment. More importantly for the purpose of the quasi-experimental comparison, the mean scores were close enough to show that the experimental group did not begin with a large advantage over the control group. This baseline pattern strengthens the interpretation of the subsequent improvement because the post-treatment difference can be considered in relation to similar initial mean performance.

Post-Test Improvement and Normality

After the instructional period, the experimental class achieved a mean post-test score of 71.3, while the control class achieved a mean post-test score of 42.1. When these scores are considered together with the pre-test means, the contrast is clear. The experimental class increased from 43.8 to 71.3, representing a substantial improvement after the six sessions of Webtoon-based instruction. The control class increased only from 41.7 to 42.1. The much larger increase in the experimental class indicates that the students who learned vocabulary through Webtoon experienced stronger progress than those who received conventional instruction. The result is consistent with the central expectation of the study that contextual visual and textual input can support vocabulary learning.

The normality of the data was also examined before the inferential result was interpreted. The significance values from the normality tests are presented in Table 2. For the Kolmogorov-Smirnov test, the reported significance values were .200 for the control-class pre-test, .084 for the control-class post-test, .200 for the experimental-class pre-test, and .200 for the experimental-class post-

test. Each of these values was greater than .05. The Shapiro-Wilk significance values were also above .05 for all four sets of scores. Therefore, the score distributions were treated as normally distributed for the purpose of the subsequent statistical analysis.

Table 2. Tests of Normality

Class	Kolmogorov-Smirnov	Kolmogorov-Smirnov	Kolmogorov-Smirnov	Shapiro-Wilk	Shapiro-Wilk	Shapiro-Wilk
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test (Control Class)	.125	30	.200	.849	30	.224
Post-test (Control Class)	.135	30	.084	.924	30	.559
Pre-test (Experimental Class)	.157	32	.200	.938	32	.535
Post-test (Experimental Class)	.115	32	.200*	.962	32	.314

Effectiveness of Webtoon in Vocabulary Learning

The inferential analysis further supported the descriptive pattern. The reported t-test produced a significance value of $p < 0.001$, which is below the conventional significance level of 0.05. Accordingly, the alternative hypothesis was accepted, and the use of Webtoon was interpreted as having a statistically significant effect on students' vocabulary mastery. Statistical significance is important because it indicates that the difference observed in the experimental class was unlikely to be explained only by random variation within the sample. At the same time, the descriptive means remain essential for understanding the practical direction of the result: the experimental group improved markedly, whereas the control group showed almost no change.

One explanation for the improvement is the contextual nature of vocabulary presentation in Webtoon. In conventional vocabulary activities, students may encounter a word together with a translation or definition but have limited information about how the word operates in a situation. In a digital comic, vocabulary is embedded in dialogue and narrative events. Students can see who is speaking, what is happening, how characters react, and what objects or actions are represented. These contextual cues can reduce the abstractness of unfamiliar vocabulary. Instead of processing a word as an isolated item, students can connect the word with a scene and a communicative purpose. Such connections may support both initial comprehension and later recall.

The combination of visual and verbal information also provides a theoretical explanation for the findings. Mayer (2009) argues that meaningful learning can be supported when learners process appropriately integrated verbal and visual information. Webtoon naturally combines these modes through written dialogue and sequential images. For vocabulary learning, the visual component can function as a semantic clue while the verbal component provides the written form and linguistic context. When students encounter both at the same time, they may form richer mental representations than they would from a word list alone. The result of the present study is therefore

compatible with the idea that carefully selected multimedia input can support learning when it directs attention to relevant information rather than distracting students.

Repeated exposure is another factor that may have contributed to vocabulary development. Vocabulary mastery generally requires more than a single encounter with a word. During the Webtoon-based sessions, students did not merely read an episode once. The instructional activities required them to identify new vocabulary, discuss meanings, practice dialogue, and use words in writing-related tasks. As a result, a target word could be encountered at several points in the same lesson and through different activities. Repetition within meaningful tasks can strengthen familiarity with word form and meaning. It can also help students move from recognition toward more active use, particularly when they are required to produce the vocabulary in dialogue or written responses.

Student engagement may also help explain the difference between the two groups. Digital comics present information through narrative progression, characters, visual design, and dialogue, all of which can make reading feel more purposeful to learners who are accustomed to digital media. Greater engagement does not automatically guarantee learning, but it can increase the amount of attention students give to instructional material. When students are interested in following a story, they may be more willing to read the dialogue carefully, ask about unfamiliar expressions, and continue working with the text. In the present study, the structured classroom activities were important because they directed this engagement toward vocabulary objectives rather than allowing students to read passively.

CONCLUSION

This study investigated the effectiveness of the Webtoon application in enhancing the vocabulary mastery of tenth-grade students at SMAN 1 Inuman. The findings demonstrate a clear difference between the learning outcomes of the experimental and control classes. The experimental class improved from a mean pre-test score of 43.8 to a mean post-test score of 71.3, whereas the control class changed only from 41.7 to 42.1. The reported statistical test yielded $p < 0.001$, indicating a significant effect of the treatment. Based on these results, Webtoon was effective as a vocabulary-learning medium in the context of this study.

The improvement can be understood in relation to the characteristics of the learning process. Webtoon presented vocabulary through stories that combined written dialogue with visual information, allowing students to connect word meanings with situations, characters, and actions. The treatment also required students to identify vocabulary, analyze context, practice dialogue, complete writing activities, and participate in discussion. Thus, the effectiveness observed in the study reflects both the contextual affordances of digital comics and the structured activities used by the teacher. Repeated exposure, visual support, contextual interpretation, and active student participation appear to be important elements of the approach.

Teachers may therefore consider Webtoon as an alternative or supplementary medium for vocabulary instruction, particularly when they wish to provide contextualized digital material. The application should be integrated with clear learning objectives and carefully selected content rather than used without instructional guidance. Students can also use digital comics to support independent vocabulary learning by recording unfamiliar words, inferring meaning from context, and reusing new vocabulary. Future researchers are encouraged to investigate longer treatments,

broader samples, long-term vocabulary retention, and the use of Webtoon for other language skills so that the pedagogical potential of digital comics can be understood more comprehensively.

Pedagogical Interpretation and Implications

The findings also suggest that Webtoon can support contextual guessing. Students who depend heavily on dictionaries may interrupt the reading process whenever they meet an unfamiliar word. Although dictionary use is valuable, exclusive dependence on direct translation can limit the development of inferencing strategies. A Webtoon panel offers several sources of contextual evidence: the sentence surrounding the word, previous and following dialogue, character expressions, visual actions, and the sequence of events. Teachers can use these features to encourage students to predict meaning before confirming it. This process can make vocabulary learning more active because students must connect linguistic and visual information rather than simply receive a definition.

The collaborative elements of the treatment may have further strengthened the learning process. Group discussions allowed students to compare interpretations of vocabulary and explain why a particular meaning was appropriate in the context of the story. Dialogue practice required students to pay attention to how vocabulary appeared in conversational sequences. Writing tasks encouraged students to transfer vocabulary from recognition to production. These activities show that the value of Webtoon in this study should not be attributed solely to the application. The instructional design surrounding the application was equally important. Webtoon supplied the contextual material, while the teacher-guided activities transformed that material into opportunities for noticing, discussion, rehearsal, and use.

ACKNOWLEDGEMENTS

The authors would like to express their appreciation to the individuals and institution that supported the completion of this study. Any specific funding information or formal institutional assistance should be added here by the authors before submission if applicable.

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