

# Improving English Reading Comprehension Through Readable Applications in SMA Negeri 1 Purworejo

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**Abstract.** The Readable application is a digital platform to improve English language learning by providing simplified stories across various genres, supported by audio and word translation features. This research investigates the effectiveness of teaching reading comprehension through the Readable application and examines students' perceptions of its utility in learning. The study was conducted among eleventh-grade students at SMA Negeri 1 Purworejo during the 2024/2025 academic year, with a total sample of 72 students. A quasi-experimental design was used, with 36 students in the experimental (XI-I) and 36 in the control (XI-K) class. Findings showed a significant improvement in reading comprehension for the experimental group, with mean pre-test and post-test scores of 51.64 and 71.22, respectively. The two-tailed significance value was 0.00, below the 0.05 threshold, supporting the alternative hypothesis. Additionally, students provided positive feedback on the app, expressing that it made learning English more enjoyable and accessible. These results suggest that the Readable application is valuable for enhancing reading comprehension skills.

Keywords: Readable application, Reading comprehension, Educational technology

## **1. INTRODUCTION**

In an era of globalization, effective communication in English is crucial for participating in international exchanges of knowledge, culture, and technology. Despite its importance, English remains a foreign language in Indonesia, where proficiency levels are relatively low [1]. This issue is further compounded by limited instructional hours and the non-compulsory status of English education at the elementary level [2]. It hinders students' ability to develop essential language skills, particularly in reading comprehension—a vital component for engaging with global information [3]. *Reading* is a crucial language proficiency skill that students must develop to share information and broaden their knowledge effectively [4]-[6].

Despite efforts to integrate English as a foreign language, students still need help understanding English texts, which are crucial for keeping up with global developments [7]. Some experts consider using Indonesian in EFL classrooms to convey meaning and ensure student comprehension [8] effectively. However, the limited hours of English instruction in secondary schools, combined with the government's reluctance to mandate primary school English, contribute to Indonesia's low English proficiency.

Reading comprehension is a multifaceted process that involves decoding text, interpreting meaning, and connecting it with prior knowledge [9]. It requires proficiency in vocabulary, fluency, and inferencing, making it essential for understanding written material. The significance of reading is also emphasized in Islamic teachings, as seen in Surah Al Alaq (verse 1), which underscores the importance of reading for personal and spiritual growth [10], [11].

Various strategies have been identified to improve reading comprehension, such as scaffolding, think-aloud methods, reciprocal teaching, and the SQ3R technique [12]. Additionally, student attitudes, family support, and classroom environments significantly influence reading comprehension outcomes [13], [4], [14], [15]. However, challenges persist in Indonesian high schools, such as SMA Negeri 1 Purworejo, where students struggle to comprehend texts beyond their immediate interests. Traditional teaching methods often fail to fully address these issues, necessitating more innovative solutions [16].

The previous study related to modern education actually in strategy to acquite languange has been done by smoe scholars. The Readable digital application offers a potential solution to these challenges. This digital platform provides simplified English stories across various genres, supported by features like audio and word translations, to engage learners at different proficiency levels [17]-[20]. The app offers targeted assistance for vocabulary related to construction and food and is designed for those learning workplace English. Users can save and learn new words as they read, with the app including a word memorization feature to help expand their vocabulary [21]-[22]. Positive reviews highlight its effectiveness, and the Readable app is available for download on both the Google Play Store and iOS, making it a convenient and accessible resource for English learners, especially for high school students in Indonesia [18]-[21]. It aims to make reading more accessible and enjoyable, enhancing comprehension and vocabulary acquisition [22]-[25]. Initial feedback suggests the app holds promise for improving language learning outcomes, making it a valuable tool in Indonesian education [29], [31], [32].

This study aims to evaluate the effectiveness of the Readable application in improving reading comprehension among eleventh-grade students at SMA Negeri 1 Purworejo. By comparing the outcomes of students using the app with those using traditional methods, this research seeks to provide insights into how mobile applications can be utilized to enhance English learning in Indonesian schools.

## 2. METHOD

Sugiyono [33] defines experimental research methods as a research approach used to investigate the effects of specific treatments on other factors under controlled conditions. This study utilized a quasiexperimental research design to evaluate the effectiveness of the Readable application. It involved two groups: an experimental group and a control group. Rokhayati et al. stated in their book that the control group did not receive the treatment and acted as a baseline for comparison, whereas the experimental group received the treatment or intervention being studied [34]. Pre-tests and post-tests were administered to assess reading comprehension before and after the intervention.

The study population comprised all eleventh-grade students at SMA Negeri 1 Purworejo, totaling 396 students. A sample of 72 students was selected through purposive sampling, with 36 students in each of the two chosen classes. The study variables include the independent variable, the Readable application (X), and the dependent variable, students' English reading comprehension (Y).

Data collection included both test and non-test instruments: a reading comprehension test (multiplechoice and short-answer) and a questionnaire containing open-ended and close-ended questions as the non-test research instrument to gather students' perceptions of the Readable application. The researcher implemented the Readable application in the experimental class to enhance reading comprehension, while the control class received instruction without the application.

Qualitative data from the questionnaire were analyzed to assess students' perceptions. In contrast, quantitative data were analyzed using a t-test to compare the pre-test and post-test scores and descriptive statistics. The questionnaire employed a Likert scale with response levels ranging from 'strongly disagree (1)' to 'strongly agree (5)'. Statistical analysis was conducted using SPSS to assess the significance of the findings.

Table 1. Test Scoring Table							
Types of Question	Number of Questions	Score Each Number	Total Score				
Multiple choices	20	3	100				
Short answer	10	4	100				

## **3. FINDINGS**

# **Data Description**

This study utilized a quasi-experimental design involving 36 students divided into experimental (XI-I) and control (XI-K) classes. The pre-tests were conducted on July 31st, 2024, and post-tests on August 2nd, 2024. The experimental class received instruction using the Readable application on August 1st, 2024, while the control class followed traditional teaching methods. The main goal of this phase was to introduce the experimental class to novel teaching methods that focused on interaction, engagement, and active learning. These methods involved group activities, problem-solving sessions, and interactive discussions designed to enhance understanding and retention of the material. Conversely, the control class adhered to conventional lecture-based instruction, which allowed for a clear comparison of how different teaching approaches affect learning outcomes.

The post-test for both the experimental and control classes was administered after school on August 2nd, 2024, for 45 minutes. The researcher conducted the experimental class while the English teacher oversaw the control class. The pre-test and post-test results from both classes were then categorized based on the following assessment criteria [35].

Value	Grade	Level of Achievement
80-100	А	Excellent
66-79	В	Good
55-65	С	Sufficient
40-55	D	Fairly Sufficient
<39	Е	Poor

Table 2. Classification of Students' Learning Achievement

The highest score on the pre-test was 74, and the lowest was 30. On the post-test, the highest score increased to 86, while the lowest rose to 58. This range of scores illustrates the variation in student performance before and after the intervention, highlighting improvements in reading comprehension due to the implemented methods.

Table 3. Achievement Level of Experimental Class from Pre-Test Score

No.	Value	Students' Level Achievement	Frequency	Percentage	
1.	80-100	Excellent	0	0.00%	
2.	66-79	Good	3	8.33%	
3.	55-65	Sufficient	7	19.44%	
4.	40-55	Fairly Sufficient	22	61.11%	
5.	<39	Poor	4	11.11%	
		Total	36	100.00%	

This process involves several carefully planned stages, each evaluating students' knowledge and understanding before and after applying the teaching method. At first, a pre-test was administered to establish a baseline understanding of students' reading comprehension ability. It was followed by the introduction of the teaching method, where the experimental class received specialized instruction using the Readable app designed to improve their reading comprehension ability. Meanwhile, the control class continued the traditional teaching method without using the app.

Following the teaching intervention, a post-test was administered to evaluate changes in students' comprehension and knowledge due to the new teaching method. The pre-test and post-test scores of the experimental and control groups were analyzed and compared to determine the effectiveness of the Readable app.

No.	Value	Students' Level Achievement	Frequency	Percentage
1.	80-100	Excellent	4	11.11%
2.	66-79	Good	23	63.89%
3.	55-65	Sufficient	9	25.00%
4.	40-55	Fairly Sufficient	0	0.00%
5.	<39	Poor	0	0.00%
		Total	36	100.00%

 Table 4. Achievement Level of Experimental Class from Post-Test Score

## Data Analysis

The data analysis involved evaluating the descriptive statistics of student scores using IBM SPSS 25, focusing on central tendencies and measures of variation for both the control and experimental classes.

Table 5. Descriptive Statistic							
		Contro	ol Class	<b>Experimental Class</b>			
		Pre-Test Post-Test Pre-Test Post-Te					
N	Valid	36	36	36	36		
Ν	Missing	0	0	0	0		
Mean		51.19	59.72	51.64	71.22		
Median		51	60	51.5	71		
Mode		48	55	47	68		
Std. Deviation	I	7.49	6.73	9.82	6.92		
Variance		56.10	45.29	96.52	47.89		
Range		30	27	44	28		
Minimum		37	45	30	58		
Maximum		67	72	74	86		

For the experimental class, the mean pre-test score was 51.64, increasing to 71.22 post-test, reflecting a notable improvement. The median scores followed a similar trend, rising from 51.50 to 71. The mode for pre-test scores was 47, while post-test scores showed a mode of 68, indicating a shift towards higher achievement levels. Additionally, the standard deviation and variance decreased from 9.82 to 6.92 and from 96.52 to 47.89, respectively, suggesting a more concentrated distribution of scores following the intervention [36].

In contrast, the control class exhibited a more modest improvement. The mean pre-test score was 51.19, with a post-test mean of 59.72. The median improved from 51 to 60, and the mode shifted from 48 to 55. The standard deviation and variance slightly decreased from 7.49 to 6.73 and from 56.10 to 45.29, respectively. These results indicate limited progress in the control group compared to the experimental group, highlighting the impact of the Readable application [37].

#### Table 6. Test of Normality

		Kolmogor	ov-Sr	nirnov <sup>a</sup>	Shapi	i <b>ro-W</b>	ïlk
(	Class	Statistic	df	Sig.	Statistic	df	Sig.
Dest Des d'as Coore	PostTest_Control	0.077	36	.200*	0.979	36	0.711
Post Reading Score	PostTest_Experiment	0.096	36	.200*	0.977	36	0.658
*. This is a lower bou	nd of the true significance						
	~ .						

a. Lilliefors Significance Correction

In determining if the post-test scores followed a normal distribution, the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted, as shown in Table 4.10. Both tests yielded significance values greater than 0.05 (p > 0.05) for the control and experimental groups, confirming that the data were normally distributed [37]. The Kolmogorov-Smirnov test yielded significance values of 0.200 for both groups, while the Shapiro-Wilk test showed values of 0.711 for the control class and 0.658 for the experimental class. These results validate the use of parametric tests for further analysis, as the data do not significantly deviate from normality [36].

Table 7. Test of Homogeneity						
		Levene Statistic	df1	df2	Sig.	
-	Based on Mean	0.006	1	70	0.937	
	Based on Median	0.014	1	70	0.907	
Post_Reading_Score	Based on the Median and with adjusted df	0.014	1	69.038	0.907	
	Based on trimmed mean	0.009	1	70	0.925	

Levene's test assessed the homogeneity of variances between the control and experimental groups, as presented in Table 4.11. The test results showed significance values of 0.937 (mean), 0.907 (median), and 0.925 (trimmed mean), all exceeding the 0.05 threshold. It confirms that the variances of the post-test scores were equal across both groups, supporting the validity of parametric tests such as the independent samples t-test [37]. Ensuring homogeneity of variances is crucial for the accuracy of statistical comparisons and the robustness of the analysis [36].

<b>Table 6.</b> Test of Hypothesi	<b>Fable</b>	e 8. Tes	st of Hyp	othesis
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	Independent Samples Test									
		Levene's Test for Equality of t-test for Equality of Means Variances								
		F	Sig.	Т	df	Sig. (2- taile d)	Mean Differ ence	Std. Error Difference	95 Confi Interva Diffe Low er	% dence l of the rence Upper
	Equal variances assumed	0.006	0.937	-7.148	70.000	0.000	-11.500	1.609	-14.709	-8.291
Score	Equal variances not assumed			-7.148	69.946	0.000	-11.500	1.609	-14.709	-8.291

The hypothesis was evaluated using an independent samples t-test to assess whether there was a significant difference between the means of the two groups. As shown in Table 4.12, the t-test yielded a t-value of -7.148 with a p-value of 0.000, indicating a statistically significant difference between the experimental and control groups. The mean difference of -11.500 demonstrates that the experimental group, which used the Readable application, performed significantly better than the control group. The 95% confidence interval for the mean difference, ranging from -14.709 to -8.291, further confirms the effectiveness of the intervention [36]. The t-test results support the rejection of the null hypothesis (H<sub>0</sub>) and validate the positive impact of the Readable application on reading comprehension.

# 4. DISCUSSION

This research supports the hypothesis that the Readable application significantly improves students' reading comprehension. The app stimulated imagination and creativity and improved students' ability to organize and articulate ideas through writing [38]-[40]. The integration of visuals within the app further enhanced text comprehension, making it a valuable tool for educators aiming to help students analyze and interpret material more effectively. By using visuals to foster creativity and organization, educators can assist students in improving their understanding and interpretation of texts, enhancing their communication skills and depth of expression.

The study, conducted with eleventh-grade students at SMA Negeri 1 Purworejo during the 2024/2025 academic year, revealed a marked improvement in reading comprehension for students using the Readable application. This result contrasts the control class, where traditional methods resulted in modest gains. These findings align with the growing body of evidence suggesting that interactive and engaging teaching methods, such as those provided by Readable, can create dynamic learning environments that enhance student outcomes.

#### Students' English Reading Comprehension of SMA Negeri 1 Purworejo

a) The Students' English Reading Comprehension in the Experimental Class

In the experimental class, students' post-test scores reflected a significant improvement, with the highest score at 86 and the lowest at 58. The standard deviation was 6.92, and the variance was 47.89. These results suggest that the average score falls within the range of 51 to 72, indicating that students

generally performed well in their reading comprehension. The average score was 71.22, with 11.11% of students achieving an excellent level, 63.89% at a reasonable level, and 25% at a sufficient level. This distribution confirms the effectiveness of the Readable application in improving reading comprehension, as it promotes interactive, group-oriented learning, consistent with Constructivist and Social Learning theories.

b) The Students' English Reading Comprehension in the Control Class

In contrast, the control class showed a less substantial improvement, with a highest score of 86 but an average score of 59.72. The control class's results align with Behaviorism, which emphasizes learning as a response to external stimuli and often relies on repetition and reinforcement. The score distribution was not good enough, with 22.22% of students at a reasonable level, 50% at a sufficient level, and 27.78% at a reasonably sufficient level. The control class's performance reflects the limitations of traditional Behaviorist methods, which emphasize repetition and reinforcement without fostering the interactive engagement seen in the experimental group.

## The Effectivity of the Readable Application in Teaching Reading Comprehension

Statistical analysis confirmed the effectiveness of the Readable application with a Sig. (2-tailed) test yielding a p-value of 0.00, well below the 0.05 threshold. This outcome rejected the null hypothesis (H<sub>0</sub>), confirming that the application positively affected reading comprehension.

The application's capability to adjust content according to each student's reading level was also crucial. By offering texts that align with individual skill levels, the application prevents students from becoming bored with material that is too easy or overwhelmed by texts that are too challenging. This personalized method, which is difficult to implement in a traditional classroom setting, enables students to advance at their own pace, enhancing their confidence and abilities.

Several key features of the Readable application contributed to this improvement:

1.Interactive Design

Using quizzes, instant feedback, and progress tracking engaged students and deepened their interaction with the reading material.

2.Personalized Content

The application tailored reading content to match each student's reading level, helping to sustain their interest and improve comprehension.

3. Multimedia Elements

The application's integration of images, audio, and videos made reading more engaging and accessible, especially for visual students.

This research indicates that the Readable application is practical and reflects a more significant trend: technology is becoming essential in shaping the future of education. It contributes to creating more effective, engaging, and inclusive learning environments. These findings align with the Cognitive Load Theory, highlighting the importance of minimizing cognitive overload using well-structured, multimedia-based learning environments. Additionally, they align with the Self-Determination Theory, which emphasizes promoting autonomy and competence to motivate learners effectively.

#### The Analysis of Questionnaire Results

The survey results from 36 participants provide an in-depth evaluation of the Readable application, examining crucial aspects such as user-friendliness, levels of motivation and satisfaction, quality of content, effectiveness of features, enhancement of skills, and the overall user experience :

- 1.Ease of Use: A significant majority (61.11%) of respondents strongly agreed that the Readable application was easy to use, and a total of 86.11% found the application user-friendly
- 2. Motivation & Satisfaction: 83.33% reported increased motivation and satisfaction. The Readable application motivated users and boosted their satisfaction. The app effectively engages users, likely due to its interactive features and compelling content.
- 3.Content Quality: The quality of content in an educational application directly impacts learning outcomes and user engagement. 88.89% positively rated the quality of the stories and content
- 4.Feature Effectiveness: Regarding features' effectiveness, 72.22% of respondents gave positive ratings. It suggests that interactive quizzes, annotations, and progress tracking significantly improve the learning experience.
- 5.Skill Improvement: 72.23% noticed improvements in their reading comprehension. It indicates that the application is practical in helping users improve their reading comprehension and related skills.

- 6.Motivation and Habits: Half of the respondents (50%) strongly agreed that the Readable application positively impacted their motivation and study habits, while an additional 33.33% agreed. This demonstrates that the application is engaging and effective in promoting regular use and cultivating beneficial learning habits.
- 7.General Experience: Overall, 83.33% of users rated their experience with the Readable application positively, with half of them strongly agreeing. This high satisfaction rate highlights the application's effectiveness, user-friendliness, content quality, and positive influence on users' learning experiences.

The success of the Readable application highlights the potential of integrating technology into education as a powerful tool for enhancing traditional teaching methods. The Readable application has demonstrated considerable promise as a valuable educational resource. Users generally responded favorably, especially noting its user-friendliness, motivational features, quality of content, and overall experience. These qualities align with educational theories such as Cognitive Load Theory and Constructivism, which stress the significance of intuitive design and engaging content in enhancing learning outcomes.

Future research could explore its long-term effects on literacy, critical thinking, and student motivation. Moreover, investing in teacher training to ensure the effective use of such technologies in classrooms is essential. The study's findings and supporting literature suggest that interactive, technology-enhanced learning environments are beneficial and necessary for creating more engaging and inclusive learning experiences in modern education.

## **5. CONCLUSION**

Based on the data analysis and discussion from the previous chapter, the Readable application has effectively enhanced reading comprehension among eleventh-grade students at SMA Negeri 1 Purworejo during the 2024/2025 academic year. The following points support the evidence for this conclusion; The pre-test and post-test results analysis demonstrated a substantial increase in students' reading comprehension. The experimental group (XI-I) achieved significantly higher post-test scores than their pre-test results, with the paired t-test indicating a significance value of 0.00. Since this value is well below the 5% (0.05) threshold, it confirms that the Readable application had a notable positive effect on students' reading comprehension.

Feedback from 36 participants highlighted that 86.11% found the application user-friendly, and 83.33% reported increased motivation and satisfaction. Additionally, 88.89% of users praised the quality of content. Although there is room for improvement in feature effectiveness and skill development, the application has been generally well-received and is recognized for making English learning enjoyable and effective.

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