



The Implementation of BukuAku Application as a Digital Learning Innovation for Improving Reading Comprehension at Junior High School

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Article Info	Abstract
Received: 2026-04-07 Revised: 2026-05-19 Accepted: 2026-08-22 Keywords: <i>BukuAku Application; Digital Learning Innovation; Reading Comprehension</i> DOI: 10.24256/ideas.v14i2.12371 Corresponding Author: Yuyun Nur Aprilia yynnuraprilia@gmail.com Ilmu Pendidikan, Universitas Muhammadiyah Makassar	<i>This study aimed to examine the effect of the BukuAku application as a digital learning innovation on improving eighth-grade students' reading comprehension at SMPN 1 Bontonompo Selatan. A quasi-experimental non-equivalent control group design was employed, involving 60 students selected through purposive sampling (30 in the experimental class and 30 in the control class). Data were collected using pre-test and post-test reading comprehension assessments covering main ideas, supporting details, and vocabulary. The findings revealed that the experimental group's mean score increased significantly from 36.11 to 83.11 (N-Gain = 71.43%), whereas the control group increased from 37.11 to 67.23 (N-Gain = 37.12%). The Independent Samples T-Test showed a significant difference between both groups ($t = 5.623$, $p = 0.000 < 0.05$). Thus, implementing the BukuAku application significantly enhances students' reading comprehension skills compared to conventional methods.</i>

1. Introduction

Reading, as one of the four core language skills, contributes significantly to the development of students' English language competency and serves as a fundamental mechanism for acquiring knowledge. Reading comprehension is a complex cognitive activity that requires the integration of multiple, interconnected data sources to generate coherent meaning from printed or digital materials. However, low literacy rates and poor reading comprehension remain persistent

challenges in English as a Foreign Language (EFL) instruction at the secondary school level.

At SMPN 1 Bontonompo Selatan, preliminary observations and teacher interviews revealed that students' reading comprehension levels were relatively low, estimated at only 60%. Students often exhibit low motivation and regard reading as a boring, monotonous activity. This problem is largely exacerbated by conventional instructional practices where students are asked to read texts passively and immediately answer text-based comprehension questions without engaging reading strategies or varied media. When students encounter difficulty in decoding words, their cognitive capacity becomes overwhelmed, leaving limited mental resources for higher-order text interpretation.

With the rapid advancement of technology, the integration of digital learning innovations (DLI) and Mobile-Assisted Language Learning (MALL) offers effective solutions to overcome these instructional barriers. Interactive mobile applications provide multimodal resources and personalized learning experiences that enhance cognitive strategies, reduce extraneous cognitive load, and foster intrinsic reading engagement. One promising digital platform is the BukuAku Application, launched by PT Readboy Indonesia. BukuAku serves as an interactive digital library featuring leveled reading materials, audio-visual scaffolding (such as the "Read-to-Me" feature), integrated dictionaries, and gamified comprehension quizzes.

While empirical debates regarding screen versus print reading often mention a "screen inferiority effect", pedagogically structured applications equipped with dynamic scaffolding can turn screen reading into a highly supportive environment. Therefore, this study aims to examine the empirical effect of implementing the BukuAku application as a digital learning innovation to improve eighth-grade students' reading comprehension across three main indicators: identifying main ideas, finding supporting details, and understanding contextual vocabulary.

2. Method

Research Design

This study employed a quantitative quasi-experimental research design, specifically a non-equivalent control group design. The design is illustrated in table 1 below:

Table 1. Quasi-Experimental Non-Equivalent Control Group Design

Group	Pre-Test	Treatment	Post-Test
Experimental Class	O_1	X(BukuAku Application)	O_2
Control Class	O_3	-(Conventional Method)	O_4

Notes:

1. O_1, O_3 : Pre-Test scores prior to intervention
2. O_2, O_4 : Post-Test scores following intervention

3. X: Learning intervention using the BukuAku digital application

Population and Sample

The population comprised all eight-grade students at SMPN 1 Bontonompo Selatan during the 2025/2026 academic year, totaling 150 students across five class (VII A to VII E). Using purposive sampling, two classes were selected based on similar English proficiency levels and class size: Class VII A ($n = 30$) served as the experimental group, while Class VII B ($n = 30$) served as the control group.

Instruments and Data Collection

The primary instrument was a 20-item multiple choice Reading Comprehension Test administered as both a pre-test and post-test. The test evaluated three core indicators adapted from the National Reading Panel and Barret's Taxonomy:

1. Main Idea
2. Supporting Detail
3. Vocabulary

The assessment items underwent expert validation and pilot testing to establish content validity and reliability. Additionally, observation sheets and structured questionnaires were used to capture supporting contextual data.

Data Analysis

Data were analyzed using descriptive statistics (means, standard deviation, score classifications) and inferential statistics via SPSS. To evaluate gain improvement, normalized gain (N-Gain) scores were calculated using the standard formula:

$$N - Gain (\%) = \frac{Post - test Score - Pre - test Score}{Maximum Score (100) - Pre - test Score} \times 100\%$$

Before hypothesis testing, prerequisite assumptions were conducted using the Shapiro - wilk test for normality and Levene's test for homogeneity of variance. Because the variance between groups was heterogeneous ($P < 0.05$), the hypothesis was evaluated using Welch's t-test (Equal Variances Not Assumed) in the Independent Samples T-Tes module.

3. Result

1. Student Performance Reading Comprehension Indicators

A descriptive analysis of pre-test and post-test results across the three reading comprehension indicators is presented in Table.

Table 2. Comparison of Mean Scores per Reading Comprehension Indicator

X	CONTROL GROUP		EXPERIMENTAL GROUP	
	PRE TEST	POST-TEST	PRE-TEST	POST-TEST
MAIN IDEA	42,67	68,67	44	85,33

SUPPORTING DETAILS	40	68,67	39,33	81,33
VOCABULARY	28,67	64,33	25	82,67.
READING COMPREHENSION (Mean)	37,11	67,23	36,11	83,11

As detailed in Table 2, both groups displayed low initial reading abilities during the pre-test (37.11 vs 36.11). However, following the 6-session intervention, the experimental group achieved a post-test mean of 83.11, whereas the control group reached 67.23. The most substantial progress occurred in the Vocabulary indicator, where experimental students progressed from an initial mean of 25.00 to 82.67

2. Normalized Gain (N-Gain) and Effectiveness Level

To quantify the relative effectiveness of the digital intervention versus conventional instruction, N-Gain percentage scores were computed.

Table 3. *Summary of N-Gain Percentage and Effectiveness Categories*

Class	Average N-Gain Score Percent (%)	Effectiveness Category	Minimum Value	Maximum Value
Experimental	71,43%	Quite effective	50,00	92,86
Control	37,12%	Less effective	-9,09	83,33

The experimental group recorded a mean N-Gain percentage of 71.43% ("Quite Effective"), whereas the control group only attained 37.12% ("Less Effective").

3. Hypothesis Testing (Independent Sample T-Test)

Normality testing confirmed normally distributed N-Gain data ($P > 0.05$). Levene's test indicated unequal group variances ($F = 16.485$, $P = 0.000 < 0.05$). necessitating Welch's t-test adjustments.

Table 4. *Independent Samples T-Test Results (N-Gain Percent)*

Model	<i>T</i>	<i>df</i>	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Confidence Interval
Equal Variances Assumed	5.623	58	.000	27.515	4.893	[17.720, 37.311]
Equal Variances Not Assumed	5.623	40.619	.000	27.515	4.893	[17.630, 37.401]

The statistical decision criteria dictate that if $p < 0.05$, H_0 is rejected and H_a is accepted. As shown in Table 4, Welch's t-test yielded $t = 5.623$, $df = 40.619$, and $p = 0.000 < 0.05$. Consequently, H_0 was rejected, confirming a statistically significant difference in reading comprehension gains in favor of the experimental group taught via the BukuAku application.

4. Discussion

The empirical findings demonstrate that integrating the BukuAku application into EFL reading instruction significantly enhances students' reading comprehension performance compared to conventional teaching methods. The overall post-test mean of 83.11 and an N-Gain percentage of 71.43% affirm that mobile-assisted digital innovations transform passive text reading into an active, scaffolded cognitive process.

The sharp gain in Main Idea identification (from 44.00 to 85.33) directly aligns with Cognitive Load Theory and Barrett's Taxonomy. Determining main ideas requires higher-order inferential thinking to construct text macrostructures. The leveled reading feature in BukuAku ensures that text difficulty matches students' actual reading capacities. This alignment minimizes extraneous cognitive load, allowing working memory to focus on extracting core thematic ideas rather than struggling with basic word decoding.

Similarly, the improvement in Supporting Details (from 39.33 to 81.33) highlights the benefits of Dual-Coding Theory and intensive reading scaffolding embedded in the application. Structured visual cues, paragraph-by-paragraph navigation, and immediate feedback allow students to actively scan and retain specific facts without experiencing the cognitive fatigue common in static print media.

The most pronounced surge occurred in Contextual Vocabulary performance (from 25.00 to 82.67). This growth validates extensive reading principles and multimodal learning theory. The "Read-to-Me" audio narration combined with interactive in-app dictionaries provided simultaneous visual and auditory input. This dual-channel processing facilitated deep lexical encoding, helping students

infer word meanings naturally in context.

Ultimately, these results challenge traditional "screen inferiority effect" arguments. They demonstrate that when digital literacy tools are pedagogically structured, interactive, and user-friendly, they effectively bridge the gap between mechanical decoding and deep reading comprehension.

5. Conclusion

Based on statistical analyses and empirical evidence, this study concludes that the implementation of the BukuAku application as a digital learning innovation significantly improves eighth-grade students' reading comprehension at SMPN 1 Bontonompo Selatan. The application's interactive scaffolding, leveled narrative texts, and multimodal features created an engaging environment that enhanced students' abilities to identify main ideas, locate supporting details, and acquire contextual vocabulary. Hypothesis testing via Welch's Independent Samples T-Test confirmed a highly significant difference ($t = 5.623$, $p = 0.000 < 0.05$), with the experimental group achieving an N-Gain of 71.43% ("Quite Effective") compared to the control group's 37.12% ("Less Effective").

Based on these conclusions, English teachers are encouraged to integrate interactive mobile reading platforms like BukuAku to foster self-regulated reading habits. School administrators should support technological infrastructure and teacher training in Technology-Enhanced Language Learning (TELL). Future researchers are advised to explore longer intervention periods, larger sample sizes, and diverse language skills or text genres.

5. References

References

- Dakhi, JP, Febrianti, A., & Waruwu, R. (2025). Utilizing Digital Technology To Improve Digital Literacy And Reading Motivation Of Elementary School Students. *Modem*, 3 (3), 88–96. <https://doi.org/10.62951/Modem.V3i3.584>
- Ismayanti, D., Said, Y. R., Usman, N., & Nur, M. I. (2024). The Students Ability in Translating Newspaper Headlines into English A Case Study. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 12(1), 108-131.
- Masruddin, M., & Nasriandi, N. (2022). Lexical and Syntactical Errors Performed by Junior High School Student in Writing Descriptive Text. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 10(1), 1094-1100.
- Neswary, SBA, & Prahani, BK (2023). The Use Of Digital Pocketbooks To Support Merdeka Curriculum In Physics Learning: Literature Review. *Anatolian Journal Of Education*. <https://doi.org/10.29333/Aje.2023.829a>
- Níkleva, D. G., & Rodríguez-Muñoz, F. J. (2022). Effects Of A Visual Literacy

- Programme For The Improvement Of Reading Comprehension In Primary And Secondary School Students. *AZTI Arrantza*, 22, 1–19. <https://doi.org/10.21248/L1esll.2022.22.1.394>
- Ningsih, A. A., Weganofa, R., & Mafulah, S. (2023). Exploring The Challenges Of Digital Textbooks In Reading Comprehension.
- Putri, D., & Savitri, W. E. (2022). The Use Of Digital Book Let's Read In Improving Reading Comprehension For Junior High School Student. *Yavana Bhasha : Journal Of English Language Education*, 5(2), 106–117. <https://doi.org/10.25078/Yb.V5i2.1045>
- Raja, T. E. B. L., Budiarti, R., Tindaon, C. Y., Simarmata, P. M., & Sihombing, M. (2025). THE IMPLEMENTATION OF DIGITAL-BASED READING COMPREHENSION TEST TO STUDENTS: A LIBRARY RESEARCH. *Jurnal Intelek Insan Cendikia*, 2(1).
- Lin, M. H., Chen, H. C., & Liu, K. S. (2017). A Study Of The Effects Of Digital Learning On Learning Motivation And Learning Outcome. *Eurasia Journal Of Mathematics, Science And Technology Education*, 13(7), 3553-3564.