

I-READ: Interactive Reading Mobile Application for Enhanced Senior High School Reading and Writing Skills

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Abstract. This study aims to address persistent literacy challenges in the Philippines, which ranked among the lowest in international reading assessments, by integrating literature instruction with digital technology through the development of I-READ (Interactive Reading for Enriched Academic Development). Designed to enhance the reading and writing proficiency of Grade 11 students in a senior high school in Los Baños, the mobile application incorporates interactive literary content to foster engagement and support learning in a digitally driven environment. Guided by the Design and Development research method, the study involved selected Grade 11 students and educational experts who evaluated the app's content and usability. Data were collected using a four-point Likert scale and analyzed through mean computation and a paired t-test. Findings showed that the I-READ application was highly valid in terms of instructional design and content, and highly acceptable in terms of functionality and usability. A significant improvement in student performance between the pretest and posttest results was also observed. The study concludes that I-READ effectively bridges digital innovation and literacy development, offering promising implications for mobile learning in education.

Keywords: Design and development; Interactive reading application; Mobile learning; Reading and writing proficiency; Technology-integrated instruction.

1.0 Introduction

The present educational environment reflects a significant convergence of literature, learning, and technology. This meeting point offers new possibilities for curriculum development and directly addresses the increasing need to strengthen students' reading and writing abilities. Language teachers, who continue to face persistent challenges in literacy, are being encouraged to explore the use of literary content through mobile learning platforms to create instruction that is engaging, adaptive, and effective.

The use of digital tools plays a vital role in changing how education is delivered and supports international educational goals such as the United Nations Sustainable Development Goal 4, which advocates for quality education for all. As stated by Haleem et al. (2022), these technologies help make education more inclusive and have significantly shaped teaching practices across a range of learning settings. Incorporating literary materials into mobile learning contributes to these global efforts while also enhancing learner engagement and improving access. Similarly, Anohina-Naumeca et al. (2021) highlighted that educational technologies can raise student motivation, improve instruction, and help close learning gaps.

Reading and writing are essential literacy skills that develop gradually from early education through the junior

and senior levels. In the Senior High School curriculum of the Department of Education, the Reading and Writing subject is designed to help students understand how written content is deliberately organized to achieve communication purposes. This course encourages learners to recognize patterns in how ideas are developed and to examine how the structure and meaning of a text are influenced by its components.

To improve literacy outcomes, the Department of Education continues to review and evaluate the K to 12 curriculum across different regions. In 2023, the department placed a strong emphasis on improving literacy and numeracy. To meet the varied needs of learners, it implemented several learning delivery methods, including in-person, modular, and blended instruction. Despite these strategies, the country continues to face major academic issues. In the 2022 cycle of the Programme for International Student Assessment, the Philippines ranked seventy-seventh out of eighty-one countries in reading, mathematics, and science (OECD, 2023), highlighting the need for focused and effective reforms in the education system.

As a response to these results, the Department of Education introduced the National Learning Recovery Program, as specified in DepEd Order No. 013, s. 2023. This program aims to strengthen students' skills in reading, mathematics, and science. At the division level, activities such as Drop Everything and Read, guided by Division Memorandum No. 028, s. In 2024, initiatives were launched to encourage silent and independent reading. However, a review conducted by language teachers at a senior high school in Los Baños showed that such efforts were not enough to fully address the difficulties students face in reading comprehension and written expression, particularly among those with low proficiency.

In a senior high school located in the district of Los Baños, learning resources remain limited despite the school's steady achievements in research, journalism, leadership, and various extracurricular activities. The Learning Resource and Reading Area does not meet the standards set by the Department of Education, serving only one percent of the student body, which is significantly below the ten percent requirement for public school libraries. As of January 5, 2024, the school had an enrollment of 310 Grade 11 students. Based on the results of the Philippine Informal Reading Inventory and teacher assessments, about 39 students, or roughly five out of every forty, were identified as having difficulties in reading fluency, oral communication, and constructing sentences, particularly in subjects like Oral Communication in Context.

Acknowledging this issue, the researcher, who also functions as the Learning Resources Coordinator at the school, recognized the need to apply technology to support students' literacy development. This led to the creation of the I READ or Interactive Reading for Enriched Academic Development mobile application. The tool was developed with the local context in mind. It was specifically designed to improve the reading and writing skills of Grade 11 students by combining literary materials with user-friendly and interactive features that support engagement, reflection, and learning.

This research was conducted to achieve three main objectives. First, to design the I READ mobile application for the Reading and Writing subject. Second, to determine its content validity and acceptability as reviewed by educators and subject specialists. Third, to evaluate its effectiveness based on the comparison of pretest and posttest results of selected Grade 11 students from a senior high school in Los Baños. This study is significant as it addresses the ongoing literacy concerns in Philippine education and adds to the growing literature promoting mobile learning solutions in schools with limited resources. It also supports the goals of the Department of Education, which focuses on curriculum improvement, learner-centered teaching, and improving the literacy and numeracy of its learners.

2.0 Methodology

2.1 Research Design

The Design and Development research method guided the creation and evaluation of the I-READ mobile application. This design enabled the researcher to assess both the instructional impact of the app and its content quality through expert validation and student performance measures. The study also investigated the extent to which the mobile app improved the learners' reading and writing skills.

2.2 Participants and Sampling Technique

The participants consisted of 40 purposively selected Grade 11 learners enrolled in the HUMSS strand at a senior high school in Los Baños. This strand was chosen due to its strong focus on literature, arts, and communication

disciplines aligned with the purpose of the study. In addition, 15 evaluators (2 Education Program Supervisors and 13 Reading and Writing and ICT teachers from schools in the Los Baños District) assessed the validity and acceptability of the mobile application. Purposive sampling was used to ensure that participants were relevant to the study's objectives and capable of providing informed feedback on the content and functionality of the mobile app.

2.3 Research Instrument

Two primary research instruments were used in this study. First, a 50-item researcher-made Pretest and Posttest were designed to evaluate learners' performance in the Reading and Writing subjects before and after using the I-READ mobile application. The instruments were validated by five expert validators, including the research adviser, the institution's research director, a statistician, and subject matter experts. The tests were based on DepEd Order No. 8, s. 2015 "Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program—and aligned with the Most Essential Learning Competencies (MELCs)."

As for the second instrument, the research adopted from Aniciete et al.'s (2022) study, "Development of Offline E-Modules to Improve Learners' Academic Performance in Disciplines and Ideas in the Social Sciences," this questionnaire was administered to the 15 evaluators to assess the content validity and acceptability of the mobile application. A four-point Likert scale was used to rate aspects such as Objectives, Topics, Exercises, Directions, and Reflections. The instrument's reliability was confirmed through Cronbach's Alpha coefficients: 0.851 for content validity and 0.846 for acceptability, as reported in the source study.

2.4 Data Gathering Procedure

A request letter was submitted to the Schools Division Superintendent in early February 2024 to obtain permission for the conduct of the study. Once the approval was granted, the school provided an official schedule for the data gathering process. An orientation was held for the participating students, during which informed consent forms and parental consent forms were distributed and collected to ensure adherence to ethical standards in research. The pretest, which had undergone prior validation, was administered in the third week of February 2024. In the succeeding weeks, learners engaged with the I READ mobile application to complete lessons aligned with the Most Essential Learning Competencies. Following the completion of the third quarter of School Year 2023 to 2024, the posttest was conducted. The mobile application utilized online functions, and all scores were automatically recorded in a cloud-based storage system. Meanwhile, the questionnaire designed to evaluate the mobile application's validity and acceptability was sent to the fifteen designated evaluators using Google Forms to allow for easy digital access and submission. All collected data were securely stored and organized in Google Drive for further analysis.

2.5 Data Analysis Procedure

The data gathered were analyzed using the following statistical methods: (a) Mean and Standard Deviation were used to interpret the ratings on the mobile application's content validity and acceptability based on expert evaluations, (b) A paired t-test was applied to determine whether a statistically significant difference existed between the pretest and posttest scores of the learner-respondents, indicating the effectiveness of the mobile application in enhancing reading and writing proficiency.

2.6 Ethical Considerations

All research protocols adhered to ethical standards. Informed consent and parental consent were secured from all student participants. Anonymity and confidentiality were strictly maintained for both learners and evaluators. The instruments used in the study collected only essential data, avoiding any personally identifiable or sensitive information. To support student motivation and recognize their participation, learners were provided with non-monetary incentives, specifically additional points in their Reading and Writing subjects, after completing all lessons and assessments in the I-READ mobile application. These incentives also served as a structured review in preparation for the quarterly examinations.

3.0 Results and Discussion

3.1 Design the Mobile Application for Reading and Writing Subjects

The mobile application was explicitly created to support the Reading and Writing subjects. This included the development of an interactive platform known as I READ, which stands for Interactive Reading for Enriched Academic Development, to enhance students' literacy abilities. The app featured a variety of components such as reading passages, practice activities, interactive quizzes, and other learning tools aimed at improving students' skills in reading comprehension and written expression. The design also included elements that allowed tracking learner progress, giving feedback, and providing learning experiences tailored to the needs of individual students.

The user interface and visual elements of the application were developed using several software programs that required paid or premium access. Canva, an online multimedia design platform, was used for lesson creation and presentation. Voicemaker, a text-to-speech converter available online, was used to enrich the delivery of instructions, content, and narrations. Adobe Premiere Pro 2022 was used to produce video-based lessons. The mobile app was developed and programmed using Google Firebase, which also supported real-time data monitoring and progress tracking for students. Instructional content and context were based on the DepEd Alternative Delivery Modules, aligned with the Most Essential Learning Competencies stated in the Senior High School Reading and Writing Subject Curriculum Guide.

Table 1. *Final List of Learning Objectives and Topics in the I-READ Mobile Application*

MELC	Learning Objectives	Topic
Compare and contrast patterns of written texts across disciplines	1. Familiarize yourself with the different writing patterns in paragraph development. 2. Identify the transitional words and phrases used in the different writing patterns. 3. Write a short paragraph using a specific writing pattern 4. Distinguish the uses and the differences of each writing pattern	Narration Description Definition Exemplification/ Classification Comparison and Contrast Cause and Effect Problem-Solution Essay Persuasion
Evaluate a written text based on its properties (organization, coherence and cohesion, language use, and mechanics)	1. Determine the beginning, middle, and end of the story read 2. Write the episodes of your life from childhood to young adulthood using a Graphic organizer 3. Organize ideas using proper transitional devices 4. Construct a coherent and cohesive paragraph 5. Determine the essence of appropriate language use in written texts 6. Evaluate a written text based on the appropriateness of language use 7. Utilize writing prowess through practice skills in grammar 8. Use proper mechanics in writing, such as spelling, punctuation, capitalization, and paragraph development.	Organization Coherence and Cohesion Language Use Mechanics
Identify claims explicitly or implicitly made in a written text.	1. Identify claims expressly or implicitly made in a written text 2. Determine the key elements of explicit and implicit claims 3. Differentiate a claim of fact, a claim of policy, and a claim of value from each other 4. Identify claims of fact, policy, and value presented in written texts.	Claim of fact Claim of policy Claim of value

3.2 Establish Content Validity and Acceptability of the I-READ: Interactive Reading for Enriched Academic Development: A Mobile Application for Reading and Writing Subject

Validity

The overall evaluation of the mobile application's validity, based on its stated objectives, was rated as Highly Valid with a mean score of 3.85. Among the criteria, the indicator "Specific and clearly stated" achieved the highest rating with a mean of 3.93, indicating that users found the objectives to be well defined and closely aligned with the intended learning outcomes. On the other hand, the indicator "Time bound" received the lowest mean of 3.73. Although this rating still falls within the highly valid range, it may suggest some concerns related to the time management and pacing features included in the application.

Table 2. *Level of Validity of the Developed Mobile Application for Reading and Writing in terms of Objectives*

Indicators in terms of Objectives		Mean	Interpretation	Rank
1.	Relevant	3.87	HV	3
2.	Specific and clearly stated.	3.93	HV	1
3.	Measurable	3.87	HV	3
4.	Attainable	3.87	HV	3
5.	Result-oriented	3.80	HV	5
6.	Time-bound	3.73	HV	6
General Assessment		3.85	HV	

Legend: 3.25 – 4.00 Highly Valid (HV) 1.75 – 2.49 Slightly Valid (SV)
2.50 – 3.24 Valid (V) 1.00 – 1.74 Not Valid (NV)

This outcome implies that while the app effectively incorporates SMART objectives by being specific, measurable, attainable, result-focused, and time-bound, there is still an opportunity to improve how time-related elements are structured within its lessons or activities. A possible reason for the relatively lower score on the "Time-bound" aspect could be the flexible nature of the app's learning environment, which may not require learners to complete tasks within fixed time frames. For use in classroom settings, it may be helpful to consider adding clearer time markers or built-in progress tracking to support both students and teachers better. The clarity and specificity of the objectives confirm the app's consistency with the Department of Education's required learning competencies, reinforcing its role as a purposeful instructional tool. As noted by Griffin (2024), clearly defined learning goals contribute not only to improved learner motivation but also help maintain focus throughout the learning process. When objectives are effectively communicated, students are more likely to understand them and work intentionally toward achieving them.

Furthermore, Uygun and Firat (2023) emphasized that the educational value of mobile applications is closely linked to how well their instructional designs are organized and communicated. Their research highlighted the need for carefully validated learning modules that can promote meaningful and measurable learning, particularly in the context of language instruction, through well-designed objectives. In conclusion, the I READ mobile application shows strong potential as a teaching tool, mainly due to its clear and targeted objectives. However, improving the timing and pacing features may further enhance its usability and effectiveness in classroom environments.

Table 3. *Level of Validity of the Developed Mobile Application for Reading and in terms of Concepts*

Indicators in terms of Concepts		Mean	Interpretation	Rank
1.	Gives insights and ideas as to what the activity is all about.	3.87	HV	2
2.	Provides background of the concepts and information about the topic to be solved.	3.93	HV	1
3.	Attracts learners' attention	3.80	HV	3
4.	Arouses learners' interest in solving exercises	3.73	HV	4
General Assessment		3.83	HV	

Legend: 3.25 – 4.00 Highly Valid (HV) 1.75 – 2.49 Slightly Valid (SV)
2.50 – 3.24 Valid (V) 1.00 – 1.74 Not Valid (NV)

The overall validity score of 3.83 indicates that the mobile application developed for the Reading and Writing subject is considered Highly Valid in terms of its conceptual foundation. All evaluated indicators exceeded the benchmark of 3.25 for high validity, highlighting the app's effectiveness in presenting content that is conceptually grounded and well structured. The indicator "Provides background of the concepts and information about the topic to be solved" received the highest mean score of 3.93. This reflects the users' perception that the app offers strong contextual support and a solid introduction to key topics. This finding is consistent with the views of Weruwanaruk et al. (2023), who stressed the value of contextual learning and the activation of cognitive processes

that aid in forming new knowledge. By delivering clear background information, the application helps learners better grasp complex or layered ideas often found in academic texts.

In contrast, the indicator “Arouses learners’ interest to solve exercises” had the lowest score, with a mean of 3.73. Although this still falls within the range of High Validity, it suggests that the app has slightly less impact in motivating learners during exercises compared to its other strengths. This may point to a need for additional features that promote learner engagement, such as incorporating game-like elements or other interactive components. As noted by Weruwanaruk et al. (2023), capturing and maintaining learners’ interest plays a crucial role in effective knowledge acquisition. While the instructional content is straightforward and well-designed, its delivery method could benefit from enhancements to maintain engagement throughout the activity.

Overall, the findings suggest that the mobile application contributes significantly to developing both conceptual understanding and higher-order thinking skills. Its well-organized content and depth help foster meaningful learning, encouraging students not only to absorb information but also to analyze and apply it. Compared to traditional textbooks or static modules, the application’s interactive design and visual aids likely played a role in achieving its high validity ratings. However, further improvement may be possible by introducing adaptive features that adjust based on learners’ motivation and performance levels. In summary, the app’s conceptual structure successfully supports learner comprehension and encourages active participation. It aligns with established standards for digital learning tools and demonstrates strong potential to support students’ academic development and cognitive skills in the Reading and Writing subjects.

Table 4. *Level of Validity of the Developed Mobile Application for Reading and Writing in terms of Topics*

Indicators in terms of Topics		Mean	Interpretation	Rank
1.	Sequenced according to MELCs	4.00	HV	1
2.	Logically presented	3.80	HV	2
3.	Address learners’ needs	3.73	HV	3
General Assessment		3.84	HV	
Legend:		3.25 – 4.00 Highly Valid (HV) 2.50 – 3.24 Valid (V) 1.75 – 2.49 Slightly Valid (SV) 1.00 – 1.74 Not Valid (NV)		

The mobile application received an overall validity rating of Highly Valid with a mean score of 3.84 in terms of its topic selection. This rating reflects a strong alignment with both curriculum standards and the expectations of learners. Among the indicators, “Sequenced according to MELCs” achieved a perfect score of 4.00, highlighting the application’s strict compliance with the learning competencies set by the Department of Education. While all indicators were rated within the Highly Valid range, the statement “Addresses learners’ needs” received the lowest score of 3.73. This suggests that there may be opportunities to improve how the content is adapted to suit a broader range of learners. This concern may stem from the difficulty of meeting varied academic levels, learning preferences, and access challenges, particularly within a mobile learning context.

These results emphasize the value of deliberate curriculum planning, as discussed by Kusmawan et al. (2025), who pointed out that customizing content based on the specific needs of learners can significantly enhance their engagement and academic performance. Likewise, Gillispie et al. (2023) stressed that considering the learners’ social, cultural, and educational backgrounds contributes to the effectiveness and relevance of instruction. The I-READ application’s clear structure and logical topic progression helped support a more organized and user-friendly learning experience, which is especially important in digital learning environments that rely on independent navigation. By using technology to arrange topics by curriculum standards while also considering the varied needs of learners, the application helps create an inclusive and flexible learning space. This promotes learner independence and encourages continuous engagement in developing reading and writing skills.

Table 5. *Level of Validity of the Developed Mobile Application for Reading and Writing in terms of Directions*

Indicators in terms of Directions		Mean	Interpretation	Rank
1.	Simple and clear	3.87	HV	2
2.	Easy to follow	3.93	HV	1
3.	Properly sequenced	3.93	HV	1
4.	Can be done independently	3.93	HV	1
5.	Guide non-native users of technology accordingly	3.93	HV	1
General Assessment		3.92	HV	
Legend:		3.25 – 4.00 Highly Valid (HV) 2.50 – 3.24 Valid (V) 1.75 – 2.49 Slightly Valid (SV) 1.00 – 1.74 Not Valid (NV)		

The overall mean score of 3.92 reflects that the directions provided within the mobile application are considered Highly Valid. Four indicators, specifically “easy to follow,” “properly sequenced,” “can be done independently,” and “guides nonnative users effectively,” all received the highest mean rating of 3.93. While the indicator “simple and clear” recorded a slightly lower score of 3.87, it remained within the category of high validity. These results indicate that the instructional design of the application effectively promotes clarity, ease of access, and learner independence. The consistently high ratings suggest that the app offers a clear and organized interface that reduces confusion, supports users with varying levels of digital familiarity, and encourages independent learning. These are essential features for digital educational tools . In addition, the results are consistent with the findings of Contreras (2023), who emphasized that well-structured directions, particularly when supported by information and communication technology and artificial intelligence, play a vital role in strengthening learner agency and supporting meaningful digital learning experiences.

Table 6. *Level of Validity of the Developed Mobile Application for Reading and Writing in terms of Practical Exercises*

Indicators in terms of Practical Exercise		Mean	Interpretation	Rank
1.	Relevant to the objectives	4.00	HV	1
2.	Appropriate to learners’ abilities	3.80	HV	3
3.	Adequate for learners’ language knowledge and skills	3.80	HV	3
4.	Sufficient to determine the mastery level of learners	3.73	HV	4
5.	Enhances learners’ comprehension	3.87	HV	2
General Assessment		3.84	HV	
Legend:		3.25 – 4.00 Highly Valid (HV)	1.75 – 2.49 Slightly Valid (SV)	
		2.50 – 3.24 Valid (V)	1.00 – 1.74 Not Valid (NV)	

The practical exercises included in the I-READ mobile application received an overall rating of 3.84, which indicates a Highly Valid level of quality. Among the indicators, “relevant to the objectives” obtained the highest mean score of 4.00, showing strong alignment with the learning goals set for the application. On the other hand, the indicator “sufficient to determine mastery level of learners” recorded the lowest mean of 3.73, though it still falls within the highly valid range. These results emphasize the effectiveness of the exercises in enhancing learners’ understanding and skill development. By aligning tasks with the learners’ current proficiency, the application ensures that activities are suitably challenging, helping to reinforce mastery through consistent practice. The strong and consistent scores across all indicators reflect an instructional design that prioritizes relevance, clarity, and learner engagement. This is supported by Sugden et al. (2021), who pointed out that mobile learning activities, especially those designed around students’ routines, preferences, and academic needs, have a significant impact on learning progress. With appropriate exercises, the application contributes to meaningful and continuous language learning.

Table 7. *Level of Validity of the Developed Mobile Application for Reading and Writing in terms of Reflections*

Indicators in terms of Reflections		Mean	Interpretation	Rank
1.	Motivates learners to express their learning experience	3.80	HV	2
2.	Gives insights to the teacher if learners need remediation or enrichment	3.93	HV	1
3.	Inspires the production of more innovative and novel ways of assessing learners’ learning	3.80	HV	2
General Assessment		3.84	HV	
Legend:		3.25 – 4.00 Highly Valid (HV)	1.75 – 2.49 Slightly Valid (SV)	
		2.50 – 3.24 Valid (V)	1.00 – 1.74 Not Valid (NV)	

The reflection feature of the mobile application was rated as Highly Valid with a mean score of 3.84. The highest rating was given to the indicator “Gives insights to the teacher if learners need remediation or enrichment,” which earned a mean of 3.93. This highlights the application’s effectiveness in providing diagnostic information that supports the use of differentiated instruction. Meanwhile, the indicators “Motivates learners to express their learning experience” and “Inspires the production of more innovative assessment strategies” both received a mean score of 3.80, showing the application’s strong performance in encouraging learner reflection and creative assessment approaches.

These results emphasize the app’s capability to promote metacognitive awareness and independent learning by allowing students to express their thoughts and learning experiences. Engaging in such reflective practices contributes to a deeper level of understanding and supports more personalized and responsive teaching methods. This is in line with the findings of Merkebu et al. (2023), who stated that reflective activities, especially those that make use of metacognitive strategies and emotional regulation, help enhance meaningful learning. The reflection

features of the I-READ application, therefore, go beyond simple assessment tools, functioning as platforms that encourage thoughtful learning and continuous academic progress.

Acceptability

The functionality of the mobile application received an overall rating of Highly Acceptable with a mean score of 3.77. The indicator “Program is self-instructed” recorded the highest mean at 3.93, showing that users valued the app’s support for independent learning. On the other hand, the lowest score was given to the indicator “Program is free of technical problems,” which had a mean of 3.60, though it still falls within the range of high acceptability.

Table 8. *Level of Acceptability of the Developed Mobile Application for Reading and Writing in terms of Functionality*

Indicators in terms of Functionality		Mean	Interpretation	Rank
1.	The program is free of technical problems	3.60	HA	4
2.	The program is self-instructed	3.93	HA	1
3.	Graphics and color increase the instructional value of the program	3.80	HA	2
4.	The program serves its purpose	3.80	HA	2
5.	The program provides authorized easy access	3.73	HA	3
General Assessment		3.77	HA	
Legend: 3.25 – 4.00 Highly Acceptable (HA) 1.75 – 2.49 Slightly Acceptable (SA) 2.50 – 3.24 Acceptable (A) 1.00 – 1.74 Not Acceptable (NA)				

These findings indicate that the application effectively promotes learner independence and offers necessary support for improving reading and writing skills. The use of attractive visuals and a user-friendly interface also contributes to a more engaging learning environment, emphasizing the importance of visual appeal and functional clarity in educational applications. This outcome supports the observations of Zolkepli et al. (2021), who highlighted that functionality, including ease of use, navigation, and overall system performance, plays a key role in encouraging continued app usage and maintaining learner interest. By providing a well-structured and self-guided platform, the application meets both educational objectives and user needs, establishing its value as a digital tool for learning.

Table 9. *Level of Acceptability of the Developed Mobile Application for Reading and Writing in terms of Accuracy*

Indicators in terms of Accuracy		Mean	Interpretation	Rank
1.	The program contains correct information about the topic	3.80	HA	2
2.	The program provides learners with the best choices for their answers	3.87	HA	1
3.	Choices reflect a certain degree of similarity in meaning but distinct syntactic uses	3.80	HA	2
General Assessment		3.82	HA	
Legend: 3.25 – 4.00 Highly Acceptable (HA) 1.75 – 2.49 Slightly Acceptable (SA) 2.50 – 3.24 Acceptable (A) 1.00 – 1.74 Not Acceptable (NA)				

The mobile application achieved an overall mean score of 3.82, reflecting a Highly Acceptable level of accuracy across all evaluated indicators. The item “Program provides learners the best choices for their answers” received the highest score of 3.87, indicating that users considered the response options to be carefully designed and suitable within the learning context. In comparison, the indicators “Program contains correct information about the topic” and “Choices reflect a certain degree of similarity in meaning but distinct syntactic uses” both recorded a mean of 3.80. These scores, which remain within the Highly Acceptable range, affirm the consistency and dependability of the content presented in the application.

These findings suggest that the application delivers not only accurate information but also encourages deeper comprehension through well-developed multiple-choice options. The level of detail in the design of answer choices strengthens the credibility of the learning material and enhances learners' confidence, which is vital for digital learning environments. Adeshina (2024) also highlighted the value of offering well-crafted and differentiated response options in educational platforms. According to this view, personalized and context-sensitive options contribute to more effective engagement, supporting critical thinking and a more meaningful learning experience.

The developed mobile application received an overall mean score of 3.80, indicating a Highly Acceptable level of Suitability. All evaluated indicators reflected strong agreement among evaluators. The highest mean score of 3.93 was recorded for the indicator concerning the adaptability of enrichment activities for large class settings. This outcome emphasizes the application's effectiveness in addressing the realities of many public school classrooms where teacher-to-student ratios are often high. It also demonstrates the tool’s ability to facilitate differentiated instruction while maintaining instructional integrity.

Table 10. *Level of Acceptability of the Developed Mobile Application for Reading and Writing in terms of Suitability*

Indicators in terms of Suitability		Mean	Interpretation	Rank
1.	Activities consider the varying attitudes and capabilities of the learner	3.60	HA	4
2.	Activities are appropriate to the subject matter	3.80	HA	3
3.	Activities are relevant, engaging, and self-motivating to the learner	3.80	HA	3
4.	Use of enrichment activity is adaptable to classes with a large number of learners	3.93	HA	1
5.	The language of the program is within the vocabulary range of the target learners	3.87	HA	2
General Assessment		3.80	HA	
Legend: 3.25 – 4.00 Highly Acceptable (HA) 1.75 – 2.49 Slightly Acceptable (SA) 2.50 – 3.24 Acceptable (A) 1.00 – 1.74 Not Acceptable (NA)				

Meanwhile, the indicator "Activities consider the varying attitudes and capabilities of the learner" obtained the lowest rating of 3.60, although it still falls within the Highly Acceptable category. This relatively lower score suggests an area where further improvement could be considered, particularly by incorporating more adaptive or personalized components that accommodate learners' emotional and cognitive diversity. It brings attention to the degree of inclusivity in the design, especially in addressing varying learning preferences, pacing demands, and motivational differences.

Additionally, the application received a mean score of 3.87 for its use of appropriate and subject-relevant language based on the learners' age. The alignment of the content with subject requirements and learner engagement, with a mean of 3.80, also affirms the careful attention given to instructional design. These results indicate that the content is not only educationally relevant but also designed to stimulate motivation and contextual understanding. The inclusion of interactive features promotes learner-centered instruction consistent with constructivist approaches. Furthermore, the consistently high ratings imply that the application has the potential to enhance or even replace certain aspects of traditional instruction, particularly in terms of engaging students and reaching a wider audience. Unlike conventional classroom methods that often face limitations in motivation and differentiation, this digital tool seems to provide a more responsive and inclusive learning experience through its user-focused design.

These findings are consistent with the perspective of Varga and Daroczi (2024), who emphasized the importance of developing digital learning tools that are both adaptable and engaging to meet the evolving expectations of modern learners. Their study highlights that learner-centered practices and responsive educational technologies are essential in fostering autonomy and sustained focus, especially in literacy-based subjects such as reading and writing. In conclusion, the application demonstrates a high level of suitability for classroom integration. Future updates could further improve its inclusiveness by adding features such as adaptive learning paths or diagnostic tools that better align with individual learner characteristics.

Table 11. *Level of Acceptability of the Developed Mobile Application for Reading and Writing in terms of Usability*

Indicators in terms of Usability		Mean	Interpretation	Rank
1.	Material prepares the learners to think logically and critically	3.80	HA	3
2.	Concepts in the material are comprehensible and straightforward	4.00	HA	1
3.	Material enhances the learners' comprehension and reading skills	4.00	HA	1
4.	Material provides an opportunity for the development of language skills	3.87	HA	2
5.	Learning contents provide adequate information on the topics presented	3.87	HA	2
6.	Material encourages the learners to become actively involved in intellectual activities	3.87	HA	2
7.	Activities seek to relate new concepts to previous learning	4.00	HA	1
8.	As a whole, activities are teachable	3.87	HA	2
General Assessment		3.91	HA	
Legend: 3.25 – 4.00 Highly Acceptable (HA) 1.75 – 2.49 Slightly Acceptable (SA) 2.50 – 3.24 Acceptable (A) 1.00 – 1.74 Not Acceptable (NA)				

The developed mobile application for Reading and Writing received a general mean score of 3.91 in terms of usability, placing it within the Highly Acceptable category. All individual indicators were evaluated within the same range, indicating strong alignment with user expectations and practical instructional design. The indicators with the highest mean score of 4.00 were the following: concepts presented in the material are straightforward to understand, the content enhances learners' comprehension and reading abilities, and the activities help learners connect new ideas with previously acquired knowledge. These outcomes reflect the application's focus on clarity, relevance, and instructional continuity, which are essential in promoting engagement and understanding.

On the other hand, the indicator with the lowest mean score was the one stating that the material encourages learners to think logically and critically, which received a rating of 3.80. While this still falls within the Highly Acceptable range, it identifies an area where the application may be strengthened. The findings suggest that although the app effectively supports foundational learning, its structure may not fully encourage users to engage in more advanced cognitive tasks. This has important implications for classroom implementation, as developing learners' critical thinking is a fundamental component of academic literacy. Addressing this concern could enhance the application's ability to support analytical thinking and knowledge transfer.

Additionally, several indicators received a mean of 3.87, including the provision of opportunities for language development, the adequacy of information in the content, and the overall teachability of the activities. These results suggest that the application effectively balances usability with sound pedagogical principles. However, further reflection indicates a need to assess the app's overall instructional efficiency. While the application offers flexibility and instant access to materials compared to traditional approaches, it may face challenges in time-sensitive learning environments if its content delivery structure is not optimized. In conclusion, the findings confirm that the application is user-friendly, educationally grounded, and capable of supporting a positive learning experience. As noted by Sharifuddin et al. (2020), usability is a crucial factor in ensuring that educational technologies respond to learner needs and contribute to improved learning outcomes. This point is supported by the high level of acceptability demonstrated in this evaluation.

Table 12. *Level of Acceptability of the Developed Mobile Application for Reading and Writing in terms of Efficiency*

Indicators in terms of Efficiency		Mean	Interpretation	Rank
1.	The program quickly responds	3.87	HA	2
2.	The program utilizes the resources efficiently.	3.80	HA	3
3.	The program utilizes the given time efficiently.	3.93	HA	1
General Assessment		3.87	HA	
Legend:		3.25 – 4.00 Highly Acceptable (HA) 1.75 – 2.49 Slightly Acceptable (SA) 2.50 – 3.24 Acceptable (A) 1.00 – 1.74 Not Acceptable (NA)		

In terms of efficiency, the developed mobile application received a general mean score of 3.87, placing it within the Highly Acceptable range. All evaluated indicators were similarly rated, confirming that the application effectively facilitates streamlined learning processes. The highest mean score of 3.93 was given to the indicator stating that the program uses the allotted time effectively. This highlights the application's ability to organize activities in a way that minimizes unnecessary delays. Such time efficiency contributes to a more focused learning experience, enabling users to accomplish tasks within appropriate time frames, which is particularly valuable in academic settings where effective time management is essential.

The indicator stating that the program responds quickly received a mean of 3.87, indicating that users appreciated the application's responsiveness. Smooth navigation and minimal interruptions positively affect both usability and the overall learning experience. Seamless transitions between lessons and tasks help maintain learners' attention and reduce mental fatigue. On the other hand, the indicator concerning efficient use of resources received the lowest mean score at 3.80, though it still falls within the Highly Acceptable range. This suggests a potential area for refinement, especially regarding how well the application utilizes system features such as storage, internet connectivity, or device compatibility. Although not a significant concern, this slight difference may reflect user experiences of varying performance across different platforms or usage scenarios.

When compared to traditional instructional approaches, the efficiency of the application offers a significant advantage. In conventional settings, time is often spent distributing materials manually or waiting for feedback, which can hinder instructional flow. In contrast, the application provides immediate engagement and supports guided learning, ensuring that users can progress without unnecessary delays. These findings are consistent with the conclusions of Jaramillo-Mediavilla et al. (2024), who highlighted that immediate feedback and efficient use of technological resources play a critical role in sustaining learner motivation and improving educational outcomes. In summary, the efficiency evaluation confirms that the application is practical in delivering a responsive and well-paced learning experience. Although already highly rated, additional improvements in how the program manages resources may further expand its accessibility and performance, ultimately benefiting a wider range of users.

3.3 Determine the Pretest and Posttest Results of Grade 11

Pretest Results

The results of the 50-item pretest administered to 40 Grade 11 students indicated a generally satisfactory level of performance, with a mean score of 32.52 and a standard deviation of 5.06. The overall performance rating was calculated at 82.53. Among the participants, 40 percent or 16 students received a satisfactory rating, which represented the largest group within the performance classifications. Additionally, 27.5 percent or 11 students achieved a very satisfactory rating, while 7.5 percent or three students demonstrated outstanding performance. In contrast, 17.5 percent or seven students were categorized under the reasonably satisfactory level, and 7.5 percent or three students did not meet the expected standard.

Table 13. *Performance of 40 Students in the 50-Item Pretest*

Grade	Indicators	Frequency	Percentage
90 – 100	Outstanding	3	7.5%
85 – 89	Very Satisfactory	11	27.5%
80 – 84	Satisfactory	16	40%
75 – 79	Fairly Satisfactory	7	17.5%
74 and below	Did Not Meet Expectations	3	7.5%
Total		40	100%
Mean		32.52	
SD		5.06	
Overall Performance		82.53	

These outcomes reveal a broad spectrum of proficiency levels before the implementation of any intervention. The existence of both high-performing and lower-performing students indicates the necessity of adopting differentiated instruction. This approach allows educators to customize teaching strategies better to address the diverse academic needs within the classroom. Differentiation ensures that students in need of support receive appropriate guidance, while those with stronger skills are provided with enrichment opportunities. As noted by Kuehn (2024), pretests are designed to assess initial understanding rather than mastery, encouraging students to activate and apply prior knowledge. The findings confirm that most students entered the instructional period with foundational skills that could be further developed through targeted learning activities.

Moreover, the data reinforce the value of formative assessment in the planning of instruction. According to Nikolovska (2023), continuous assessment functions as a diagnostic measure that supports both learners and teachers in tracking progress and identifying specific areas for improvement. In this context, the pretest serves as a critical tool for shaping purposeful instructional strategies that respond to students' unique learning profiles. The variation in scores underscores the differing levels of readiness among students, while also highlighting the potential of assessment-driven instruction to enhance engagement and promote academic growth throughout the learning period.

Posttest Results

The results of the posttest revealed a significant improvement in the academic performance of the forty Grade 11 students. The class recorded an overall performance score of 90.80, with a mean of 40.8 and a standard deviation of 5.49, placing them within the Outstanding level of achievement. A substantial proportion of the group, twenty-seven students or 67.5 percent, attained scores within the Outstanding range of ninety to one hundred. In contrast, only one student, or 2.5 percent, did not meet the expected standard, showing a considerable progression from the broader distribution of scores observed in the pretest. This notable improvement suggests that the instructional methods and learning materials implemented between the two assessments were highly effective in enhancing students' understanding and mastery of the content. The posttest performance reflects not only the retention of concepts but also the learners' improved ability to apply their knowledge with greater precision and confidence.

These findings are consistent with the conclusions of Nguyen et al. (2021), who highlighted the value of active learning and instruction enriched with relevant resources in boosting student engagement, knowledge retention, and academic success. The evident progress from the pretest to the posttest supports the view that well-planned and interactive teaching strategies can substantially raise student performance within a short span of instructional time.

Table 14. *Performance of 40 Students in the 50-Item Posttest*

Grade	Indicators	Frequency	Percentage
90 – 100	Outstanding	27	67.5%
85 – 89	Very Satisfactory	10	25%
80 – 84	Satisfactory	2	5%
75 – 79	Fairly Satisfactory	0	0
74 and below	Did Not Meet Expectations	1	2.5%
Total		40	100%
Mean		40.8	
SD		5.49	
Overall Performance		90.80	

Significant Differences between Pretest and Posttest

The table displays the results of the statistical analysis comparing the students' academic performance before and after the instructional intervention. Findings from the paired samples t-test revealed a significant improvement, with a mean gain of 8.275 points and a standard deviation of 5.37, a t-value of 39 equals negative 9.749, and a p-value less than 0.001. This result was highly significant and led to the rejection of the null hypothesis, confirming that the intervention positively influenced student achievement.

Table 15. *Test of Significant Difference between the Academic Performance in Pretest and Posttest*

Test	Paired Differences				Remarks	Decision
	Mean	SD	T	P value		
Pretest and Posttest	-8.27500	5.36841	-9.749	< .001	Significant	Reject H ₀

The notable increase in scores indicates that the applied teaching approach significantly improved learners' understanding and engagement. The improvement affirms the effectiveness of employing well-planned and goal-oriented instructional activities aimed at addressing academic needs. These outcomes support the idea that students benefit more when exposed to relevant and creatively structured content, which encourages more profound understanding and long-term retention. This is consistent with the study of Usluoglu and Toptas (2023), who also observed substantial gains in academic performance as a result of implementing creative and engaging learning strategies. The presence of a statistically significant difference further highlights the importance of aligning teaching practices with the learning requirements of students. It emphasizes the value of using interactive methods that inspire curiosity and foster critical thinking. Additionally, conducting assessments both before and after the intervention ensures that the instructional process is responsive to learners' progress. This approach allows educators to make informed and timely decisions to enhance learning outcomes.

4.0 Conclusion

This study successfully developed and validated I-READ, or Interactive Reading for Enriched Academic Development, a mobile application created for the Reading and Writing subject in the senior high school curriculum. The application achieved strong validity ratings across essential content areas, including objectives, concepts, topics, directions, exercises, and reflections. It was also rated as highly acceptable in terms of functionality, usability, and instructional efficiency.

The marked improvement in students' academic performance after utilizing I-READ confirms its effectiveness not only as a digital instructional aid but also as a tool that promotes active participation, self-directed learning, and better comprehension. These findings are consistent with the educational goals of the Department of Education's senior high school curriculum and the competencies required for the twenty-first century, highlighting the app's importance in the current educational setting.

Beyond academic results, I-READ presents broader implications for teaching practices and education policy. It exemplifies how interactive mobile technology can be effectively integrated into classroom instruction, particularly in schools where conventional teaching materials are scarce. For teachers, the platform enables adaptable lesson delivery and supports a student-focused approach to instruction. For policymakers, it provides evidence that validated digital resources can be practically implemented within the official curriculum to promote differentiated and inclusive learning. Its development also underscores the significance of aligning educational technology with curriculum goals and student needs.

For future studies, researchers may consider applying the I-READ model to other subjects that involve intensive reading or require strong critical thinking skills, especially in under-resourced educational settings. Exploring the integration of adaptive learning systems, personalized content, and localized implementation strategies may further improve the app's impact and accessibility. In addition, longitudinal research could provide a more profound understanding of how mobile learning influences student motivation, literacy skills, and academic performance over time and across various educational environments.

5.0 Contributions of Authors

The sole author was responsible for the conceptualization and design of the study, development of research instruments, data collection, data analysis and interpretation, and writing of the manuscript. The author also handled the ethical clearance process, coordinated with participants, revised and finalized the paper, and prepared it for submission.

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7.0 Conflict of Interests

The author declares that there is no conflict of interest in the conduct, authorship, or publication of this research.

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