Enhancing Reading Comprehension Among Informatics Management Students through the Grammarian Android Game: A Classroom Action Research

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Abstract: This research investigates the effectiveness of the Grammarian Android Game in improving the reading comprehension skills of third-semester Informatics Management students at Piksi Input Serang Polytechnic. The study adopts a Classroom Action Research (CAR) methodology, conducted in two cycles, involving 28 students. Initial observations indicated significant challenges in reading comprehension, with most students scoring below the required competency level. The introduction of the Grammarian Android Game aimed to address these challenges by providing an interactive and engaging learning tool. Results showed substantial improvements in students' reading comprehension scores, increasing from an average of 60.72 in the pre-cycle to 92.21 in the second cycle. The iterative process of planning, acting, observing, and reflecting facilitated continuous improvement in teaching strategies, leading to enhanced student engagement and understanding. The study concludes that the Grammarian Android Game is an effective tool for enhancing reading comprehension, making the learning process more enjoyable and effective. This research contributes to the understanding of digital game-based learning's impact in higher education, particularly in technical fields.

Keywords: android games, reading, grammarian, ESP

INTRODUCTION

English is an essential international language, widely used in various activities such as business presentations, corporate functions, social events, and writing correspondences. It serves as a vital communication tool among countries worldwide, offering numerous opportunities such as better job prospects, new knowledge, and cultural exposure. In Indonesia, English is taught as a foreign language (Lauder, 2020), encompassing four key skills: listening, speaking, reading, and writing. Among these, reading is crucial for understanding and interpreting written texts, which is indispensable for academic and professional success.

Despite its importance, third-semester Informatics Management students face significant challenges in reading comprehension. Observations indicate that a substantial number of students score below the required competency level, struggling particularly with technical and narrative texts. These students find it difficult to understand text characteristics, social functions, generic structures, and language features. This difficulty is not merely an academic issue but has broader implications for their future professional lives. These problems were correlated with students experience bottom-up and top-down reading anxieties, struggling with vocabulary and overall context, which negatively impacts their comprehension. Additionally, classroom reading activities contribute to their stress (Mardianti et al., 2021). Sasabone & Pongpalilu (2022) identified the issues with non-optimal learning planning and low initial comprehension scores due to the disconnect between study materials and professional requirements. Both sources emphasize the need for tailored educational strategies to address these specific anxieties and comprehension difficulties. Improving understanding in narrative text is crucial for Informatic Management students because it enhances their ability to communicate complex ideas and concepts effectively (Sukmawati & Nasution, 2020). Strong narrative skills enable them to craft compelling project reports, presentations, and documentation, making technical information more accessible and engaging for diverse audiences (Ngoi et al, 2024). Additionally, proficiency in narrative text fosters creativity and critical thinking, which are essential for problem-solving and innovation in the field of informatics (El-Magd & Mohammad, 2022). By mastering narrative text understanding, students can better articulate their insights and contributions, thereby improving their future overall professional competence and effectiveness in the industry.

Mastery of English reading comprehension is not just an academic requirement but also a crucial skill for Informatics Management students due to the demands of the industry they will enter. The institution emphasizes the importance of this skill, as English proficiency is vital for accessing a wide range of technical resources, research papers, and documentation that are predominantly in English (Purwanto et al., 2023). Moreover, the global nature of the tech industry means that professionals often need to collaborate with international teams, understand technical manuals, and stay updated with the latest advancements, all of which require strong reading skills (Hernandez-de-Menendez et al., 2020).

The field of Informatics Management is inherently technical and heavily relies on current research and developments which are frequently documented in English. For instance, the latest software updates, programming guides, and industry best practices are often published in English. This makes reading comprehension not just a useful skill, but a necessary one for staying competitive in the field. Students who lack this proficiency are at a significant disadvantage, as they may struggle to keep up with course materials, participate in discussions, and complete assignments that require understanding complex texts (Baron, 2021).

Furthermore, many international companies expect their employees to be proficient in English (Yamao & Sekiguchi, 2015), given that it is often the language of business. Employers seek candidates who can read and comprehend technical documentation quickly and accurately, as this skill is essential for troubleshooting, developing new technologies,

and collaborating with colleagues across the globe. Therefore, the ability to read and understand English texts is not only beneficial but critical for Informatics Management students aiming to succeed in their careers.

Despite understanding the importance of English, many third-semester Informatics Management students find reading comprehension particularly challenging. Several factors contribute to this difficulty. Firstly, the complexity of technical texts, which often include specialized terminology and intricate concepts, can be overwhelming (Hedgcock & Ferris, 2018). Students may lack the vocabulary or the contextual understanding needed to grasp these materials fully. Secondly, many students have not developed effective reading strategies, such as skimming for main ideas or scanning for specific information, which can make tackling lengthy or dense texts seem daunting (Basuki, 2018).

Additionally, traditional teaching methods may not sufficiently engage students or cater to their individual learning styles (El-Sabagh, 2021). Many educators still rely on lectures and rote memorization, which can lead to disengagement and a lack of motivation. This is where innovative teaching methods, such as the use of educational games, can play a pivotal role. To address these issues, effective teaching strategies are needed to enhance students' motivation and comprehension. Serrano et al., (2019) suggests that instructors should experiment with new methods and learn from their experiences. Integrating interactive and engaging tools, such as educational games, into teaching can significantly improve the learning experience. Vedadi et al., (2019) emphasize the importance of combining various sensory modalities to enhance learning.

Educational games can capture students' attention and provide interactive experiences, making abstract concepts more understandable. One such tool is the Grammarian Android Game, an educational game designed to improve English grammar and reading skills through interactive gameplay. Games like this can offer rich visual and auditory elements, engaging students and facilitating learning. instructors can use these games to prepare students for lessons, focus their attention on specific content, and design follow-up activities to reinforce learning (Purgina et al., 2020). The educational benefits of games are substantial, as they can make difficult concepts more accessible and engaging for students.

The Grammarian Android Game, specifically, uses a blend of storytelling, problem-solving, and interactive exercises to teach grammar and reading comprehension. It provides immediate feedback, which is crucial for learning, and allows students to progress at their own pace. This personalized approach can help address individual weaknesses and build confidence in students' reading abilities.

Despite the recognized potential of educational games in education, there is a notable research gap in exploring their specific impact on reading comprehension among Indonesian college students in technical fields. While numerous studies (Elaish et al., 2019; Kurniati, 2018; Megawati & Sultoni, 2016; Nurchintyawati, 2022) have highlighted the general benefits of educational technology, few have focused on the practical implementation and measurable outcomes of game-based learning in enhancing reading skills in this context. Most existing studies concentrate on primary or secondary education, with less emphasis on higher education settings where the cognitive demands and content complexity are higher. Moreover, the effectiveness of integrating a specific educational game like the Grammarian

Android Game into the curriculum of technical students has not been thoroughly investigated.

This research aims to fill this gap by investigating the use the Grammarian Android Game to improve reading comprehension among third-semester Informatics Management students. The goal is to determine if this game can increase students' interest and motivation in learning English, particularly in enhancing their reading skills. The study evaluates the students' performance before and after the introduction of the game-based learning tool, examining any improvements in their reading comprehension scores and overall engagement with the learning material.

METHOD

In this research, the researcher conducted Classroom Action Research (CAR) to investigate the improvement of students' reading comprehension through the use of the Grammarian game. According to Kemmis et al., (2016), Action Research (AR) involves a self-reflective, critical, and systematic approach to exploring teaching contexts, aiming to intervene in problematic situations to bring about changes and improvements based on systematically collected data. Kemmis et al., (2016) emphasized that AR supports practitioners in providing quality education by transforming teaching-related activities and enhancing students' learning. This approach was chosen because particularly effective for implementing and refining new teaching tools, like the Grammarian Android Game, and assessing their impact on students' learning outcomes. The research was conducted at Piksi Input Serang Polytechnic, focusing on third-semester Informatics Management students. The study took place between January 19 and February 9, 2024. The required data included students' reading comprehension scores before and after the treatment, observations of classroom activities, and feedback from students and instructors. This data helped measure both quantitative improvements in test scores and qualitative changes in engagement and comprehension. The study aimed for at least 80% of students to actively participate in the activities and achieve scores above the minimum competency level for the English subject, set at 70. Data collection techniques included observation, interviews, and tests. Observations gathered information about classroom dynamics, while interviews with students and lecturers identified difficulties in reading comprehension. Pre-tests and post-tests measured reading comprehension improvement. Research instruments included a reading comprehension test, an observation sheet, and documentation in the form of photos and notes.

To confirm data validity, the researchers employed several strategies. Firstly, triangulation was utilized to ensure the robustness of the findings. This involved gathering data from multiple sources, including tests, observations, and interviews. Secondly, member checking was implemented as another validation strategy. This process involved sharing the collected data and preliminary interpretations with the participants themselves (Jainal & Shahrill, 2021; Tarrayo et al., 2020). Data analysis involved three activities: data reduction, data display, and conclusion drawing/verification (Miles et al., 2020). Data reduction involved selecting, focusing, simplifying, and summarizing collected data. Data display involved organizing and displaying reduced data for easier understanding and interpretation. Conclusion drawing/verification involved interpreting and verifying the data to draw

conclusions about the effectiveness of the Grammarian game in improving reading comprehension.
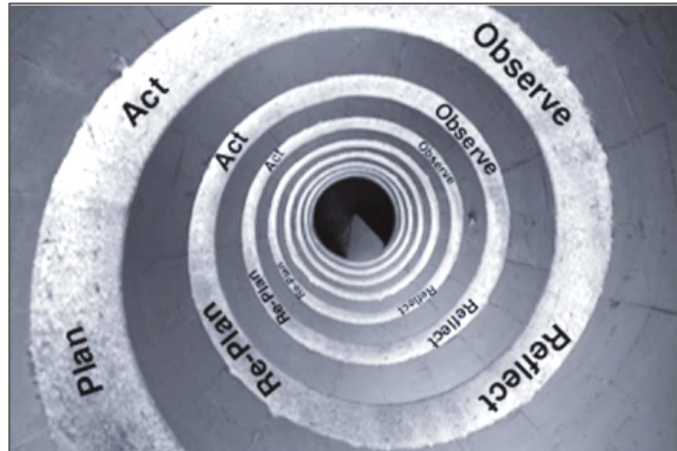

Figure 1. The action research spiral (Kemmis et al., 2016)

The CAR was conducted in two cycles, with three meetings each. If the first cycle showed no progress, a second cycle was conducted to address weaknesses. If significant improvement occurred in the second cycle, further cycles were not necessary. The research subjects were 28 students of Informatics Management students on their third semester at Piksi Input Serang Polytechnic. Convenience sampling was used to select the 28 students participating in the study. This non-probability sampling method involves choosing participants who are readily available and willing to take part in the research.

The steps in Action Research included planning, acting, observing, and reflecting (Kemmis et al., 2016). During the planning phase, problems were identified through pre-observation, and a plan was developed to address these issues, involving the determination of teaching strategy, topic, time, lesson plan, observation sheets, and scoring techniques. Next, the acting phase involved implementing the planned strategy, topic, and lesson plan in the classroom. Subsequently, during the observing phase, data on changes in practices during the teaching-learning process were collected, with observers recording classroom activities and noting strengths and weaknesses. Finally, the reflecting phase involved analyzing and interpreting the observation data to evaluate the teaching-learning process, thereby informing improvements for the next cycle.

RESULTS

This study focused on enhancing the reading comprehension skills of third-semester Informatics Management students through the use of the Grammarian Android Game. Conducted between January 19 and February 9, 2024, it involved 28 students and followed a structured methodology encompassing a pre-cycle test and two cycles of instruction and evaluation. Figure 2 below describes the result of test in each cycle.
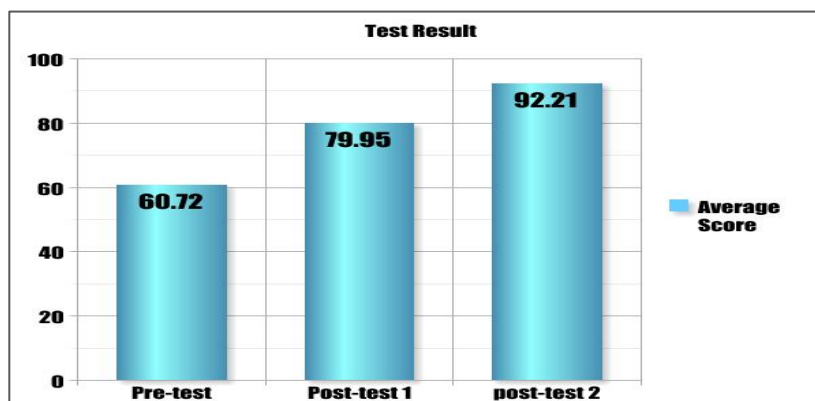
Figure 2. The Result of Tests in Each Cycle

1. Pre-Cycle

The pre-cycle was designed to assess the students' initial reading comprehension abilities. The researcher gave pre-test to know the real situation of students' reading comprehension skill. The test was in the form of long narrative text and the questions were in essay form which consisted of 10 questions. The pre-test results revealed significant challenges, with the average score being 60.72. This indicated that the majority of students were struggling to meet the minimal score required for the English subject. The researcher also found that there were some students who did not answer the question. It indicated their inability to comprehend the long narrative text was the most difficult for them. Observations during this phase showed that students heavily relied on dictionaries, experienced confusion, and had difficulty answering comprehension questions, highlighting the need for an innovative instructional approach.

2. Cycle One

In the first cycle, the researcher introduced the Grammarian Android Game as a core teaching tool. Lesson plans were meticulously crafted for two sessions, each lasting 2 x 50 minutes, focusing on narrative texts. The instructional process was divided into three main activities: previewing, playing, and post-playing.

During the previewing phase, the researcher connected the students' prior knowledge to the game content to stimulate curiosity and set the stage for learning. In the playing phase, students engaged with the game, which was paused periodically to discuss key points and difficult vocabulary, ensuring comprehension at each step. In the post-playing phase, students worked in groups to write summaries and retell the game's story, reinforcing their understanding and ability to articulate the narrative. Despite these structured activities, the first cycle revealed that students often needed multiple interactions with the game to fully grasp the content. Finally, after conducting and guiding the students in reading comprehension instruction using the game, the researcher gave pos-test. The post-test consisted of 15 essay questions. The post-test results showed an average score increase to 79.95, yet 40% of the students still fell below the minimal score required. After collecting and analyzing the data from the tests and observations, the researcher made several reflections on the activities. Initially, students responded enthusiastically to questions related to the game, but struggled to understand it when played only once. Consequently, the researcher replayed and paused the game at various points to ensure comprehension. In the

next cycle, the game was paused midway to check students' understanding, especially for those in the back rows.

Additionally, many students faced vocabulary challenges, which hindered their complete comprehension of the game's storyline. To address this, the researcher allowed students to mark information from the game and discussed difficult vocabulary. Furthermore, students in the back rows lost focus during the lessons, prompting the researcher to pay more attention to them and shift from group work to pair work for better efficiency and control. Despite these efforts, test results indicated that many students still struggled with text comprehension and incomplete answers and it was considered the most difficult for the students. These reflections led to improvements in teaching methods to enhance student engagement and comprehension in the next cycle. This indicated the necessity for further refinement in the instructional approach.

3. Cycle Two

Reflecting on the first cycle's outcomes, the second cycle incorporated adjustments to address observed challenges. The lesson plans and activities were revised to enhance interactivity and focus more intensively on vocabulary and comprehension checks. During the previewing stage, questions were asked to link the game content with students' experiences, enhancing relevance and engagement. In the playing stage, the game was paused more frequently to discuss and clarify content, with an emphasis on difficult vocabulary and key narrative elements. The post-playing activities were designed to be more collaborative, with students working in pairs to share interpretations and reinforce their understanding.

The results from the second cycle showed substantial improvement. At the final session, the post-test was given. The post-test consisted of 15 essay questions. The average post-test score increased to 92.21, surpassing the minimal score required. With the adjustments made, in cycle two, the researcher improved the teaching approach by initially playing the game and pausing it midway to ask students about the storyline so far, ensuring that all students, including those in the back, could hear and understand the game clearly. Enhanced vocabulary support was provided by allowing students to mark important information and discussing vocabulary in context, which helped them better understand the narrative and the new words used in the game. The researcher also paid closer attention to students in the back rows to maintain their focus and engagement. Additionally, instead of larger groups, students were instructed to work in pairs, making the sessions more efficient and manageable, and ensuring that each student could participate actively and receive individual attention. These changes collectively led to better comprehension and higher student engagement.

DISCUSSION

The research demonstrated a clear progression in the students' reading comprehension abilities through the integration of the Grammarian Android Game. The iterative process of planning, acting, observing, and reflecting facilitated continuous improvement and adaptation of teaching methods.

1. Improvement in Reading Comprehension

The progression from the pre-cycle to the second cycle was evident in the students' scores, which increased from an average of 60.72 to 92.21. This significant improvement highlighted the effectiveness of using the Grammarian Android Game as a teaching tool. The game's interactive nature and engaging content made learning more enjoyable and effective, helping students better understand and retain the material (Davis et al., 2018). Initially, students struggled with vocabulary comprehension within narrative texts, but the game's contextual usage of words and interactive gameplay helped them learn and retain new vocabulary more effectively, leading to marked improvement in understanding and using new words in context. The interactive storytelling required students to pay close attention to the narrative to advance, which improved their ability to identify the main idea and supporting details, distinguishing between essential and non-essential information. The game's design included scenarios for making inferences based on given information, helping students develop critical thinking skills and make logical connections, as evidenced by their improved test scores. Continuous interaction with the game's narrative and comprehension questions also enhanced students' text analysis skills.

2. Enhanced Engagement and Understanding

The introduction of the Grammarian Android Game positively impacted student engagement. Observations showed that students were more active and interested in the learning process when the game was used. The interactive elements and visual aids of the game helped maintain their attention and facilitated a deeper understanding of the material. The familiar and relatable content in the game further contributed to their enthusiasm and participation (Pateşan et al., 2018), making the learning experience more relevant and enjoyable.

3. Challenges and Adjustments

The first cycle brought to light several challenges, particularly in maintaining student interest and ensuring comprehension of difficult vocabulary. These issues were addressed in the second cycle through more interactive discussions and a greater focus on vocabulary building. The iterative approach allowed for continuous refinement of teaching strategies, leading to more effective learning outcomes.

4. Effectiveness of the Grammarian Android Game

The research concluded that the Grammarian Android Game was a highly effective tool for teaching reading comprehension. It not only improved students' comprehension scores but also made the learning process more enjoyable and engaging. The game's interactive and visually appealing format helped students grasp complex concepts and retain information more effectively (Shirinova, 2018).

In summary, this study demonstrated that integrating digital tools like the Grammarian Android Game into the curriculum can significantly enhance students' reading comprehension skills. This approach not only meets educational standards but also fosters a more dynamic and interactive learning environment. The findings suggest that educators should consider incorporating similar digital tools and interactive methods to improve student engagement and learning outcomes in various subjects (Liu & Moeller, 2019).

CONCLUSION

Based on the observations in both cycle one and cycle two, most students appeared happy and adequately understood the material explained by the instructor while learning through the Grammarian Android Game. This was evident during the observations, as students were able to practice and answer questions well. Additionally, they felt enthusiastic during class, remaining alert and engaged because the game demonstrated how expressions and phrases were used. This indicates that the use of the Grammarian Android Game could assist students in practicing their reading comprehension skills. It can be concluded that this research was successful because 100% of the students improved their reading comprehension skills. In other words, the Grammarian Android Game is an effective and useful tool for teaching reading comprehension.

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