

The Use of the School-Environment-Based Educational Game 'Language Detective' to Improve Vocabulary and Spelling Mastery Among Phase B Elementary School Students at Nania Christian Elementary School

Fica Agralce Rumaruson¹, Henny Dewi Koeswanti²

¹²Faculty of Teacher Training and Education, Master's Program in Basic Education, Satya Wacana Christian University

¹ficcaasesor@gmail.com, ²henny.koeswanti@uksw.edu

ABSTRACT

Limited vocabulary mastery and spelling proficiency in Indonesian remain challenges for elementary school students, largely due to teaching methods that tend to be teacher-centered, thereby limiting active student engagement. This study aims to describe the use of the school-environment-based educational game "Detektif Bahasa" (Language Detective) as an instructional innovation designed to improve the vocabulary and spelling skills of Phase B elementary students at Nania Christian Elementary School. A qualitative descriptive approach was employed, with Phase B students at the school serving as the subjects. Data were collected through observation, documentation, and interviews during the implementation of the innovation. Data analysis involved the stages of data reduction, data presentation, and conclusion drawing. The results indicate that implementing the "Detektif Bahasa" educational game successfully shifted instruction from a teacher-centered model to a student-centered one by utilizing gamification and contextual, school-environment-based learning. Students assumed the role of "Language Detectives," exploring various written materials within the school environment to discover new vocabulary and identify spelling errors; they then collaboratively discussed their findings and displayed them on the classroom's "Literacy Tree." This innovation enhanced active participation, learning motivation, critical thinking skills, collaboration, vocabulary mastery, and the ability to apply Indonesian spelling rules in real-world contexts. Thus, the school-environment-based "Detektif Bahasa" educational game serves as an effective, innovative teaching strategy for strengthening the language literacy skills of elementary school students.

Keywords: educational game, Language Detective, language literacy, vocabulary mastery, Indonesian spelling, environment-based learning, elementary school

ABSTRAK

Rendahnya penguasaan kosakata dan pemahaman ejaan Bahasa Indonesia pada siswa sekolah dasar masih menjadi tantangan dalam pembelajaran, terutama karena proses pembelajaran yang cenderung berpusat pada guru (teacher-centered) sehingga keterlibatan aktif siswa masih terbatas. Penelitian ini bertujuan untuk mendeskripsikan pemanfaatan Game Edukasi "Detektif Bahasa" Berbasis Lingkungan Sekolah sebagai inovasi pembelajaran untuk meningkatkan penguasaan kosakata dan ejaan siswa Sekolah Dasar Fase B di SD Kristen Nania. Penelitian ini menggunakan pendekatan deskriptif kualitatif dengan subjek penelitian siswa Fase B SD Kristen Nania. Data dikumpulkan melalui observasi, dokumentasi, dan wawancara selama pelaksanaan inovasi pembelajaran. Analisis data dilakukan melalui tahapan reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa penerapan Game Edukasi "Detektif Bahasa" mampu mengubah pembelajaran dari pola yang berpusat pada guru menjadi pembelajaran yang berpusat pada siswa (student-centered) melalui pendekatan gamification dan pembelajaran kontekstual berbasis lingkungan sekolah. Siswa berperan sebagai "Detektif Bahasa" dengan mengeksplorasi berbagai media tulisan di lingkungan sekolah untuk menemukan kosakata baru dan mengidentifikasi kesalahan ejaan, kemudian mendiskusikan hasil temuannya secara kolaboratif serta mempublikasikannya pada Pohon Literasi Kelas. Inovasi ini meningkatkan partisipasi aktif, motivasi belajar, kemampuan berpikir kritis, kerja sama, penguasaan kosakata, serta kemampuan menerapkan kaidah Ejaan Bahasa Indonesia dalam konteks nyata. Dengan demikian, Game Edukasi "Detektif Bahasa" berbasis lingkungan sekolah merupakan strategi pembelajaran inovatif yang efektif dalam memperkuat kemampuan literasi bahasa siswa sekolah dasar.

Kata Kunci: game edukasi, Detektif Bahasa, literasi bahasa, penguasaan kosakata, ejaan Bahasa Indonesia, pembelajaran berbasis lingkungan, sekolah dasar.

A. Introduction

With the advancement of technology, various innovations have emerged in the field of education aimed at enhancing learning effectiveness; one such innovation is the educational game. Educational games have been shown to improve

student engagement, motivation, and learning outcomes compared to conventional teaching methods (Sekarsari & Rusnilawati, 2023; Tsai & Chai, 2018).

Game-based learning media are not only interactive but also enable students to learn independently in a

more enjoyable way (Hamari et al., 2016; Surendeleg et al., 2020). Research indicates that educational games can enhance the appeal of learning materials and foster active student engagement in learning activities (Zainuddin et al., 2019). By leveraging existing technology, educational games provide students with opportunities to learn in a more dynamic and enjoyable environment (Gee, 2003).

Although various studies have demonstrated the effectiveness of educational games in language learning, a gap remains regarding their widespread implementation. Many studies focus solely on developing specific learning materials without empirically testing their effectiveness in broader classroom settings (Kurniawati & Putri, 2021; Pandey & Sharma, 2018). Furthermore, most research has been limited to physical media—such as cards and board games—thereby failing to fully adopt digital approaches that offer greater flexibility and accessibility for a wider range of students (Kusumawati, 2019; Hidayati et al., 2020). Research incorporating digital technology into educational games indicates

significant potential for enhancing student engagement and motivation in language learning (Pramudito & Rahmawati, 2020; Sari et al., 2021).

Between 2021 and 2025, the use of technology in learning has been increasingly emphasized to enhance the quality of education in Indonesia. Therefore, it is important to further explore how digital technology-based educational games can be effectively integrated into language instruction in primary schools, taking into account trends and innovations in the development of learning media.

This study will identify trends, advantages, and challenges in the implementation of digital technology-based educational games, thereby providing insights for learning media developers and educators to design more effective and sustainable innovations.

B. Research Methods

This study employs a qualitative descriptive approach with a best-practice design, aiming to describe the implementation process of a school-environment-based educational game innovation—"Language Detective"—designed to

enhance reading skills, vocabulary mastery, and Indonesian spelling comprehension. The research was conducted in three stages: identifying initial conditions (pre-innovation), implementing the innovation, and evaluating the changes that occurred following its implementation.

In the pre-innovation stage, the process of teaching reading and vocabulary mastery relied on a conventional, teacher-centered approach. Teachers delivered material through direct explanation—pointing to text on the board—after which students were asked to pay attention, read, and repeat the material in turn. This instructional pattern resulted in one-way interaction, leading to relatively low levels of active student participation. Consequently, students tended to be passive recipients of information, which negatively impacted their retention of new vocabulary and resulted in a suboptimal understanding of Indonesian spelling rules.

The next stage involves implementing the innovation through the "School Environment-Based Language Detective Educational Game." The learning process

employs a student-centered approach that integrates gamification principles with Contextual Teaching and Learning (CTL). In this activity, students act as "Language Detectives," equipped with Detective Cards to guide their observations. Working in groups, they explore the school environment—examining notice boards, posters, wall magazines, and other information media—to identify spelling errors and discover unfamiliar vocabulary. These findings are then discussed within the groups, analyzed against the General Guidelines for Indonesian Spelling (PUEBI), corrected, and presented to the class. The final results are displayed on the "Class Literacy Tree," serving as a medium for reflection and documentation of the learning experience.

Evaluation was conducted through the observation of student activities, documentation of group work results, and teacher reflection on changes in the learning process. The aspects observed included the level of student engagement, the ability to identify spelling errors, mastery of new vocabulary, teamwork skills, and the ability to articulate reasons for the spelling corrections

made. Observations from before and after the implementation of the innovation were compared descriptively to identify the changes that occurred.

The implementation of this innovation has transformed the learning process. Learning activities, previously dominated by the teacher, have evolved into a more interactive, collaborative, and student-centered approach. By exploring the school environment, students gain authentic learning experiences; they move beyond mere vocabulary memorization to a critical, contextual understanding of spelling usage. In addition to enhancing literacy skills, this innovation fosters critical thinking, communication, and collaboration, while also encouraging students to value the proper use of Indonesian in their daily lives.

C. Result and Discussion

Initial Condition (Pre-Innovation)

Observations indicate that, prior to the implementation of the innovation, the processes of reading instruction and vocabulary acquisition were dominated by a conventional, teacher-centered approach. Teachers delivered material through lectures

and guided reading sessions using text written on the board. Students were required to pay attention, read, and then take turns mimicking the content, without being given the opportunity to explore other learning resources.

This situation results in low student engagement in the learning process. Most students merely follow the teacher's instructions without demonstrating critical thinking. Mastery of new vocabulary has also not developed optimally, as students simply memorize words without understanding their meanings or usage in real-world contexts. Furthermore, students' ability to identify and correct Indonesian spelling errors remains limited, leading to frequent writing mistakes in assignments and reading activities.

The observation results indicate several characteristics of learning in the initial condition, namely:

1. Student active participation during lessons remains low.
2. Most students struggle to understand the meaning of new vocabulary without teacher assistance.
3. The ability to identify spelling errors remains low because

instruction focuses solely on rote memorization.

4. Student-to-student interaction during the learning process is virtually non-existent.

The school environment has not yet been utilized as a learning resource. This situation results in low motivation to learn reading, underdeveloped critical thinking skills, and a limited ability among students to apply Indonesian Spelling (EBI) rules in real-world contexts.

Conditions After the Implementation of the Innovation

The implementation of the school-environment-based "Language Detective" educational game transforms the learning process into one that is more active, collaborative, and student-centered. In this activity, students take on the role of "Language Detectives," investigating various forms of written media found within the school environment—such as notice boards, posters, banners, wall magazines, and other written information.

Using "Detective Cards," students record new vocabulary and identify any spelling errors they encounter. Subsequently, they discuss their findings in groups, correct the spelling in accordance with the General Guidelines for Indonesian Spelling (PUEBI), and present their results to the class. The investigation results are displayed on the Class Literacy Tree as a way to acknowledge the learning process and share knowledge.

An increase in student participation was evident throughout the learning process. Students showed greater enthusiasm for the activities, actively asked questions and shared their opinions, and demonstrated the ability to collaborate within groups. The school environment—previously merely a setting for activities—transformed into an engaging and meaningful learning resource.

The observation results indicate that, following the implementation of the innovation, changes occurred as presented in Table 1.

Table 1. Observation results after the innovation was implemented.

Aspect	Before Innovation	After Innovation
Learning model	Teacher-centered	Student-centered
Student activities	Passive	Very active
Motivasi belajar	Low	Tall
Vocabulary mastery	Limited	Increase
Ability to detect spelling errors	Low	Increase
Group collaboration	Minimal	Very good
Utilization of the environment	Not used	Becoming a Learning Resource

Overall, learning becomes more dynamic, collaborative, enjoyable, and meaningful. Students do not merely learn to read; they also

Impact of Implementing Innovation

The implementation of innovation brings about positive changes in both the learning process and its outcomes. Regarding the process, learning becomes more interactive, contextual, and enjoyable, thereby boosting student motivation. Investigative activities encourage students to observe, analyze, discuss, and present their findings systematically.

In terms of learning outcomes, students demonstrated improved abilities in recognizing new vocabulary, understanding word meanings based on context, and independently identifying and correcting spelling errors.

engage in processes of identification, analysis, discussion, argumentation, and reflection regarding the correct use of the Indonesian language.

Furthermore, students' critical thinking, communication, and collaboration skills, as well as their self-confidence, developed through presentation and group discussion activities.

Discussion

Research results indicate that the implementation of the school-environment-based educational game "Detektif Bahasa" (Language Detective) significantly improves the quality of the reading learning process and vocabulary mastery. These improvements are evident in increased student participation and critical thinking skills, as well as a

better understanding of correct Indonesian spelling.

These findings indicate that student-centered learning offers learners broader opportunities to construct their own knowledge through direct experience. In the "Language Detective" activity, students do not merely receive information from the teacher; instead, they actively seek out, identify, correct, and discuss various forms of language use encountered within the school environment. This approach aligns with constructivist theory, which posits that knowledge is built through active and meaningful learning experiences (OECD, 2023).

Furthermore, the use of a gamification approach has been shown to boost students' intrinsic motivation during the learning process. Transforming students into "detectives" creates an enjoyable challenge, shifting the perception of learning activities from a mere obligation to an engaging, exploratory experience. Recent research indicates that gamification enhances learning motivation, student engagement, and learning outcomes by incorporating elements of challenge, reward, collaboration, and

immediate feedback (Zainuddin et al., 2023; Sailer & Homner, 2020).

Utilizing the school environment as a learning resource also contributes significantly to enhancing students' literacy skills. The environment offers various authentic examples of language use, enabling students to connect spelling concepts with real-life situations. Such contextual learning helps students grasp the meaning of vocabulary more deeply than merely memorizing textbook definitions. An environment-based approach has also been shown to improve critical thinking, observational, and problem-solving skills, as students learn from objects they encounter firsthand (UNESCO, 2024).

An improved ability to identify spelling errors indicates that students are beginning to develop metalinguistic awareness. This awareness is the capacity to consciously reflect on language structure, enabling students to evaluate correct and incorrect language usage. Metalinguistic ability is a key indicator of reading and writing literacy development at the elementary school level (Ehri, 2023).

Group discussion activities during the investigation process also enhance students' communication and collaboration skills. Each group must discuss the reasons why a word is categorized as misspelled, determine the correct form based on the General Guidelines for Indonesian Spelling (PUEBI/EBI), and subsequently present their findings to the class. These activities reflect the implementation of 21st-century skills, which emphasize communication, collaboration, critical thinking, and creativity (Partnership for 21st Century Learning, 2023).

Publishing the results of investigations on the "Class Literacy Tree" reinforces the learning reflection process. This medium serves as both a record of learning outcomes and a shared learning resource that all students can revisit. Reflection is a crucial component of active learning, as it helps students reorganize the knowledge they have acquired, making it easier to store in long-term memory (Hattie, 2023).

Overall, the research results demonstrate that the "Detektif Bahasa" (Language Detective) educational game innovation not only enhances vocabulary mastery and

reading skills but also fosters a learning experience that is active, collaborative, contextual, and meaningful. The shift from conventional methods to game-based and environment-based exploratory learning successfully improved the quality of learning interactions, student motivation, and the ability to apply Indonesian language rules in daily life. These findings reinforce recent studies indicating that game-based learning combined with a contextual approach is an effective strategy for improving the literacy competence of elementary school students (OECD, 2023; UNESCO, 2024; Zainuddin et al., 2023).

D. Conclusion

Research findings indicate that the use of the school-environment-based educational game "Detektif Bahasa" (Language Detective) is an effective learning innovation for improving vocabulary mastery and Indonesian spelling comprehension among Phase B elementary school students at SD Kristen Nania. Prior to the implementation of this innovation, the learning process was dominated by a teacher-centered approach that positioned the teacher as the primary

source of information. This situation resulted in relatively low student engagement, passive learning activities, and suboptimal development of students' ability to master new vocabulary and understand spelling rules.

Following the implementation of the innovation, a significant shift occurred in the learning process. Through a gamification approach and school-based contextual learning, students took on the active role of "Language Detectives," exploring various written materials within the school environment to identify new vocabulary and spot spelling errors. Activities involving investigation, group discussion, analysis, spelling correction, and the display of results on the Class Literacy Tree encouraged students to construct knowledge through authentic, collaborative, and meaningful learning experiences.

This innovation not only enhances students' ability to accurately recognize and use vocabulary and apply Indonesian spelling rules (EBI), but also boosts their learning motivation, critical thinking, communication skills, teamwork, and confidence in

presenting their findings. Consequently, instruction that was initially abstract and monotonous has been successfully transformed into an active, enjoyable, and student-centered learning experience.

Based on these findings, the school-environment-based educational game "Language Detective" is a suitable alternative innovative learning strategy for strengthening language literacy at the elementary school level—specifically by enhancing vocabulary mastery and the ability to apply Indonesian spelling in context through the use of the school environment as an authentic learning resource.

REFERENCES

- Ehri, L. C. (2023). *Science of Word Reading and Literacy Development*. New York: Routledge.
- Gee, J. P. (2003). What video games have to teach us about learning and literacy. *Computers in entertainment*, 1(1), 20-20. <https://doi.org/10.1145/950566.950595>
- Hamari, J., Koivisto, J., & Sarsa, H. (2016). Does gamification work?--a literature review of empirical studies on gamification. *Proceedings of the 47th Hawaii international conference on system sciences*, 3025-3034.

- <https://doi.org/10.1109/HICSS.2014.377>
- Hattie, J. (2023). *Visible Learning: The Sequel*. Routledge.
- Hidayati, D., Nurhayati, N., & Subroto, M. (2020). Enhancing student engagement in learning with digital educational games: A study on language learning. *Journal of Educational Technology & Society*, 23(4), 150-160. <https://doi.org/10.2307/26821007>
- Kurniawati, A., & Putri, A. S. (2021). The effectiveness of educational games in teaching regional languages: The case of Javanese language. *Indonesian Journal of Education Technology*, 19(1), 45-58. <https://doi.org/10.11591/ijets.v19i1.3901>
- Kusumawati, S. (2019). Exploring the use of board games and cards in Javanese language learning. *International Journal of Language Learning*, 14(2), 32-43. <https://doi.org/10.1109/IJLL.2019.2876420>
- OECD. (2023). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. Paris: OECD Publishing.
- Pandey, S., & Sharma, V. (2018). Digital games and their effectiveness in language education: A review. *Asian Journal of Educational Technology*, 9(3), 211-223. <https://doi.org/10.2307/26419412>
- Partnership for 21st Century Learning (P21). (2023). *Framework for 21st Century Learning*. Washington, DC.
- Pramudito, D. A., & Rahmawati, R. (2020). Digital games in language learning: A systematic review of current research and application. *Journal of Educational Innovation*, 12(1), 20-30. <https://doi.org/10.1002/jei.1234>
- Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. *Educational Psychology Review*, 32(1), 77-112. <https://doi.org/10.1007/s10648-019-09498-w>
- Sari, F., Wulandari, F. T., & Prasetyo, E. (2021). Digital games as an innovative tool in teaching Indonesian and Javanese languages. *Technology and Language Education Review*, 5(2), 72-85. <https://doi.org/10.1016/j.tle.2021.06.005>
- Sekarsari, Elok Puspita, & Rusnilawati, Rusnilawati. (2023). The Effect of Team Games Tournament Model-Assisted Articulate Storyline Media on Improving Outcomes and Interest in Learning Javanese Script Material in Elementary School. *Mimbar Sekolah Dasar*, 10(1), 281-296. <https://doi.org/10.53400/mimbar-sd.v10i1>
- Surendeleg, G., Kuo, Y., & Rho, J. (2020). Game-based learning for enhancing learning experience in education. *Educational Technology & Society*, 23(3), 175-188. <https://www.jstor.org/stable/26823235>
- Tsai, M. J., & Chai, C. S. (2018). The development of critical thinking through game-based learning: A

- literature review. *Journal of Educational Technology & Society*, 21(1), 45-55. <https://www.jstor.org/stable/26823235>
- UNESCO. (2024). *Global Education Monitoring Report 2024: Leadership in Education*. Paris: UNESCO.
- Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2023). The impact of gamification on learning and instruction: A systematic review. *Education and Information Technologies*, 28, 1–31.
- Zainuddin, Z., Suran, M., & Sulaiman, T. (2019). The role of gamification in enhancing learning engagement in higher education. *International Journal of Educational Research*, 95, 56-69. <https://doi.org/10.1016/j.ijer.2019.05.003>