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Microlearning Media for Language Literacy : A Learning Innovation for Elementary School Students

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Abstract: This study aims to develop and test the effectiveness of microlearning-based instructional media in improving the language literacy skills of elementary school students. The microlearning media developed consists of short videos using a chunk-based approach that includes pre-learning, core, and post-learning activities. The study employed the research and development with ADDIE model, consisting of five stages: analysis, design, development, implementation, and evaluation. The instruments used included surveys, interviews, and observations, while data analysis techniques involved quantitative analysis (pretest and posttest) and qualitative analysis from interviews and observations. Validation was carried out by media and education experts, followed by revisions based on the feedback provided. The implementation involved 60 fourth and fifth-grade students at elementary schools for Indonesian language lessons. Evaluation results showed an average increase of 34.35% in students' language literacy skills after using the media. Students also gave positive feedback on the clarity and presentation of the materials through the microlearning videos. Based on these results, microlearning media can be considered an effective tool for improving students' language literacy, reading skills, reading comprehension, writing skills, vocabulary mastery, and sentence construction.

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Introduction

The low PISA (Programme for International Student Assessment) scores in Indonesia, especially at the elementary school level, can be traced to various factors related to the education system and learning processes. One of the main causes is the inequality in education in Indonesia, which greatly affects the quality of education in underdeveloped, frontier, and outermost regions (3T). In these areas, there is often a lack of qualified teachers and minimal use of effective instructional media, contributing to the disparity in educational quality (Saputra, 2023). This has led to low literacy and numeracy skills among students, as reflected in the PISA results, which show Indonesia ranking low compared to other countries (Khaerawati, 2023; Suryanti, 2023).

The curriculum applied in Indonesia is also a key factor influencing PISA results. Many of the topics assessed in PISA are not covered in the current curriculum, leaving students inadequately prepared for the exam (Safrudiannur, 2022). For example, the transition from the 2006 Curriculum to the 2013 Curriculum aimed to improve students' PISA performance, but its implementation still faces many challenges (Safrudiannur, 2022). Furthermore, teachers' understanding of PISA and how to teach relevant material is still quite low, impacting the quality of classroom instruction (Ilhami, 2024).

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The quality of classroom learning is also affected by the teaching methods used. Many students in Indonesia still tend to learn by memorization without deeply understanding the concepts, which results in poor critical and analytical thinking skills (Lestari & Annizar, 2020). Research shows that Indonesian students have very low critical thinking abilities, as reflected in their PISA rankings (Lestari & Annizar, 2020). Moreover, the learning environment, such as inadequate educational facilities, also contributes to the poor quality of education (Ferdiana, 2023).

PISA (Programme for International Student Assessment) measures various aspects of literacy that are important for students, including mathematical literacy, scientific literacy, and reading literacy. In the context of PISA, mathematical literacy is defined as an individual's ability to use, understand, and interpret various forms of mathematics in real-life situations. This includes the ability to formulate, solve, and interpret problems involving mathematics (Almarashdi & Jarrah, 2022; Hendroanto et al., 2018; Munfarikhatin & Natsir, 2020). PISA also measures scientific literacy, which encompasses students' ability to understand and apply scientific concepts in relevant contexts, as well as the ability to evaluate and argue based on scientific evidence (Stacey, 2011). Additionally, reading literacy is measured through students' ability to comprehend, use, and analyze texts in various contexts. Reading literacy is not just the ability to read words but also to understand the meaning, structure, and purpose of the text (Hapsari, 2019). In this context, language literacy becomes very important, as it includes the ability to communicate effectively, both orally and in writing, as well as the ability to understand and produce texts in various genres and socio-cultural contexts (Reswari, 2022).

Language literacy, more specifically refers to an individual's ability to use language in various communication situations. This includes reading and writing skills, as well as speaking and listening abilities. In education, language literacy is crucial as it forms the foundation for learning in all subjects. Students with good language literacy tend to better understand lesson materials, participate in discussions, and express their ideas clearly (Anafiah, 2018). Therefore, developing language literacy in elementary schools is essential for supporting students' future academic success.

Language literacy issues among students are often a significant challenge in education, especially in countries with diverse education systems like Indonesia. Language literacy includes the ability to read, write, speak, and listen effectively in various contexts. Inadequate language literacy can hinder students' learning processes and negatively impact their overall academic performance (Sankaranarayanan et al., 2022). One increasingly popular approach is to address this issue microlearning.

Microlearning is a learning method that presents content in small, easily digestible pieces, allowing students to learn gradually and in short periods. This approach is designed to improve knowledge retention and make it easier for students to understand complex materials (Choudhary & Pandita, 2023; Sathiyaseelan, 2024). In the context of language literacy, microlearning can be used to deliver new vocabulary, sentence structures, and other communication skills in concise formats, such as short videos, infographics, or interactive quizzes (ALIAS, 2023; Nugraha et al., 2021).

The benefits of microlearning in improving language literacy are numerous. First, microlearning helps reduce cognitive load by presenting information in small chunks, so students do not feel overwhelmed (Choudhary & Pandita, 2023; McNeill & Fitch, 2022). Second, this method allows students to learn anytime and anywhere, providing greater flexibility in the learning process (Iqbal et al., 2021) . Moreover, microlearning can also

increase student engagement, as interactive content tends to be more interesting and motivating (Puah et al., 2021).

Research shows that students involved in microlearning programs exhibit significant improvements in their language literacy skills compared to traditional learning methods (Viendyasari, 2023). By utilizing modern technology, microlearning can be integrated into curricula to support more effective and efficient language literacy development in elementary and secondary schools (Dolasinski & Reynolds, 2020). The importance of research in developing microlearning media to enhance language literacy cannot be underestimated, especially in the context of modern education which increasingly relies on technology. Microlearning, which delivers content in small, digestible pieces, can be an effective solution for improving students' language literacy skills. Research indicates that the use of digital media in learning can improve students' multimodal literacy, which includes reading, writing, speaking, and listening skills (Kardika, 2023).

One of the main reasons why microlearning is effective in improving language literacy is its ability to reduce students' cognitive load. By presenting information in concise and focused formats, students can more easily understand and retain the material being taught (Sathiyaseelan, 2024). Additionally, microlearning allows students to learn independently and flexibly, which is crucial in today's education context where students often have busy schedules (Iqbal et al., 2021). Studies also show that students participating in microlearning programs experience significant improvements in their language literacy skills compared to traditional learning methods (Viendyasari, 2023). Furthermore, the development of microlearning media can be tailored to meet students' specific needs. For example, content can be designed to target specific skills in language literacy, such as vocabulary, grammar, or speaking skills (Novitasari, 2019). Thus, research in the development of microlearning media not only focuses on improving overall language literacy skills but also on achieving more specific and measurable learning objectives.

In this context, research on developing microlearning media for language literacy can make a significant contribution to improving the quality of education. By leveraging technology and innovative approaches, we can create more engaging and effective learning environments for students, which in turn can enhance their academic outcomes (Purwanto, 2024). The novelty of this research lies in the development and implementation of microlearning media specifically designed to enhance the language literacy skills of elementary school students. By utilizing a chunk-based approach through short videos, the research introduces an innovative method that addresses existing gaps in conventional teaching practices. The purpose of the research is to improve students' reading, writing, and comprehension skills by presenting learning materials in small, easily digestible segments. This approach not only aims to make learning more accessible and engaging for students but also seeks to provide an effective solution to the challenges of traditional teaching methods in fostering language literacy.

Research Method

This research uses the development research method (research and development) with a ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation (Aldoobie, 2015). Below is a detailed explanation of each stage in the context of this research:

1) Analysis: In this stage, researchers conduct a needs analysis to identify the existing issues in students' language literacy. This involves collecting data through surveys, interviews, and observations to understand the current level of students' language

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literacy and the challenges they face. Researchers also need to analyze the existing curriculum and determine the language literacy competencies that need to be improved.

2) Design: After the needs analysis is complete, researchers design appropriate microlearning media. This includes developing relevant content, selecting media formats (such as videos, infographics, or interactive modules), and designing activities that can increase student engagement. At this stage, it is important to consider the characteristics of the students and their learning styles to ensure that the developed media is well-received.
3) Development: In this stage, researchers develop the materials and microlearning media based on the design created. This includes content creation, video editing, and the development of digital platforms that will be used to deliver the materials. During this process, researchers also validate the content by involving subject matter and media experts to ensure that the materials developed are valid and effective.
4) Implementation: Once the microlearning media has been developed, the next stage is implementation. Researchers apply the media in a learning environment, either in the classroom or online. This involves training teachers and students on how to use the media effectively. Data collection during implementation is also important to evaluate how students interact with the media and whether they experience improvements in language literacy.
5) Evaluation: In the final stage, researchers conduct an evaluation to assess the effectiveness of the implemented microlearning media. This can be done through quantitative methods, such as pre-tests and post-tests, to measure students' language literacy improvement, as well as qualitative methods, such as interviews and observations, to gather feedback from students and teachers (Yusnidar & Syahri, 2022). The results of this evaluation will be used to revise and enhance the microlearning media in the future. The data analysis technique for the pre-test and post-test involved a comparative analysis to measure the improvement in students' language literacy skills after implementing the microlearning media. Pre-test scores were collected before the intervention, while post-test scores were obtained after the students completed the learning sessions using the microlearning videos. The average scores for each aspect of language literacy—such as reading skills, reading comprehension, writing skills, vocabulary mastery, and sentence composition—were calculated and compared. The percentage increase in scores was then computed to quantify the improvement in each aspect. This analysis demonstrated the effectiveness of the microlearning media, with the percentage improvement providing a clear measure of its impact. Based on the observed improvements, conclusions were drawn regarding the positive influence of the intervention on enhancing students' language literacy skills.

Results and Discussion

Procedure for Designing Microlearning-Based Video Materials in Developing Language Literacy for Elementary School Students

The procedure for designing microlearning-based video materials for elementary school students aims to improve their language literacy skills. This development process consists of several phases: the preparation phase, iterative design phase, and iterative development phase. In the preparation phase, researchers gather data through curriculum observations and interviews with teachers and students. The interviews reveal that no specific

teaching media are used for language literacy, and teachers still apply conventional, less interactive teaching methods. This causes students to struggle to understand the material provided, particularly in language literacy skills.

In the iterative design phase, the researchers begin designing three microlearning-based video materials that integrate several learning models such as Cooperative Learning, Task-Based Learning, and Experiential Learning. Each video is tailored to the needs of elementary school students and relevant topics to enhance language literacy. For example, in the first video, the material focuses on introducing basic vocabulary through cooperative activities, where students are invited to work together in constructing simple words and sentences. In the second video, students learn to understand simple texts through tasks that require them to apply vocabulary comprehension in broader contexts, while the third video emphasizes experiential learning through direct interaction with reading texts suited to the students' ability levels.

The iterative development phase involves creating prototypes of the three learning videos. Each video is divided into several sections according to the principles of microlearning, allowing students to study the material gradually and in a structured way. At this stage, the researchers conduct trials involving educational experts to assess the effectiveness of the developed media. Based on expert feedback, several revisions are made, particularly concerning simplifying language and improving visual and audio clarity to better suit elementary students' needs.

After completing the prototype development, the researchers implement the materials in the classroom and receive positive feedback from the students. They show high enthusiasm and provide feedback to further improve the video quality, such as clarifying the narrator's voice. A final evaluation is conducted to ensure that the learning media are effective in improving students' language literacy skills. Using a microlearning-based approach, these videos are designed to allow students to access the materials flexibly and interactively, enabling them to better understand and apply language literacy concepts in everyday life.

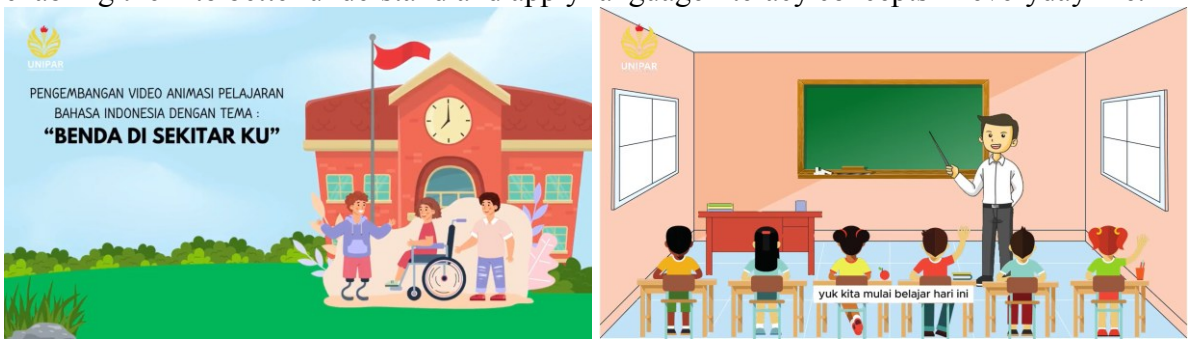

Figure 1. Microlearning Video

Validation Results of Microlearning Media for Improving Elementary School Students' Language Literacy

After designing the microlearning-based video prototypes to enhance elementary school students' language literacy, the next step is media validation. This validation was conducted by several educational experts, including media experts, language experts, and learning practitioners. The validation process aimed to evaluate various aspects of the media, such as visual quality, audio quality, learning content, appropriateness for the target age group, and the effectiveness of the teaching methods used.

Validation Assessment Aspects:

1) Visual Quality: Evaluates how clear and engaging the visual elements in the video are, and whether they effectively support literacy learning.

2) Audio Quality: Assesses the clarity of narration, sound quality, and the use of sound effects relevant to the learning content.
3) Learning Content: Examines whether the content aligns with the learning objectives, the difficulty level of the material, and its relevance to language literacy.
4) Suitability for Target Age Group: Reviews whether the language and visual content are appropriate for the comprehension level of elementary school students.
5) Learning Effectiveness: Measures how well the microlearning-based media supports students' learning in a flexible and efficient manner.

Table 1. Microlearning Media Validation Results

No	Assessment Aspects	Validator 1 (Media Expert)	Validator 2 (Language Expert)	Validator 3 (Learning Practitioner)	Average	Category
1	Visual Quality	4.5	4.0	4.3	4.27	Good
2	Audio Quality	4.0	4.2	4.0	4.07	Good
3	Learning Content	4.8	4.7	4.6	4.7	Very good
4	Suitability to Target Age	4.7	4.6	4.8	4.7	Very good
5	Learning Effectiveness	4.5	4.4	4.6	4.5	Very good
Total Average					4.45	Very good

Based on the validation results conducted by three experts, an average rating of 4.45 was obtained, which falls into the excellent category. Below is the explanation of each assessment aspect:

1) Visual Quality: The media received a good rating in the visual aspect, with an average score of 4.27. The validators suggested improving some visual elements, such as the font and background color, to make them more contrasting and easier for students to read.
2) Audio Quality: The audio aspect scored an average of 4.07. While the narration and sound quality were rated as sufficiently clear, the validators recommended enhancing the clarity of sound in certain parts of the video, especially during dialogues between characters.
3) Learning Content: The content was rated excellent, with an average of 4.7. The validators found that the material presented was relevant to elementary school students' language literacy and was systematically structured, starting from introductions to exercises that support understanding.
4) Suitability for the Target Age: Validators rated the language and visual content appropriate for the comprehension level of elementary school students, with an average score of 4.7. The language used was easy to understand, and the visual illustrations were highly engaging for the students.
5) Learning Effectiveness: The effectiveness of the learning approach also received an excellent rating, with an average score of 4.5. Validators agreed that the microlearning approach allowed students to learn gradually, which helped improve their understanding of the language literacy material.

Overall, this microlearning media was rated as excellent and ready to be used in the language literacy learning process in elementary schools, with a few minor improvements suggested by the validators

Implementation

After the validation and revision of the microlearning media were completed, the media was implemented in two classes with a total of 60 elementary school students. The implementation took place over two weeks with three sessions per week. The following are the steps of the implementation:

1) Introduction to Microlearning Media: The teacher introduced the students to how the microlearning videos would be part of the learning process. Students were taught how to access and use the videos as a learning tool.
2) Learning with Videos: Each student was given access to watch three videos designed using the microlearning concept. The videos were divided into several short sessions (chunks), including pre-activity, core activity, and post-activity.
3) Discussion and Practice: After watching the videos, students were asked to discuss the material presented in groups and complete exercises related to the material. The teacher facilitated the discussion and helped students understand the material.
4) Quizzes and Formative Assessment: At the end of each learning session, students were given quizzes to assess their understanding of the material. The quiz results were used to evaluate the impact of the media on students' language literacy skills.
5) Feedback Collection: At the end of the learning process, students were asked to provide feedback on the use of the media. They gave their opinions on the clarity of the videos, audio quality, and how much the videos helped them understand the material.

Evaluation

To evaluate the effectiveness of the microlearning media, a pretest was conducted before the implementation and a posttest was administered after the media was applied. The results of these two tests were compared to measure the improvement in students' language literacy skills. In addition, a student satisfaction survey was also conducted on the media.

Table 2. Pretest and Posttest Results

No	Aspects of Language Literacy	Pretest Average Score	Posttest Average Score	Increase (%)
1	Reading Skills	60	80	33.33%
2	Reading Comprehension	55	78	41.82%
3	Writing Skills	58	76	31.03%
4	Vocabulary Mastery	62	82	32.26%
5	Sentence Composition	59	79	33.90%
	Overall Average	**58.8**	**79**	**34.35%**

Based on the pretest and posttest results, it was observed that the use of microlearning media had a positive impact on improving the language literacy of elementary school students. The average pretest score before using the media was 58.8, and after using the media, it increased to 79. The overall average improvement reached 34.35%.

This study revealed several key findings regarding the improvement of students' language literacy skills after applying the microlearning media. The results showed that using microlearning media had a significant positive impact on various language skills, including reading skills, reading comprehension, writing skills, and vocabulary mastery.

1) Reading Skills: There was a 33.33% improvement in reading skills. This indicates that students demonstrated a better understanding after watching the videos, as the material was presented in easily digestible, small chunks. Previous research has shown that using interactive and segmented media can enhance student engagement

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and facilitate their understanding of information (Sathiyaseelan, 2024). Thus, microlearning media, which presents content in a concise and engaging format, can help students improve their reading skills.

2) Reading Comprehension: The most significant improvement was seen in reading comprehension, with a 41.82% increase. This shows that students found it easier to understand information from texts after receiving explanations through microlearning videos. Research by Sathiyaseelan (2024) suggests that microlearning modules can improve student learning outcomes, especially in complex and technical contexts, by reducing cognitive load and enhancing comprehension (Sathiyaseelan, 2024). This aligns with the results of this study, where microlearning videos served as an effective tool for enhancing students' reading comprehension.
3) Writing and Sentence Structuring Skills: Both aspects showed an improvement of over 30%, indicating that students were better able to construct sentences properly and write more structured compositions. Microlearning media that provides clear examples of sentences and writing structures can help students understand how to form correct and well-structured sentences. Research by Yusnidar and Syahri (2022) has shown that using interactive learning media can enhance students' communication and writing skills (Yusnidar & Syahri, 2022).
4) Vocabulary Mastery: With an increase of 32.26%, the use of microlearning media was proven to help students learn and master new vocabulary relevant to the material. Media that presents vocabulary in an engaging and interactive context can enhance vocabulary retention. Research by Yusnidar and Syahri (2022) also indicates that microlearning can help students effectively master new vocabulary (Yusnidar & Syahri, 2022).Overall, the results of this study demonstrate that the implementation of microlearning media has a significant positive impact on students' language literacy skills. By presenting material in a more digestible and engaging format, microlearning media can enhance reading skills, reading comprehension, writing skills, and vocabulary mastery. Therefore, the development and application of microlearning media in language learning is highly recommended to improve education quality and student learning outcomes.

Conclusion

Based on the results of the research and evaluation on the use of microlearning media to enhance language literacy in elementary school students, it can be concluded that this media has proven to be effective. The implementation of microlearning media showed a significant improvement in students' language literacy skills, particularly in reading skills, reading comprehension, writing skills, vocabulary mastery, and sentence construction. The overall average increase reached 34.35%, indicating that microlearning media had a positive impact on students' literacy abilities.

Additionally, students demonstrated high enthusiasm and provided positive feedback on the use of this media. The presentation of material in short video segments made it easier for students to understand and absorb the information, while also increasing their engagement in the learning process. Thus, microlearning media can be regarded as an innovative solution for language literacy education, especially for elementary school children, as it allows material to be presented effectively and in a way that aligns with their learning abilities. Proper implementation and support from teachers are essential to optimize student learning outcomes.

Recommendation

For future research, it is recommended to explore the long-term impact of microlearning on language literacy to assess whether improvements are sustained over time. Expanding the study to different age groups and subject areas would provide a broader understanding of its effectiveness. Additionally, comparing microlearning with other instructional methods could yield insights into its relative advantages. Researchers might also explore the integration of advanced technologies like AI or augmented reality to enhance student engagement. Adapting microlearning for diverse cultural or linguistic contexts and investigating its impact on rural or non-native learners is also crucial. Finally, future studies could examine how best to train teachers for effective microlearning implementation in classrooms.

Teachers are advised to integrate microlearning media into the learning process to improve students' language literacy. The use of short video-based media, accompanied by interactive activities, can help students understand the material more effectively, reduce cognitive load, and increase their engagement in learning. Teachers should also provide training to students on how to access and utilize this media independently, while regularly collecting feedback from students to enhance the quality of the learning materials. Additionally, teachers should continue to develop their skills in using learning technologies to create more engaging and flexible learning experiences.

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