



Development of Scratch-Based POEDU Digital Media Incorporating Children's Songs to Improve Fifth-Grade Students' Poetry Reading Skills

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Abstract: This study aims to develop a digital learning medium called POEDU (Poetry Education), assisted by children's songs and developed using Scratch, and to examine its feasibility and effectiveness in improving fifth-grade students' poetry reading skills at SDN 3 Kedu. The study employed a Research and Development (R&D) approach using the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The research subjects were 21 fifth-grade students, with a small-group trial involving 6 students and a large-group trial involving all 21 students. Data were collected through interviews, observations, expert validation questionnaires, and pretest–posttest assessments. Data analysis was conducted using descriptive qualitative and quantitative approaches, supported by the Shapiro–Wilk normality test, paired-samples t-test, and N-Gain analysis to evaluate the effectiveness of the developed media. The results showed that the POEDU media obtained an average expert validation score of 93.33%, indicating a highly feasible category. The paired-samples t-test results revealed a significance value of $p < 0.05$, demonstrating a significant improvement in students' poetry reading skills after using the media. Furthermore, the N-Gain scores were 0.5518 for the small-group trial and 0.4527 for the large-group trial, both categorized as moderate. In conclusion, Scratch-based POEDU digital media assisted by children's songs is highly feasible and effective for improving elementary school students' poetry reading skills. This study highlights the potential of technology integration in supporting innovative, interactive, and meaningful learning experiences in primary education.

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Introduction

Poetry constitutes an integral component of Indonesian language instruction at the elementary school level, as it supports the development of students' linguistic competence, aesthetic appreciation, emotional awareness, and creativity in expressing ideas both orally and in written form (Diplan, 2025). In poetry reading activities, students are not only required to comprehend textual meaning at a cognitive level but also to demonstrate expressive performance elements, including appropriate intonation, clear pronunciation, controlled voice projection, effective pausing, facial expression, gestures, and emotional delivery. This indicates that poetry reading involves a combination of cognitive understanding, affective engagement, and psychomotor performance skills (Latif et al., 2025).

The ability to read poetry effectively represents an important aspect of literary learning in elementary education. It contributes to the development of oral communication skills, builds students' confidence in performing before an audience, and fosters an appreciation of literary works. However, in practice, poetry reading instruction still



encounters several obstacles. A considerable number of students experience difficulties in mastering essential performance components such as articulation, intonation, pausing, expression, and emotional interpretation. As a result, their poetry performances tend to sound monotonous and lack communicative impact (Latif et al., 2025; Mufidah et al., 2022; Suma, 2020). This condition suggests that students require learning experiences that provide clear models accompanied by sufficient opportunities for guided and repeated practice.

One of the contributing factors to these challenges is the limited use of instructional media in the classroom. Poetry learning is often delivered through conventional methods, such as teacher explanations and reading assignments, without the support of demonstrative or interactive media. In contrast, poetry reading skills demand observable examples that learners can imitate and practice continuously. Previous studies have demonstrated that audio-visual digital media can facilitate students' understanding of expressive aspects in poetry performance by presenting concrete and demonstrative models (Mufidah et al., 2022; Nurfitri et al., 2025).

Alongside these issues, the rapid development of digital technology opens up opportunities to design more engaging and meaningful learning experiences. Elementary school students, who are generally at the concrete operational stage, tend to grasp concepts more effectively when learning involves visual, auditory, and interactive elements. The use of digital learning media that integrates multimedia components such as text, animation, audio, video, and interactive features has been shown to enhance students' motivation, participation, and conceptual understanding (Rasyid Julianto et al., 2025). Therefore, the integration of digital media into poetry instruction can serve as a strategic effort to improve learning quality.

An alternative approach that can be incorporated into poetry learning is the use of children's songs. Songs designed for children typically contain simple melodies, repetitive patterns, and easily memorized lyrics, making them suitable for elementary learners. These characteristics enable songs to function as effective instructional tools that deliver learning content in an enjoyable manner. From a pedagogical perspective, incorporating songs into instruction can support memory retention, maintain students' attention, and create a more interactive classroom atmosphere. Moreover, the rhythmic and repetitive nature of songs facilitates the gradual internalization of learning material through auditory processes. Prior research has indicated that integrating musical elements into instruction positively influences students' retention and comprehension of both procedural and conceptual knowledge (Indriani et al., 2023; Nur Safitri, 2022; Sari, 2024).

In this study, the children's song "Kalau Kau Suka Hati" was adapted as the basis for developing POEDU because it is familiar and easy for elementary school students to understand. The lyrics were modified to introduce key poetry reading elements, including pronunciation, intonation, volume, expression, pausing, gestures, and emotional interpretation. POEDU was then developed as a Scratch-based digital learning medium that integrates audio, animation, text, and interactive activities. Since children's songs naturally contain rhythm, intonation, pauses, and vocal stress that support expressive poetry reading, they can help students practice these skills more effectively. Combined with Scratch's interactive features, POEDU provides an engaging multimodal learning experience that encourages active participation and supports the improvement of students' poetry reading skills.

The selection of Scratch as the development platform is based on its capability to support interactive multimedia learning and its accessibility for elementary school users.



Scratch allows the integration of animation, sound, interactive controls, and visually appealing navigation, which can enhance student engagement during the learning process. Previous studies have shown that Scratch-based learning environments can promote active participation, encourage creativity, and improve students' understanding of learning materials (Belessova et al., 2024; García, 2024; Su et al., 2024). In addition, Scratch supports the creation of instructional media that are accessible, visually engaging, and adaptable to different learning contexts, including literature instruction.

Based on interviews with the fifth-grade homeroom teacher at SDN 3 Kedu is located in Temanggung Regency, Central Java Province, Indonesia, Indonesian language instruction was still primarily supported by textbooks and simple visual media, with limited use of innovative learning resources due to time constraints in media development. Interviews and classroom observations further revealed that these conventional approaches often led to students' boredom and difficulties in understanding poetry reading materials. The findings also showed that students' poetry reading skills remained relatively low, with only 6 out of 21 students meeting the minimum mastery criterion, while the majority experienced difficulties in pronunciation, intonation, pausing, expression, voice projection, gestures, and emotional interpretation, as well as low confidence when performing.

To address these challenges, this study introduces POEDU, a Scratch-based digital learning medium integrated with modified children's songs as a musical mnemonic strategy for poetry instruction. Unlike previous studies that mainly employed digital visualization media, flipbooks, or instructional videos, POEDU offers an interactive learning experience designed to strengthen students' understanding and performance skills through engaging practice activities. Therefore, this study aims to develop and evaluate the feasibility and effectiveness of POEDU in improving the poetry reading skills of fifth-grade students at SDN 3 Kedu, while contributing to the development of innovative and developmentally appropriate literary learning media for elementary education.

Research Method

This study employed a Research and Development (R&D) method aimed at developing and evaluating the feasibility and effectiveness of POEDU (Poetry Education) digital media assisted by children's songs using the Scratch web-based platform to improve the poetry reading skills of fifth-grade elementary school students. The research was conducted at SDN 3 Kedu, Temanggung Regency, Central Java Province, Indonesia, during the second semester of the 2025/2026 academic year. The implementation of the POEDU learning media was carried out over approximately two to three weeks through several instructional sessions, allowing students sufficient opportunities to practice and develop their poetry reading skills. Meanwhile, March 13–14, 2026, represented the period of pre-test and post-test data collection used to evaluate students' poetry reading performance. The subjects of this study were 21 fifth-grade students.

The media evaluation was carried out in two successive phases, namely a small-group trial and a large-group implementation. The small-group trial involved six students and was intended to examine the initial feasibility of the developed media, as well as to gather feedback related to its visual design, content quality, and ease of use. Following this stage, a large-group trial was conducted with all 21 fifth-grade students to determine the effectiveness of the media in enhancing students' poetry reading skills.

This study employed both qualitative and quantitative data collection within a Research and Development (R&D) framework. Qualitative data were obtained through

observation, interviews, and documentation involving teachers and students. Quantitative data were collected through expert validation questionnaires and students' pre-test and post-test scores. The validation was conducted by a subject matter expert and a media expert using a four-point Likert scale (1 = poor to 4 = excellent). The validation score was calculated as a percentage by comparing the obtained score with the maximum possible score. The data collection techniques consisted of observation, interviews, and documentation. Furthermore, this research adopted the ADDIE development model, which comprises five main stages: analysis, design, development, implementation, and evaluation (Almelhi, 2021). The design of the model is illustrated as follows:

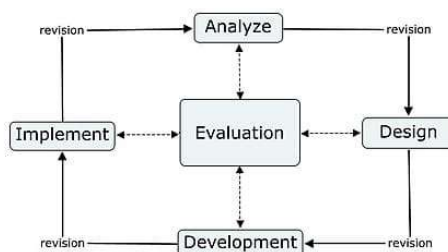


Figure 1. ADDIE Development Model Design

Based on the research procedure, the study was conducted through several stages, beginning with a pre-test in which students were asked to read a poem entitled “Guruku Pahlawanku” to determine their initial competency levels. This was followed by the implementation of the POEDU (Poetry Education) media assisted by children’s songs as the treatment. In the final stage, students were given a post-test by reading the same poem, “Guruku Pahlawanku,” to assess their poetry reading skills after the intervention. This procedure was carried out to enable the researcher to compare students’ performance before and after the use of the POEDU media. The assessment rubric used in the poetry reading test is presented as follows:

Table 1. Assessment Rubric

No	Assessment Criteria	Scoring Weight
1	Intonation	4
2	Voice Volume	4
3	Pausing Accuracy	4
4	Facial Expression	4
5	Pronunciation	4
6	Gesture	4
7	Fluency	4
8	Performance Confidence	4
9	Maximum Total Score	32

To determine whether the developed media is feasible for use, it is evaluated based on the following media feasibility criteria:

Table 2. Feasibility Criteria

Percentage (%)	Remarks
81% - 100%	Highly Feasible
61% - 80%	Feasible
41% - 60%	Moderately Feasible
21% - 40%	Less Feasible
0% - 20 %	Not Feasible



Quantitative data in this research were derived from students' pre-test and post-test results in poetry reading performance. These data were subsequently processed and analyzed to generate findings that are both valid and reliable. The analysis procedure began with a normality test to examine the distribution of the data. When the data met the assumption of normal distribution, hypothesis testing was carried out using a paired sample t-test. However, if the data were not normally distributed, a non-parametric alternative, namely the Wilcoxon signed-rank test, was applied. Furthermore, the extent of improvement in students' poetry reading ability was assessed using the N-Gain score as an indicator of the effectiveness of the developed learning media.

The normality test was employed to identify whether the dataset followed a normal distribution pattern. The decision was based on the obtained significance value (p-value). A significance value below 0.05 indicates that the data deviate from normal distribution, whereas a value above 0.05 suggests that the data are normally distributed.

Results and Discussion

The development of POEDU digital learning media based on Scratch was implemented following the ADDIE development model. This research was conducted until the stages of small-group trials and large-group testing. The findings from the development of the Scratch-based POEDU digital learning media are described as follows.

Analysis Stage

This phase was conducted to identify learning needs and the problems encountered in the field. Based on interviews carried out on January 19, 2026, with the fifth-grade homeroom teacher at SDN 3 Kedu, it was found that the use of instructional media was still limited to simple visual aids due to the teacher's limited time in developing more innovative media. Furthermore, the interview results indicated that students' poetry reading skills were still relatively low, as reflected in their difficulties with intonation, expression, pronunciation, pausing, fluency, and lack of self-confidence. Therefore, it is necessary to develop more interactive and engaging learning media to support the improvement of students' poetry reading skills.

Design Stage

This phase involved developing the conceptual framework of the instructional media based on the results of the needs analysis. At this stage, the researcher determined the theme of the media, namely poetry reading instruction presented in an interactive and engaging manner through the POEDU digital media based on the Scratch web platform. Furthermore, the researcher designed the main components of the media, which include learning materials, interactive quizzes, and educational songs to support the learning process.

The song design was carried out by adapting the melody of the children's song "*Kalau Kau Suka Hati*," which is familiar to students, while modifying the lyrics to incorporate key elements of poetry reading such as intonation, expression, pronunciation, pausing, and self-confidence. The use of this song is intended to facilitate students' understanding of the concepts and to enhance their engagement in the learning process.

In addition, the researcher designed the interface flow of the media, which consists of a main menu, a material page, a quiz page, and a song page. Each component was systematically structured to ensure ease of use for elementary school students and to provide an engaging, interactive learning experience that aligns with students' characteristics. At the development stage, POEDU (Poetry Education) was developed as a Scratch-based digital learning medium that integrates learning materials, quizzes, and interactive practice activities



supported by children's songs. The media can be accessed through <https://scratch.mit.edu/projects/1269062373>, allowing users to explore its main features, including poetry learning materials, comprehension quizzes, and practice activities. By combining visual, audio, and interactive elements, POEDU creates an engaging learning environment that supports the improvement of students' poetry reading skills.

Before field testing, the media was validated by experts. Based on their feedback, revisions were made to improve color selection, text readability, and the audio quality of the children's songs. These improvements resulted in a more engaging and effective learning medium for fifth-grade students.

Table 3. Revisions Based on Expert Validation

Aspect	Validator Suggestion	Revision Made
Visual Design	Use more attractive colors suitable for fifth-grade students	Revised the color scheme with brighter and more engaging colors
Text Display	Improve text readability	Increased font size and used clearer typography
Audio Quality	Improve the clarity of the children's songs audio	Adjusted audio volume and enhanced sound quality

The expert validation process provided valuable feedback for improving the POEDU media. Revisions included enhancing color selection, text readability, and audio quality before field testing, resulting in a more effective and user-friendly learning medium.



Figure 2. Main Interface



Figure 3. Menu Interface



Figure 4. Material Interface

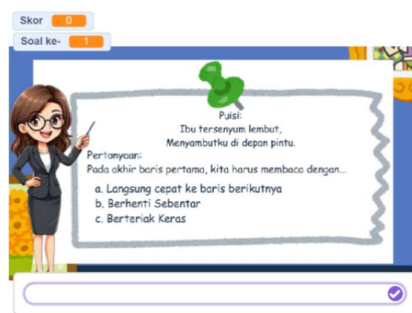


Figure 5. Quiz Interface



Figure 6. Children's Song Interface

The next development stage involves the product validation process conducted by subject matter experts and media experts. This validation aims to evaluate the feasibility of the content, language use, visual presentation, and technical aspects of the developed media. Feedback and suggestions from the experts are then utilized as a basis for revising and refining the product to ensure it meets the expected instructional standards.

Based on the assessment results, the validation conducted by the subject matter expert obtained a percentage of 98.33%, which falls into the “very feasible” category. Meanwhile, the validation results from the media expert showed a percentage of 88.33%, which is also categorized as “very feasible.” The summary of the evaluation results from both validators is presented in the following table.

Table 4. Expert Validator Assessment

No	Validator	Score	Maximum Score	Percentage (%)	Category
1	Subject Matter Expert	59	60	98,33%	Very Feasible
2	Media Expert	53	60	88,33%	Very Feasible
	Average	112	120	93,33%	Very Feasible

Referring to the results displayed in Table 4, the developed learning media achieved an average score of 93.33%, which falls within the “very feasible” category. The evaluation conducted by the subject matter expert resulted in a score of 98.33%, likewise indicating a very high level of feasibility. In addition, the assessment from the media expert produced a percentage of 88.33%, which is also classified as very feasible. These results suggest that the developed media is suitable for implementation in the learning process, with minor revisions recommended based on the feedback provided by the validators.

Implementation

The implementation stage involved the application of Scratch-based POEDU digital learning media assisted by children's songs in Grade V learning activities at SDN 3 Kedu



through small-group and large-group trials. The process began with a pretest to assess students' initial poetry reading skills, followed by learning activities using POEDU, which integrates instructional materials, interactive quizzes, and educational songs. The use of audio elements supported students' engagement and helped develop expressive aspects of poetry reading, such as intonation, pronunciation, and fluency, making the learning process more meaningful and contextual (Ningsi & Hartono, 2025; Yonanda et al., 2024).

During the implementation, students demonstrated active participation while exploring the media and completing interactive practice activities. This supports previous findings that Scratch-based digital media can improve students' motivation and engagement in learning (Dewi et al., 2025; Rosydiana et al., 2023). The posttest results further indicated improvement in students' poetry reading performance. Overall, these findings show that POEDU can be effectively implemented in elementary classroom learning, as it provides interactive and enjoyable learning experiences aligned with students' developmental characteristics (Rahmadika et al., 2024; Wahdian & Arifah, 2025).

Evaluation

The evaluation stage was conducted to assess the effectiveness of the POEDU learning media assisted by children's songs in enhancing students' poetry reading skills. This stage involved 21 fifth-grade students of SDN 3 Kedu through pretest and posttest poetry reading practices. The evaluation results were used as the basis for improving the media, with the summary of scores presented in the following section.

Table 5. Pretest and Posttest Result Summary

Activity	Minimum Score	Maximum Score	Average
Pretest (small group)	68,75	84,37	76,56
Posttest (small group)	81,25	96,87	89,06
Pretest (large group)	62,50	81,25	71,87
Posttest (large group)	75,00	93,75	84,37

Normality Test

The students' pretest and post-test scores were then analyzed statistically. In the initial stage of data analysis, a normality test was conducted using the Shapiro–Wilk method. This test aims to determine whether the obtained data are normally distributed. The results of the normality test are presented in the following table

Table 6. Normality Test

Group	Data	Sig (Shapiro Wilk)	Remarks
Large	Pretest	0,159	Normal
Large	Posttest	0,184	Normal
Small	Pretest	0,320	Normal
Small	Posttest	0,451	Normal

The results of the normality test using the Shapiro–Wilk method indicate that both the pretest and post-test data are normally distributed. This is evidenced by the significance values of 0.159 for the large group pretest and 0.184 for the large group post-test, as well as 0.320 for the small group pretest and 0.451 for the small group post-test. All of the significance values are greater than 0.05 (Sig. > 0.05).

T-Test

The t-test was conducted to determine whether the use of the POEDU digital media assisted by children's songs was able to produce a significant improvement in learning outcomes between the pretest and post-test scores. The results of this test are presented in the following table.

**Table 7. Paired Samples T-Test (small group)**

Data	Mean Difference	t	Sig	Remarks
Pretest-Posttest	-13,020	-25,038	<0,001	Significant

The results of the paired sample t-test conducted on the pre-test and post-test scores in the small group indicate that the implementation of POEDU (Poetry Edukasi) digital media, supported by children's songs, resulted in a statistically significant improvement in students' poetry reading skills. This is evidenced by the significance value of 0.001 ($p < 0.05$), which confirms a meaningful difference between students' performance before and after the intervention.

Table 8. Paired Sample T-Test (large group)

Data	Mean Difference	t	Sig	Remarks
Pretest-Posttest	-12,202	-16,396	<0,001	Significant

The results of the paired sample t-test conducted on the pre-test and post-test scores in the large group indicate that the implementation of POEDU (Poetry Edukasi) digital media, supported by children's songs, resulted in a statistically significant improvement in students' poetry reading skills. This is evidenced by the significance value of 0.001 ($p < 0.05$), which confirms a meaningful difference between students' performance before and after the intervention.

N-Gain Test

Table 9. N-Gain Test

Group	Mean N-Gain	Category
Small	0,5518	Moderate
Large	0,4527	Moderate

Based on the N-Gain analysis results, the average scores obtained were 0.4527 in the large group and 0.5518 in the small group, both of which fall into the moderate category. This indicates that the POEDU (Poetry Education) digital media assisted by children's songs is effective in improving poetry reading skills of Grade V elementary school students. The effectiveness of the media was higher in the small group compared to the large group.

The findings demonstrate that Scratch-based POEDU digital learning media assisted by children's songs is both feasible and effective in improving elementary students' poetry reading skills. This is supported by expert validation results categorized as "very feasible" and by the significant improvement in students' pretest and posttest scores in both small- and large-group trials. The effectiveness of this media is reflected in its integration of visual, audio, and interactive features that provide students with clear examples of poetry reading techniques, including intonation, articulation, pausing, and expression. Such interactive and multisensory learning experiences are consistent with previous studies highlighting the positive impact of Scratch-based media on student engagement and learning achievement (Nurhayati et al., 2023).

The incorporation of children's songs also contributed substantially to the learning process, as rhythmic and melodic elements helped students better understand pacing, stress, and expressive delivery in poetry reading. This finding aligns with research indicating that music-assisted learning can strengthen language acquisition, memory retention, and oral performance skills (Utami et al., 2024). In addition, the interactive practice opportunities embedded in the Scratch environment encouraged active participation and repeated practice, which enhanced students' confidence and motivation.

The significant paired sample t-test results ($p < 0.05$) indicate that POEDU had a positive effect on students' poetry reading skills, while the moderate N-Gain score reflects



gradual improvement through audio-visual modeling and guided practice. These findings are supported by the suitability of the media to elementary students' learning characteristics, which emphasize concrete and interactive experiences. Consistent with previous studies (Reinita & Hanifah, 2025). The findings of this study imply that POEDU can serve as an effective digital learning medium to support poetry reading instruction in elementary schools. By integrating children's songs and Scratch-based interactive features, the media provides an engaging learning experience that helps students improve their poetry reading skills. Furthermore, the results suggest that technology-assisted learning media can be utilized by teachers as an alternative instructional tool to create more interactive and student-centered learning environments.

Conclusion

Based on the results of the study and discussion, it can be concluded that the POEDU (Poetry Education) digital learning media based on Scratch and assisted by children's songs is feasible and effective for use in poetry reading instruction for Grade V elementary school students. The feasibility of the media is evidenced by expert validation results categorized as "very feasible." In addition, the effectiveness of the developed media is reflected in the improvement of students' learning outcomes, as indicated by the significant differences between pre-test and post-test scores in both small-group and large-group implementations. The results of the paired sample t-test confirm a statistically significant effect, while the N-Gain analysis shows a moderate category of improvement. This suggests that the enhancement of students' poetry reading skills occurred progressively throughout the learning process.

Therefore, the Scratch-based POEDU learning media, supported by children's songs, can be considered an alternative instructional tool that fosters an active, engaging, and meaningful learning environment. Moreover, the media contributes to the improvement of elementary school students' poetry reading skills through an interactive and enjoyable learning experience.

Recommendation

Based on the results of this study, several recommendations can be proposed. Teachers are encouraged to utilize POEDU digital learning media as an alternative resource for poetry reading instruction, as it has demonstrated feasibility and effectiveness in improving students' learning outcomes. They are also expected to continue integrating innovative digital media to create more interactive and meaningful learning experiences. For students, active engagement with POEDU is recommended to support the development of their poetry reading skills through enjoyable and practice-based activities. Future researchers are advised to further develop similar media with wider material coverage, enhanced features, and broader implementation across different educational levels or larger sample sizes to obtain more comprehensive findings.

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