Developing RUBETA Flipbook to Improve Fourth Grade Elementary Students' Motor Skills

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Abstract
The lack of engaging learning materials in dance education has resulted in fourth-grade students' motor skills not developing optimally, resulting in reduced activity, and easily bored during learning. This study aims to develop, test the feasibility, and effectiveness of RUBETA flipbook in introducing dance through fables to fourth-grade students. This study utilized the Research and Development (R&D) approach, applying the ADDIE model. Data collection involved both non-test methods like interviews, observations, questionnaires, and documentation, and test methods such as pretests and posttests. Qualitative data analysis using qualitative descriptive analysis, while quantitative data analysis using SPSS to test for normality, paired-sample t-test, and N-Gain test. The results indicate that RUBETA was developed in Canva and is available on Heyzine. This media contains main menus with images, videos, backgrounds, and audio, making it engaging for students. The validation result by subject matter experts is 93%, and by media experts is 96%, both categorized as "highly suitable", indicating that RUBETA is suitable for learning. Furthermore, the study found that RUBETA is effective for use in learning. This conclusion is drawn from the normality test results, which indicated that both the pretest and posttest data follow a normal distribution. The paired-sample t-test result is 0.001, which is less than 0.05, confirming a significant effect. Additionally, the N-Gain test results for the small-group trial was 0.7355 and for the large-group trial was 0,7201, both categorized as "very high". Thus, RUBETA is suitable and effective as a learning media in fourth-grade elementary school dance education.

1. Introduction

Dance is one of the subjects in the cultural arts and crafts curriculum offered in elementary schools, providing students with the opportunity to develop their potential. Dance is rhythmic body movement within a specific space and time to express ideas, feelings, release energy, or simply enjoy the movement itself (Singh & Devi, 2021). As an art form involving body movement, dance education not only emphasizes mastery of knowledge and skills but also the overall development of students. In recent years, dance arts education has faced challenges in meeting the expectations of the modern world, underscoring the importance of dance education for elementary students. According to Ary (2019), ideally, the educational process should serve as a container for students' creativity and imagination, as well as encourage them to understand themselves and their environment. However, current education only emphasizes the process of transferring knowledge and skills.

Based on interviews with fourth-grade teachers at one of the elementary school teacher, dance art learning in the classroom is less than optimal because the teachers' understanding of dance art is considered difficult, as they believe they must be able to dance well. The lack of teachers proficient in dance art also makes teachers feel insecure about teaching dance to students. Limited learning media at study location, both physical and digital media, restricts the learning environment, making it difficult for students to explore ideas, express creativity, and develop their motor skills through art activities. This finding aligns with research by Ary and Markamah (2024), which shows that the teaching of cultural arts and crafts, especially dance, in elementary schools is still hindered by teachers' limited creativity and reliance on media that relies solely on YouTube videos and imitation methods. These conditions cause students' interest and participation in learning to decrease, which can hinder their abilities, creativity, and imagination, as well as result in less optimal development of their basic skills.

The rapid development of technology has influenced aspects of education, including teachers' integration of digital media into the learning process (Utami & Ary, 2024). In this case, technology can be used as a media or teaching material that can replace traditional media or teaching materials (Rahmadani & Bungawati, 2024). Advances in educational technology provide opportunities to analyze, design, develop, implement, and evaluate learning environments that support more effective teaching and learning processes (Yalley, 2022). Digital media

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have the potential to create interactive and engaging learning experiences, thereby supporting student engagement and motivation (Kalyani, 2024). To attract elementary school students to understand and remember material, the use of relevant media is important for supporting meaningful learning experiences, which can improve the quality of their learning (Rahim, Sari, Sundari, Aulia, & Fauza, 2022). Additionally, digital media can directly involve students in the learning process and support the development of their skills and abilities (Greve et al., 2022). Therefore, the utilization of digital media has the potential to support dance art education in elementary schools.

One use of digital media in learning is the flipbook, which integrates text, images, animations, videos, and audio into an interactive learning resource. In dance education, flipbooks have the potential to improve the quality of student learning. As Rachmawati and Ary (2025) show, the developed flipbook-based digital media presents movement-based material in a more visual and engaging way. This dance art learning involves body movements and physical coordination that allow students to explore and express ideas through movement activities. The use of digital media in dance learning has a positive impact on dance movements, such as increasing creativity, motor skills, and physical fitness of students (Dwidarti, Zamzani, & Prabowo, 2025). Additionally, dance also provides benefits to the body, such as increased strength, flexibility, and balance, which can boost students' self-confidence (Anggraeni, Alpian, Harmawati, & Anggraeni, 2024).

Previous research by Rachmawati and Ary (2025) proved that the development of digibook media was successful in achieving the research objectives, one of which was to enhance students' creativity in dance art learning. However, according to Neville and Makopoulou (2021) activities involving basic movements such as imitating animal movements based on teacher instructions can facilitate students' motor improvisation. In addition to creativity, improvements in psychomotor aspects in dance have also been explored using other digital platforms. As shown in research by Kurniawan and Ary (2024) the use of Linktree-based media has proven capable of improving students' psychomotor skills by providing quick access via links to various dance art learning resources. Nevertheless, the use of link-based media like Linktree still has limitations in presentation, as materials must be accessed separately when opening and depend on an internet connection to switch platforms. Therefore, the researcher intends to develop flipbook media to improve the elementary school students' motor skills. This development research aims to address the limitations found in Linktree-based media in Kurniawan and Ary (2024) study and to complement the research conducted by Rachmawati and Ary (2025), which focused on creativity as a variable.

Based on the issues identified at study location, the researcher will develop a RUBETA (*Ruang Belajar Tari*) flipbook-based media on recognizing dance through fable stories. This study aims to develop, test the feasibility, and evaluate the effectiveness of the RUBETA flipbook in improving students' motor skills. The RUBETA flipbook is a learning media designed to support dance art education at the fourth-grade elementary level. This media contains material about recognizing dance through fable stories, including dance movements, levels, facing directions, and movement directions. The visualization of movements and storytelling activities in this media can also foster students' imagination and learning experiences.

2. Method

This approach employs Research and Development (R&D) through the ADDIE model, which includes Analysis, Design, Development, Implementation, and Evaluation (Sugiyono, 2023). The analysis stage involves identifying problems and needs in elementary schools. During the design stage, a media prototype is created for development. The development phase produces media based on the design plan, which is then validated by experts. In the implementation stage, RUBETA is used in classrooms through both small- and large-group trials. Finally, the evaluation stage assesses media quality through questionnaires from teachers and students. This research employed non-test data collection methods, including interviews, observations, documentation, and questionnaires (such as media needs, validation questionnaires for content and media experts, and response questionnaires for teachers and students). Additionally, test techniques like pretests and posttests were used. Qualitative data were analyzed using descriptive qualitative methods, while quantitative data were analyzed in SPSS, including normality tests, paired sample t-tests, and N-Gain tests. The research was conducted at one of the elementary school at Rembang Regency, Indonesia. The subjects of this study were expert validators (content experts and media experts) and 22 fourth-grade students. The student subjects were divided into two stages: a small-group trial with 6 students conducted on April 22, 2026, and a large-group trial with 16 students conducted on April 23, 2026.

3. Results and Discussion

3.1. Results

Flipbook RUBETA was developed using the ADDIE model, which includes Analysis, Design, Development, Implementation, and Evaluation. In the analysis phase, an initial assessment was conducted, including a needs and problems analysis in the fourth grade of elementary school by interviewing the teachers and distributing a needs questionnaire conducted in March 2025. The interview results showed that art dance learning in the

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classroom is still not optimal because the teachers are less capable and lack confidence in teaching dance art. Additionally, the lack of learning media also limits students' ability to explore ideas, express creativity, and develop motor skills. In addition, students are also less active and easily bored during the learning process. Based on the needs questionnaire, teachers suggest creating practical learning media to use and introducing dance art in the classroom. Therefore, the developed material involves recognizing dance through fable stories to provide students with an experiential learning of dance art. These findings emphasize the importance of innovative, practical media like RUBETA (*Ruang Belajar Tari*) in improving students' motor skills.

The next stage is the design phase, where the researcher creates a media production plan using a flowchart and develops a prototype or initial interface design. The following are the flowchart and prototype of media usage presented in Figures 1 and 2.

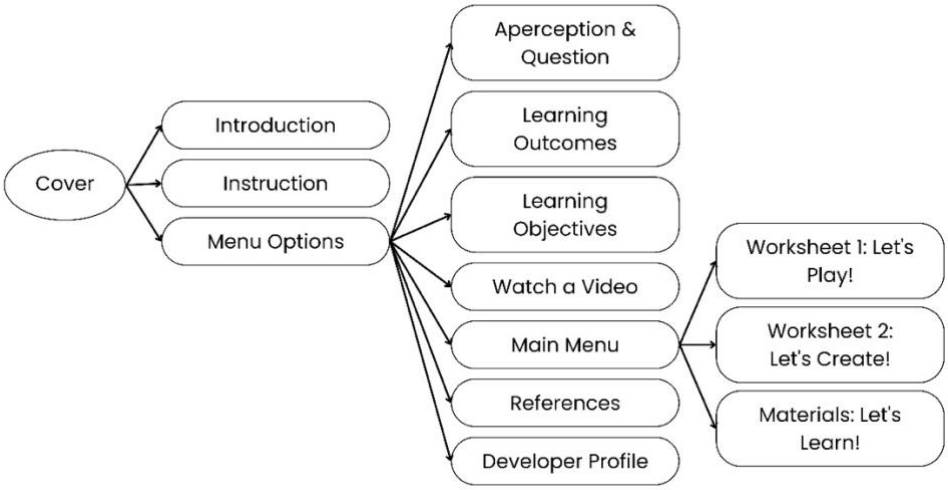

Figure 1. Flowchart of RUBETA Flipbook

Figure 2. Prototype of RUBETA Flipbook

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The third stage is development. This stage focuses on creating a flipbook learning media called RUBETA, which introduces dance through fable stories. The media is created using the Canva for proper design. The results of the media development are presented in the Figure 3.

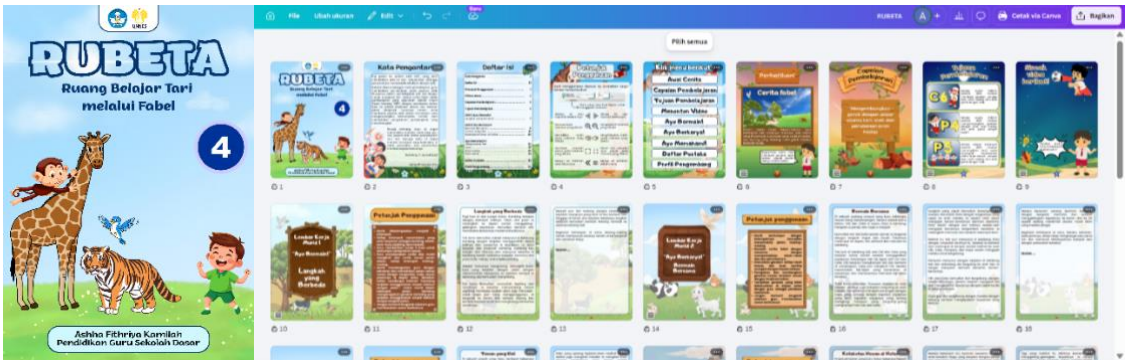


Figure 3. Initial Media Design in Canva

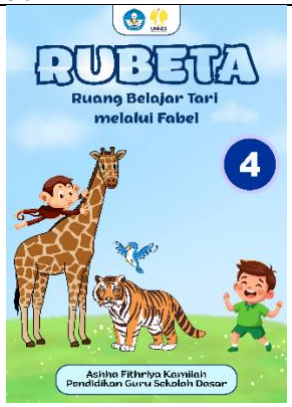
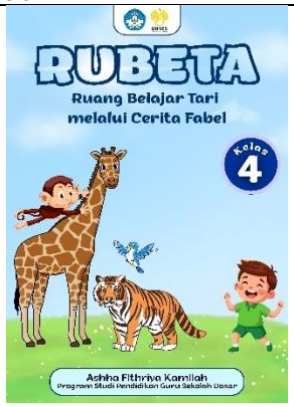
The initial design was then downloaded and uploaded to the Heyzine website for further editing, including adding backgrounds, audio, videos, and appropriate navigation buttons. After editing, the flipbook was saved and proceeded to be validated by experts. Figure 4 is the display of the RUBETA flipbook on the Heyzine website.

Figure 4. RUBETA flipbook on Heyzine

The created media is subsequently reviewed by subject matter and media expert. This step evaluates the product's feasibility in terms of its content and visual presentation. During this process, revisions are made to the product. The revisions from the subject matter experts include ensuring that the fable story content is presented in language suitable for children and that the characters' movements in the fable story can be practiced by students in accordance with the movements of real animals.

Feedback from media experts regarding RUBETA includes adding the word "class" to the cover in the class number element, adding the word "story" to the material title, and adding the phrase "study program" in the identity section. Additionally, there is a suggestion to replace the word "author" in the foreword with "compiler" and to capitalize "Fable Story" at the beginning of the story. Table 1 is the revised results based on the experts' feedback.

Table 1. Design Revision by Experts

Before the revision	After the revision
	
Cover page before revision	Cover page after revision

ISSN: 2797-3174

Before the revision	After the revision
	
Foreword page before revision	Foreword page after revision
	
First page of the story before revision	First page of the story after revision

The revised design was then uploaded back to Heyzine for editing, becoming an educational media piece that can be accessed at https://heyzine.com/flip-book/58c499e77d.html. Next, the researcher provided a validation questionnaire on the material and media to experts. The questionnaire included aspects that needed to be evaluated, such as the appropriateness of the material, presentation of the material, display quality, navigation, readability, and usefulness. The validation assessment results from the experts is present in Table 2.

Table 2. Result Validation by Experts

Experts	Percentage	Category
Material expert	93%	Highly suitable
Media expert	96%	Highly suitable

The fourth stage is implementation, where dance art learning using the RUBETA flipbook is carried out in the classroom through small- and large-group trials. The small-group trial with 6 students was conducted on April 22, 2026, with a duration of 2 × 35 minutes or 2 class hours. This trial was conducted using the Project-Based Learning (PjBL) model and the Deep Learning and TPACK approaches.

The pretest and posttest results for the small-group trial, demonstrating significant potential to improve motor skills with the RUBETA flipbook is present in Figure 5.

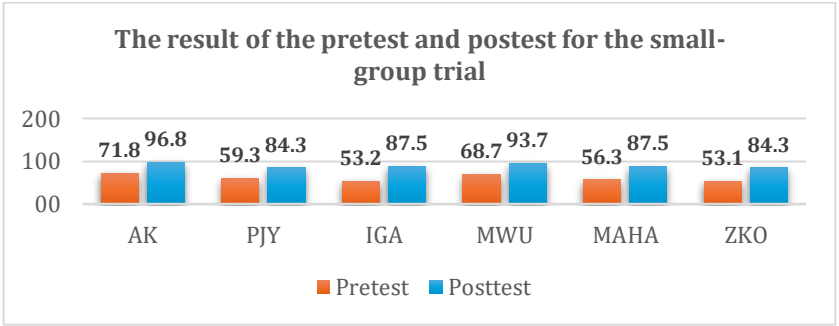


Figure 5. Diagram of Small Group Trial Results

ISSN: 2797-3174

Pretest and posttest data were then analyzed using SPSS to conduct normality tests, paired-samples t-tests, and N-Gain tests. The normality of the pretest and posttest data was tested using the Shapiro-Wilk normality test to determine whether the data followed a normal distribution. The results of the normality test using Shapiro-Wilk are presented in Table 3.

Table 3. Result of Normality Test for Small Group Trial

	Shapiro Wilk		
	Statistics	df	Sig.
Pretest	0.858	6	0.181
Posttest	0.866	6	0.211

Based on the Table 3, the normality test results using the Shapiro-Wilk test for pretest scores show a significance value of 0.181, and for posttest scores, 0.211. The normality test formula indicates that data are considered normally distributed if the sig.>0.05 and not normally distributed if the sig.<0.05. The normality test results indicate that the data are normally distributed. Consequently, the analysis proceeded with parametric tests. A paired t-test is used to identify significant differences between pretest and posttest scores. Below is the table of paired-samples t-test results presented in Table 4.

Table 4. Result of Paired Sample T-Test for Small Group Trial

	t	df	Two-Sided p
Pretest Posttest	-16.867	5	< 0.001

Based on the results from Table 4, it shows that the significance value (2-tailed) is 0.001<0.05. This indicates a significant difference before and after using the RUBETA flipbook, demonstrating a significant improvement in students' motor skills.

Furthermore, an N-Gain test was performed in SPSS to evaluate the effectiveness of the RUBETA flipbook in improving students' motor skills. Table 5 is the results of the N-Gain test.

Table 5. Result of N-Gain Test for Small Group Trial

	N	Mean	Std. Deviation
Pretest Posttest	6	0.7355	0.09683

Based on the N-Gain test results in Table 5, the N-Gain value is 0.7355. This result falls into the very high category. This indicates that the RUBETA flipbook is very effective in improving students' motor skills.

Next is the large group trial conducted on April 23, 2026, with 16 students participating. The allocated time for this large group trial is 2 × 35 minutes or 2 class hours, using the Project-Based Learning (PjBL) model and the Deep Learning and TPACK approaches.

The results from the pretest and posttest conducted during the large group trial is presented in Figure 6.

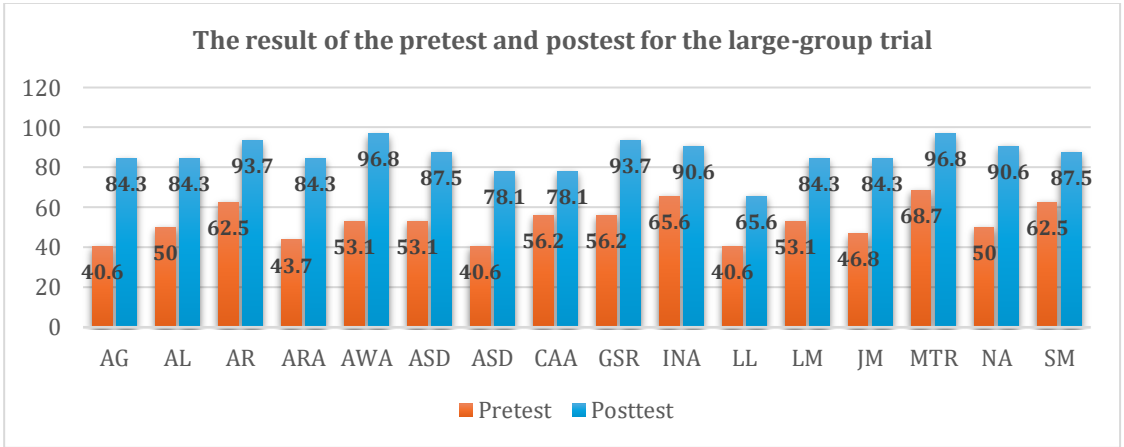


Figure 6. Diagram of Large Group Trial Results

ISSN: 2797-3174

As with the small group trial, the results of the pretest and posttest from the large group trial were also analyzed using SPSS, including a normality test, a paired-samples t-test, and an N-Gain test. The results of the normality test using the Shapiro-Wilk are presented in Table 6.

Table 6. Results of Normality Test for Large Group Trial

	Shapiro Wilk		
	Statistics	df	Sig.
Pretest	0.943	16	0.386
Posttest	0.912	16	0.126

Based on the Table 6, the normality test results using the Shapiro-Wilk test for pretest scores show a significance value of 0.386, and for posttest scores, 0.126. The normality test formula indicates that data are considered normally distributed if the sig.>0.05 and not normally distributed if the sig.<0.05. The normality test results indicate that the data follow a normal distribution. Consequently, the analysis proceeded with parametric tests. A paired t-test is employed to identify significant differences between pretest and posttest scores. Below is the table of the paired t-test results presented in Table 7.

Table 7. Result of Paired Sample T-Test for Large Group Trial

	t	df	Two-Sided p
Pretest Posttest	-19.002	15	<0.001

Based on the results from Table 7, it shows that the significance value (2-tailed) is 0.001<0.05. This indicates a significant difference before and after using the RUBETA flipbook, proving that there is a significant effect in improving students' motor skills.

Additionally, an N-Gain test was conducted in SPSS to measure the effectiveness category of using the RUBETA flipbook in improving students' motor skills. Table 8 is the results of the N-Gain test.

Table 8. Result of N-Gain for Large Group Trial

	N	Mean	Std. Deviation
Pretest Posttest	16	0.7201	0.13402

According to the N-Gain test results shown in Table 8, the N-Gain value is 0.7201, which falls into the very high category. This demonstrates that the RUBETA flipbook significantly improves students' motor skills.

The final phase of this research is the evaluation stage, aimed at assessing the quality of the RUBETA flipbook through both formative and summative methods. The formative evaluation took place during the development process and involved expert validation, where the work was revised based on expert feedback. The summative evaluation occurred after deploying the RUBETA flipbook, focusing on its practicality as measured by questionnaires completed by teachers and students. Table 9 and Table 10 presents the responses collected from these questionnaires during trials with small and large groups.

Table 9. Results of the Small Group Questionnaire

Subject	Percentage (%)	Category
Teacher	95%	Very practical
Students	95%	Very practical

Table 10. Results of the Large Group Questionnaire

Subject	Percentage (%)	Category
Teacher	97%	Very practical
Students	92%	Very practical

The results of the questionnaire responses in the product trial indicate that the product is very practical for use in classroom learning, where the RUBETA flipbook can easily provide understanding of the material about introducing dance through fable stories, improve students' motor skills through fable stories, and make students more active and confident in moving.

ISSN: 2797-3174

3.2. Discussion

The RUBETA flipbook media in this study was successfully developed as a digitally based dance art learning media that combines fable stories, dance movement elements, and practical movement activities tailored for elementary school students. RUBETA flipbook was developed based on the needs of teachers and students identified during the analysis stage, to serve as an interactive and engaging dance art learning media. The flipbook is an integrated technology-based learning media that presents content as an interactive digital book that can be flipped, read, and explored like a physical book, but with additional text, images, audio, and video (Dwindahari, Agung, & Astawan, 2025). The RUBETA flipbook is designed with texts, images, videos, audio, and backgrounds that make the media more engaging. This aligns with research by Gani, Indriani, and Herfina (2025), which states that the combination of these elements and advanced features can create more effective and interesting learning opportunities for students. The RUBETA flipbook serves as a media that supports students to actively learn and move actively during lessons. The implementation of integrated technology-based learning media has been proven to increase student engagement, as seen from interactions with teachers and peers, exploration with the learning media, and teacher instruction (Subramainan & Mahmoud, 2020).

The RUBETA Flipbook has a unique feature: presenting fable stories with different background sounds that students can practice according to the movements of real animals. The narration of the fable can improve students' motor skills by having them practice movements through actions similar to the animal characters in the story. Each narration includes animal movements that match their real behaviors, such as crabs walking sideways, rabbits hopping small jumps, pandas rolling over, frogs jumping, and gorillas walking while pounding their chests. Every movement performed by students contributes to improving their motor skills, including movement accuracy, coordination, and balance. This aligns with research by Duncan, Cunningham, and Eyre (2019), which states that learning activities combining movement and storytelling can improve students' motor competence. Additionally, role-playing characters from the book makes students more enthusiastic, more active, and more confident in physical activities (Cunningham et al., 2025).

The RUBETA flipbook also includes a video of a dancing chicken as an introduction before the learning process begins, to motivate students to think critically about the material. On the student worksheet pages, a background sound feature is provided so students can complete discussion activities and showcase their results with background music, making it less boring. In the context of dance art education, the RUBETA flipbook can help students learn about dance through fable stories because it includes material on dance movement elements, such as movement in dance, levels, facing directions, and movement directions, which are also practiced through the fable stories. The material in RUBETA flipbook includes images that reinforce the content, helping students to understand it easily. Students' interest in learning has increased because of the content, video, backsounds, and images in RUBETA flipbook, which have improved their understanding of the material (Amelia & Harahap, 2021; Hanif, 2020).

The research results show that the RUBETA flipbook is feasible for use in dance art learning, as validated by media and material experts and by feedback from teachers and students. In terms of content, the media's content aligns with the learning outcomes and objectives of fourth-grade elementary school dance art lessons. The material also includes dance movement elements related to fable stories, making it easier for students to understand. Regarding appearance, the media is considered attractive because it uses a design that meets students' needs, with harmonious layouts, comfortable color combinations, easy-to-read fonts and sizes, appropriate illustrations or images, and a presentation of text, videos, images, and visual elements that not too crowded or boring. Additionally, the inclusion of audio can increase students' interest in the learning process. Validation by material experts achieved 93%, rated as very feasible, and validation by media experts reached 96%, also categorized as very feasible. These validation results indicate that the RUBETA flipbook is suitable for use in learning to improve the motor skills of fourth-grade elementary students. These findings are consistent with the development of digital media research by Rachmawati and Ary (2025), which found that the digital media in the form of a flipbook developed received a very feasible validation from both material and media experts, containing content aligned with dance art learning outcomes, an imaginative narration of a fable story for students to practice, and active interaction from students.

In addition to expert validation, responses from teachers and students regarding the use of the RUBETA flipbook also indicate that the media is feasible. In the small group trial, teachers' responses received a score of 95%, and students' responses received a score of 95.4%. In the large group trial, teachers' responses scored 97.5%, and students' responses scored 92.03%. Students felt happy and interested in participating in the learning because the media was easy to use and contained images, videos, audio, and fable stories that helped them understand the movements. Teachers also stated that the RUBETA flipbook helped make the material more interactive and less boring and supported students' motor skills. These results show that the RUBETA flipbook is feasible and practical for use in learning.

The effectiveness of the RUBETA flipbook is further reinforced by statistical tests of students' pre- and post-test scores during the classroom implementation phase. The paired sample T-Test for pre- and post-test results is 0.001, which is less than 0.05, confirming a significant effect. Additionally, the N-Gain test results for

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the small-group trial were 0.7355 and for the large-group trial were 0.7201, both categorized as "very high". This improvement is evident in the pre-test and post-test scores, which indicate improved students' motor skills, enabling them to create and develop movements effectively using the RUBETA flipbook. The assessment indicators for the storytelling practice activity using fable movements in the RUBETA flipbook include the accuracy of animal movements, body coordination, and balance. Based on these results, the RUBETA flipbook is declared effective in improving students' motor skills.

3.3. Implications

This research produced a RUBETA flipbook that can be used as an alternative digital-based learning media in teaching dance art in elementary schools. This media helps teachers deliver material in a more engaging and interactive way, making students more active during the learning process (Sartika, Suyidno, & Wiguna, 2024). The activity of practicing movement through fable stories combined with dance movement elements also makes it easier for students to understand the material of learning dance through fable stories, in accordance with students' characteristics who enjoy playing, moving, working in groups, and demonstrating things directly Midiyanto and Hunaifi (2022). This aligns with Vygotsky's constructivist learning theory, which makes students active and have meaningful experiences during learning (Rosita, Safitri, Suwarma, Muyassaroh, & Jenuri, 2024).

This research also provides implications for improving students' motor skills through practical movement activities integrated into fable stories. Mimicking animal characters helps students train their accuracy in movement, coordination, balance, and body flexibility (Dwihuttni & Muthi, 2024). This study supports the theory that the use of interactive and innovative digital media can help develop elementary school students' motor skills (Putri & Ary, 2024).

This research also has implications for the development of digital learning media in elementary schools. Interactive and innovative flipbook media can be an educational innovation that aligns with technological advancements and the needs of students in the 21st century. Therefore, the RUBETA flipbook can serve as a reference for teachers and future researchers in developing dance art learning media with different innovations, materials, and levels.

3.4. Limitations

This research has several limitations in its stages. The study was only conducted with fourth-grade students in elementary school, so the results cannot yet be generalized broadly. Additionally, the implementation of the media was carried out within a limited time, so the use of the media has not been observed in more depth over the long term. The media developed is also still based on a simple flipbook and has not been equipped with more complex evaluation or digital interaction features. Therefore, future research is expected to develop media with more innovative features and to test the use of the media across a wider school scope.

4. Conclusion

According to the research, the RUBETA (*Ruang Belajar Tari*) flipbook was created with Canva and uploaded to the Heyzine website, featuring main menus for dance arts learning activities, particularly on recognizing dance through fable stories. The RUBETA flipbook contains images, videos, backgrounds, and background sounds, making the media engaging for students. One of the student learning activities is creating and developing animal movements based on the fable stories presented in the media. The validity results from the material and media experts indicate that the RUBETA flipbook is suitable for learning. The improvement in learning outcomes in the form of motor skills, interest in learning, and understanding of the material by students indicates that the implementation of the RUBETA flipbook has been successful. Overall, this development research demonstrates that the RUBETA flipbook media is feasible and effective for teaching dance arts, specifically for helping fourth-grade elementary students recognize dance through fable stories.

Author Contributions

All authors contributed equally to this paper. All authors have read and approved the final manuscript.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/ or publication of this article.

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Data Availability

The datasets generated during and/ or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript.

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