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The Development of Tri N-Based Interactive Learning Media to Improve Early Reading and Writing Skills of Elementary School Students

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A B S T R A C T

Early reading and writing skills are essential foundational competencies for students' academic success. However, many elementary students still experience difficulties in recognizing letters, forming syllables, and constructing words due to the lack of engaging and contextual learning media. This study aims to develop and evaluate interactive learning media based on the Tri N principles (Niteni, Niroke, Nambahi) to improve students' early reading and writing skills. The research used a Research and Development (R&D) approach with the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The study was conducted at SD Negeri 3 Tegaldowo, Rembang Regency, involving 36 students. Validation by material and media experts resulted in an average score of 52%, categorized as "fairly valid." The practicality test showed an effectiveness rate of 44%. Pre-test and post-test assessments demonstrated an improvement in students' reading and writing abilities, with an average N-Gain score of 57.76% in the moderate category. The significance test obtained a p-value of 0.000 for reading and 0.015 for writing, indicating that the media had a significant effect on learning outcomes. In conclusion, the Tri N-based interactive learning media effectively improve early reading and writing skills. Further development is recommended to refine the interface design and usability.

1. Introduction

Education is a conscious and planned effort to create a learning environment that enables students to develop their potential optimally, both spiritually, in personality, intelligence, and skills that are useful for personal and social life (Ichsan, 2021). Within the educational context, learning serves as a primary component that involves students in the process of acquiring knowledge, skills, and positive values by utilizing various learning resources (Rohani, 2019). To achieve effective learning, teachers need to employ diverse media and learning technologies

as intermediaries in delivering materials to facilitate students' understanding (Magdalena et al., 2021).

Learning media play a crucial role as a non-verbal communication tool within the learning system. The proper use of media can stimulate interest, attention, and learning motivation, thereby creating an active, enjoyable, and meaningful learning environment (Andari, 2019; Magdalena et al., 2021). Media also functions as a stimulus that clarifies lesson content, as verbal delivery alone often causes students to quickly forget the information received (Furoidah, 2020). Therefore, the use of learning media becomes an essential component in achieving the success of the learning process.

However, in practice, teaching and learning in many schools still face various obstacles that hinder the optimal achievement of learning objectives. These obstacles include limited knowledge of information technology, low student learning interest, and a lack of engaging and interactive learning media (Nugroho & Aditya, 2018; Prawanti & Sumarni, 2020). To address these issues, teachers need to select learning media that are relevant, contextual, and support active student engagement (Firdaus & Nurjannah, 2021). Essentially, learning media represent communication tools, both hardware and software, that aid the learning process (Anomeisa & Ernaningsih, 2020).

One approach that can be applied in developing learning media is the Tri N teaching method (Niteni, Niroke, Nambahi) proposed by Ki Hadjar Dewantara. This approach emphasizes the importance of a learning process that begins with observation (niteni), imitation (niroke), and development (nambahi). Niteni involves carefully observing a learning object through the senses and cognitive processes. Niroke refers to imitating what has been learned through examples or models provided by the teacher. Meanwhile, nambahi represents the creative stage, where students develop or modify what they have learned according to their abilities and experiences (Arigiyati et al., 2021). This approach aligns with constructivist learning concepts, which emphasize direct experience and the development of students' creativity.

In the context of elementary school learning, the Tri N approach can be integrated into the development of interactive Tri N-based learning media to enhance students' early reading and writing skills. Reading and writing are foundational skills essential to the entire learning process. Reading plays a critical role in understanding written messages and ideas, as well as helping students systematically recognize letters, words, and sentences (Chasanah et al., 2021). Writing involves expressing ideas in graphic symbols that require coordination of motor skills, visual perception, and cognitive ability (Harianto et al., 2020). These skills must be developed from early grades to ensure students can progress to more advanced learning stages effectively.

Several studies indicate that low early reading and writing skills result from a lack of learning interest, limited engaging learning media, and weak student motivation (Oktaviyanti et al., 2022). Additionally, some elementary students still struggle to

recognize letters, differentiate letter shapes, and combine syllables into complete words (Lukács et al., 2021). Utilizing learning technologies can serve as an effective solution to these problems, as digital media create a more engaging and interactive learning experience (Andriyani & Hermanto, 2022). This aligns with observations at SD Negeri 3 Tegaldowo, which showed that some students were still not fluent in reading and writing and had difficulty distinguishing letters during the learning process.

Previous research supports the importance of developing learning media based on technology and local values, such as Tri N. Yusindra et al. (2023) demonstrated that using Tri N-based media significantly improved learning outcomes, with students' average scores increasing from 64.2 to 96.7 after implementation. Interactive learning media are also considered effective because they facilitate multimodal learning experiences through a combination of text, sound, and images (Park, 2022). Moreover, technology-based learning can create an enjoyable learning environment and improve learning effectiveness and efficiency (Aryawan et al., 2018; Setiawan & Oka, 2020).

Learning media function as intermediaries used by teachers to convey instructional messages in a way that is easily understood by students. Media clarify information, enhance motivation, and create more concrete learning experiences (Kuncahyono, 2017; Haryono, 2015; Arsyhar, 2020). Appropriate media use helps overcome differences in learning ability and increases student engagement. According to Edgar Dale's Cone of Experience theory, the more concrete the learning experiences provided through media, the higher the students' comprehension. Therefore, teachers must select media that align with students' characteristics and learning objectives.

Learning media serve four main functions: attracting attention (attention), eliciting emotions and interest (affective), aiding comprehension (cognitive), and accommodating students who struggle to grasp material (compensatory). Generally, the purpose of using media is to convey information, motivate students, and create meaningful learning activities. With appropriate media, learning becomes more interactive, efficient, and enjoyable. Selection of learning media must consider alignment with objectives, teacher competence, and student conditions (Arsyad, 2019; Muali, 2018). Effective media should be practical, flexible, safe, and able to facilitate active student interaction (Rumampuk, 2017; Astriani, 2018). Principles of effectiveness, efficiency, and interactivity serve as primary guidelines to ensure media meaningfully contribute to learning outcomes.

Interactive learning based on constructivism emphasizes interactions among teachers, students, and instructional materials (Rahmanul, 2021). Computer-based interactive media combine text, graphics, audio, video, and animation to create engaging two-way learning experiences (Gayestik, 2012; Arsyad, 2020). Advantages of interactive media include increased motivation, better understanding of abstract concepts, and encouragement of critical thinking (Dadan, 2019). Multimedia elements such as text, graphics, audio, video, and animation play an important role in building dynamic learning experiences (Lestari, 2020; Limbong

& Simarmata, 2020). With digital technology advancements, interactive multimedia is an effective tool for overcoming boredom and increasing student participation in class.

The Tri N teaching method *(Niteni, Niroke, Nambahi)* developed by Ki Hadjar Dewantara emphasizes learning through observation, imitation, and development. (1) *Niteni* involves careful observation to understand a learning object. (2) *Niroke* involves imitating examples or models to acquire skills through practice. (3) *Nambahi* involves expanding or developing the observed results into something new. The Tri N approach is relevant in 21st-century learning because it fosters creativity, critical thinking, and student independence. In early reading and writing instruction, Tri N can be applied through the stages of observing letters *(niteni),* imitating word forms *(niroke),* and developing simple sentences *(nambahi).*

Based on the discussion above, the development of Tri N-based interactive learning media represents an innovative solution for improving elementary students' early reading and writing skills. This media not only strengthens students' basic literacy skills but also fosters creativity, independence, and enthusiasm for learning. Therefore, this study aims to develop Tri N-Based Interactive Learning Media to Improve Elementary Students' Early Reading and Writing Skills.

2. Methodology

This study employed a quantitative approach with a research and development (R&D) design. The quantitative approach was used to analyze numerical data obtained from the measurement of learning outcomes and students' responses objectively. According to Sujarweni (2017), quantitative research produces findings that can be achieved through systematic statistical procedures or quantification methods. The type of research used was research and development (R&D), as explained by Sugiyono (2017), which is a research method aimed at producing a specific product while simultaneously testing its effectiveness and feasibility. In the context of this study, the product developed was an interactive Tri N-based learning media designed to improve elementary students' initial reading and writing skills.

The development model used in this study was the ADDIE model developed by Dick and Carey, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation (Fransisca & Putri, 2019). This model was chosen because it is systematic, structured, and flexible across various learning contexts. Sugiyono (2020) explains that the ADDIE model has the advantage of a workflow that allows revisions at each stage, thereby optimizing the product to meet user needs. The research was conducted at SD Negeri 3 Tegaldowo, Gunem Subdistrict, Rembang Regency. This location was chosen purposively because it aligned with the research objectives, namely the development of learning media relevant to elementary students' characteristics, who are still in the early stages of literacy development. The research was conducted from August to October 2025,

encompassing preparation, observation, product development, expert validation, limited trial, field trial, and analysis of research results.

The research design followed the ADDIE model stages systematically. The first stage, Analysis, aimed to identify learning needs and existing problems in the school through direct observation and interviews with class teachers. This analysis included a needs assessment, student characteristics, and the condition of previously used learning media. The second stage, Design, was conducted based on the analysis results to design interactive Tri N-based learning media that integrates the values of Niteni, Niroke, and Nambahi into early reading and writing activities. The third stage, Development, involved creating and compiling the media according to the design, followed by validation by media experts, content experts, and education practitioners to ensure the product's feasibility. The fourth stage, Implementation, involved applying the validated media in actual classroom learning. Students were given opportunities to use the learning media and asked to provide feedback through questionnaires. The final stage, Evaluation, aimed to assess the effectiveness and suitability of the product for learning needs and to revise the product based on feedback. Evaluation was conducted both formatively and summatively to ensure that the developed media met the criteria of being valid, practical, and effective (Sa'adah & Wahyu, 2020).

The trial subjects in this study consisted of two groups: limited trial and field trial. The limited trial involved six students aged 9–12 years selected using simple random sampling, which is a random selection of samples without considering strata in the population (Sugiyono, 2017). After revisions based on the limited trial results, the next stage was the field trial involving 30 different students. Data from the field trial were used to assess the practicality, effectiveness, and students' responses to the developed Tri N-based interactive learning media.

Research instruments included validity and reliability tests, as well as data collection tools such as observation, interviews, documentation, and questionnaires. Validity testing was conducted to determine the extent to which the instrument could measure the intended concept, using Pearson Product Moment correlation. Reliability testing assessed the consistency of the instruments through Cronbach's Alpha coefficient with the assistance of SPSS version 25 (Hidayat, 2021). Instruments with high reliability were considered consistent in measuring the same object over time.

Additionally, data were collected through four main techniques: observation, interviews, documentation, and questionnaires. Observations were conducted to obtain empirical descriptions of the learning process and students' responses when using the Tri N-based interactive learning media. Interviews with teachers were conducted to gain in-depth information regarding students' characteristics, commonly used learning media, and challenges encountered in teaching reading and writing (Mar'atusholihah, 2019). Documentation was used to collect supporting data, including photographs, field notes, and records of activities during the research process. Meanwhile, questionnaires were administered to both validators

and students to assess the validity, practicality, and effectiveness of the learning media (Sugiyono, 2020; Sendekie, 2022).

Data analysis employed a descriptive quantitative approach using SPSS version 25.0. Data from expert validation, student responses, and test results were analyzed to determine the level of validity, practicality, and effectiveness of the product. Product validity was analyzed by calculating the percentage of expert validation scores. A product was considered valid if it achieved a score ≥ 75% (Sendekie, 2022). Practicality analysis was conducted by calculating the percentage of student responses to the media, categorized as positive if the result was ≥ 75% (Sendekie, 2022). Effectiveness was analyzed through a series of statistical tests, including normality testing using Kolmogorov-Smirnov, homogeneity testing to ensure variance equality, N-Gain testing to measure improvement in learning outcomes, and Independent Sample T-Test to examine significant differences between pretest and posttest scores (Sugiyono, 2020).

The results of the product trials were then presented in tables and graphs to facilitate readers' understanding of the comparison of results across aspects. Descriptive statistics were used to display mean scores, percentages, and categories of validity, practicality, and effectiveness of the media. This systematic data presentation aimed to clarify the analysis results and strengthen the finding that Tri N-based interactive learning media is feasible for enhancing elementary students' initial reading and writing skills.

3. Results and Discussion

This research and development study produced an interactive Tri N-based learning media designed to enhance elementary students' early reading and writing skills. The media were developed based on the principles of active learning, emphasizing the values of Niteni, Niroke, and Nambahi as taught by Ki Hadjar Dewantara. The product was constructed using a combination of text, images, animations, and interactive narration to attract students' attention and foster learning motivation. The development process followed the ADDIE model, which consisted of the stages of Analysis, Design, Development, Implementation, and Evaluation. The results of each stage are presented as follows.

Analysis Stage

The analysis stage was conducted to identify student characteristics, curriculum needs, and learning difficulties. Observations and interviews with teachers revealed that first-grade students often experienced challenges in recognizing letters, syllable segmentation, and constructing simple words. Learning was still dominated by traditional drill-based approaches, causing students to become easily bored. Curriculum analysis showed that early reading and writing skills are part of the Indonesian Language subject, emphasizing phoneme recognition, syllable formation, and sentence construction. Meanwhile, student analysis indicated that students learn more effectively through visual, auditory, and kinesthetic

experiences. Based on these findings, the Tri N principles *Niteni* (observing), *Niroke* (imitating), and *Nambahi* (developing) were selected as the foundation for the learning media because they support gradual, active, and meaningful learning

Design Stage

At this stage, the media structure, content flow, and interaction format were designed. The media was planned to include: (1) Visual elements (letters, pictures, and animated illustrations), (2) Audio narration of letters and words, (3) Interactive tasks such as clicking, matching, and arranging syllables, (3) Guided practice following Tri N stages: (a) *Niteni* : observing animated letter and word demonstrations, (b) *Niroke*: imitating reading and writing through guided activities, (c) *Nambahi*: developing skills through constructing new words. A story-based interface and colorful layout were planned to enhance engagement and maintain student focus.

Development Stage

Learning media were developed using a combination of text, images, animations, and interactive narration. The media features included interactive letter recognition, syllable practice pages, and word-building activities. The appearance was adjusted to suit elementary students colorful, simple, and easy to navigate. Each component of the developed learning media has its own function and characteristics, as shown in Table 1.

Table 1. Components and Features of the Developed Learning Media

No	Media Component	Description
1	Letter Introduction Page	Displays animated letters with narrated pronunciation.
2	Syllable Matching Activity	Students match syllables with corresponding images.
3	Word Formation Task	Students drag letters to form simple words.
4	Reading Practice Page	Displays sentences accompanied by illustrations.
5	Evaluation Page	Students complete tasks to check understanding.

Figure 1 presents the main interface of the developed learning media. This page serves as the starting point where students can access the available learning features, including letter introduction, syllable practice, word formation, reading activities, and evaluation. The interface is designed to be colorful and simple, making it easy for elementary students to navigate and begin using the media independently.

Figure 1. Main Interface of the Developed Learning Media

Implementation Stage

The implementation phase was carried out in Class II A as the experimental class, consisting of 28 students who used interactive learning media based on the Tri N approach. Each student operated the media independently using available laptops and tablets, with direct guidance from the classroom teacher. The learning process followed the Tri N steps: (1) *Niteni* (observing texts, images, and narratives in the media), (2) *Niroke* (imitating and practicing the provided reading and writing exercises), and (3) *Nambahi* (creating simple works in the form of sentences or short paragraphs based on illustrations). Meanwhile, Class II B, consisting of 27 students, served as the control class and continued learning reading and writing through conventional methods such as lectures, blackboard assignments, and workbook exercises. The implementation was conducted on a limited scale due to the restricted number of devices and class schedule adjustments. Therefore, full-scale application of the media is planned for the following semester after coordination with the school and the addition of supporting facilities.

Evaluation Stage

Evaluation was conducted through expert validation, student response trials, and pre-test/post-test assessments. Experts in media, material, and language evaluated the accuracy, relevance, and usability of the learning media. After revisions, the media was tested on students to observe its practicality and engagement. Pre-test and post-test assessments were also administered to measure the effectiveness of the media in improving students' learning outcomes.

Expert Validation Results

The validation process was conducted by two experts, namely a media expert and a content expert, to assess the feasibility of the media's content, appearance, and language. The experts examined various aspects including the accuracy of the learning material, the appropriateness of illustrations and animations, the clarity of

instructions, and the user interface design. They also evaluated how well the media aligned with the learning objectives and the characteristics of elementary school students. Suggestions and comments from the validators were used to make necessary revisions and improvements. The detailed validation results are presented in Table 2 below.

Table 2. Product Validation Results of Tri N-Based Interactive Learning Media

No	Assessed Aspect	Obtained Score	Maximum Score	Percentage (%)	Category
1	Media Expert Validation	52	100	52%	Fairly Valid
2	Content Expert Validation	52	100	52%	Fairly Valid

Based on the table above, both the media expert and content expert obtained a percentage of 52%, categorized as "fairly valid." This indicates that the media have met the criteria for content and visual feasibility, though minor improvements are still needed, particularly in presentation and visualization. The validators noted that the media possess good visual appeal, are suitable for elementary students' characteristics, and can be used independently. However, they recommended enhancing user interaction and clarifying the narration in the instructional sections to make it more communicative.

Effectiveness Trial Results

The effectiveness trial was conducted to measure the impact of the learning media on students' motivation and their early reading and writing skills. During the trial, students used the media independently and then provided assessments regarding the media's appearance, ease of use, and level of attractiveness. A questionnaire using a 1–5 Likert scale was employed to gather their responses. The collected data helped determine whether the media was engaging and practical for classroom use, as well as whether it supported learning goals. The results of the effectiveness trial are presented in Table 3 below.

Table 3. Effectiveness Trial Results of Learning Media

No	Assessed Aspect	Obtained Score	Maximum Score	Percentage (%)	Category
1	Appearance and Attractiveness	18	30	60%	Fairly Positive
2	Ease of Use	12	30	40%	Less Positive
3	Material Clarity and Navigation	14	40	35%	Less Positive
	Total	44	100	44%	Less Positive

The table above shows a total score of 44%, categorized as "less positive." This suggests that the media were generally accepted but still require improvements, especially in navigation and instructional presentation. Nevertheless, students

considered the visual display and animation of the media quite engaging, indicating significant potential to increase learning engagement.

Learning Outcomes (Pre-Test and Post-Test)

Students' early reading and writing skills were measured using pre-test and post-test assessments to determine the effectiveness of the developed learning media. The pre-test was administered before students used the media, while the post-test was given after the learning activities were completed. Through this comparison, changes in students' achievement and mastery of basic reading and writing skills could be observed. The improvement in test scores indicates that the media supports the learning process and contributes to better learning outcomes. The comparison of the Pre-Test and Post-Test scores is presented in Table 4 below.

Table 4. Comparison of Pre-Test and Post-Test Scores

Class	Lowest Score	Highest Score	Dominant Score Range	Mean
Experimental (Pre-test)	48	84	65.5–74.5 (33%)	70.1
Experimental (Post-test)	75	91.5	88.5–91.5 (40%)	85.7
Control (Pre-test)	55	89	69–82 (71%)	73.2
Control (Post-test)	66	83	66–83 (75%)	74.1

The data indicate that the experimental class experienced an increase in mean scores from 70.1 to 85.7, whereas the control class only increased from 73.2 to 74.1. This demonstrates that the Tri N-based interactive learning media had a significant impact on improving students' early reading and writing skills. The N-Gain test results showed an average score of 57.76% for the experimental class (moderate category) and 9.71% for the control class (low category). Normality and homogeneity tests indicated that the data were normally distributed with homogeneous variances (Sig. = 0.967 > 0.05). Furthermore, the T-test results showed a significance value of 0.000 < 0.05 for reading skills and 0.015 < 0.05 for writing skills, confirming that the Tri N-based interactive learning media had a significant effect on improving elementary students' early reading and writing skills.

The development of Tri N-based interactive learning media successfully enhanced students' early reading and writing skills. The media followed progressive learning stages aligned with the Tri N philosophy and provided engaging multisensory learning experiences. Although improvements are still needed in navigation and instructional clarity, the media demonstrated effectiveness in increasing student motivation and learning outcomes.

Discussion

The development results indicate that the Tri N-based interactive learning media can quantitatively improve elementary students' early reading and writing skills. The experimental class showed an average increase from 70.1 to 85.7, with a mean

N-Gain of 57.76% (moderate category), whereas the control class experienced only a small increase (N-Gain 9.71%). The T-test demonstrated a significant effect on reading skills ($p = 0.000$) and early writing skills ($p = 0.015$). These findings are consistent with the literature, which suggests that interactive multimedia and the integration of visual-auditory elements enhance comprehension and retention (Park, 2022; Lukács et al., 2021; Aryawan et al., 2018). In other words, in terms of learning effectiveness, empirical evidence strongly supports that Tri N-based interventions yield tangible benefits for students' cognitive achievement. However, the expert validation results and students' subjective responses present a contrasting picture. Expert validation (media and content) each obtained 52% (categorized as "fairly valid"), and student responses regarding practicality/effectiveness showed 44% (categorized as "less positive"). This indicates that, although objective measurements (tests) demonstrated improvement, product quality evaluation and user experience remain suboptimal. This phenomenon requires a multidimensional explanation.

The moderate N-Gain score indicates that the pedagogical content and sequence of activities *(Niteni, Niroke, Nambahi)* effectively reinforce understanding and skills. However, the low practicality/navigation scores suggest usability barriers: unclear instructions, unintuitive navigation, or technical bugs may reduce user comfort even if the pedagogical content is effective (Magdalena et al., 2021; Furoidah, 2020). Instructional design literature notes that poor usability can diminish long-term motivation, even when short-term learning gains are evident (Anomeisa & Ernaningsih, 2020). Therefore, objective outcomes alone are insufficient to declare the product successful; user experience must be enhanced to ensure sustained use and effective learning processes.

The expert validation scores categorized as "fairly valid" indicate aspects of instructional design, language, or content presentation that require improvement. Experts suggested optimizing aspects such as sequence flow, narrative clarity, and multimodal integration. Considering that expert validation is a prerequisite for content quality and curriculum alignment (Sendekie, 2022), recommended improvements include simplifying instructional narration, adding contextual examples for each niteni/niroke/nambahi activity, and standardizing feedback formats in accordance with linguistic norms (Hidayat, 2021).

The trials were conducted within a limited timeframe and in specific school conditions; thus, factors such as infrastructure (connectivity/devices), teacher readiness, and school digital media culture may influence students' perceptions of practicality. Literature indicates that device availability and teacher competence play a significant role in the successful adoption of media (Kuncahyono, 2017; Muali, 2018). If devices are slow or teachers have not integrated media smoothly, students may experience operational difficulties despite the learning material being highly beneficial.

The instrument reliability test demonstrated a very high level of consistency, with a Cronbach's Alpha of 0.904, indicating that all items reliably measured the research constructs consistently. Additionally, prerequisite statistical tests,

including normality and homogeneity tests, showed that the data were normally distributed with homogeneous variance. This confirms that the data meet the basic assumptions for parametric analysis, ensuring that the inferential test results are scientifically reliable. In other words, the findings on the impact of Tri N-based interactive learning media on improving early reading and writing skills are statistically valid.

Theoretically, this study reinforces the notion that integrating interactive multimedia with Tri N principles can enhance the quality of early literacy instruction. This approach combines three complementary learning stages: guided observation (niteni), structured practice (niroke), and creativity development (nambahi). These stages create a holistic and contextual learning cycle, in which students not only receive information passively but also actively engage in observing, imitating, and recreating acquired knowledge. This aligns with the findings of Nisa et al. (2019) and Lukács et al. (2021), which highlight that multisensory engagement and learning-by-doing experiences strengthen cognitive connections between reading and writing skills at the early literacy stage.

From a practical perspective, the Tri N-based interactive learning media has great potential as a flexible learning resource that can be utilized in various instructional contexts, both as a primary classroom resource and as part of blended learning for remedial or independent study outside school hours. Its advantage lies in providing an interactive, enjoyable learning experience suited to elementary students' need for visual and kinesthetic stimulation. However, in terms of field implementation, several improvements are still necessary to optimize product quality. Product design must be enhanced so that expert validation scores can reach the "valid" or "very valid" category (≥75%) and user response-based practicality reaches the "positive" category (≥75%). This is crucial to ensure the media is ready for broad adoption without resistance from teachers or students. Without improvements in usability and design, even statistically proven effectiveness may encounter technical and pedagogical challenges at scale. Therefore, strengthening instructional design, simplifying user interfaces, and providing enhanced teacher support are strategic steps to ensure the sustainability and acceptability of this media in elementary education practice.

4. Conclussion

This study produced Tri N-based interactive learning media (Niteni, Niroke, Nambahi) that is feasible and effective for improving elementary students' early reading and writing skills. The development process, guided by the ADDIE model, resulted in a product evaluated as fairly valid by media and content experts, with an average score of 52%. The effectiveness trials indicated that the media had an attractive appearance and was easy to use, although improvements were still needed in navigation and instructional clarity. Empirically, pre-test and post-test results demonstrated a significant improvement in students' reading and writing skills after using the Tri N-based interactive learning media. The students' average scores increased from 70.1 to 85.7, with an N-Gain of 57.76% (moderate category). The

T-test results showed significance values of 0.000 for reading skills and 0.015 for writing skills, indicating that the use of the media had a significant positive effect on students' learning outcomes.

These findings confirm that applying the Tri N principles through activities of *Niteni*, *Niroke*, and *Nambahi* is effective in creating an active, contextual, and meaningful learning experience for elementary students. Through an interactive approach, this media can simultaneously enhance students' motivation, participation, and learning outcomes. Although the study demonstrated good effectiveness, further development is recommended, particularly regarding the user interface, instructional clarity, and increased interactivity, so that the media can achieve the categories of "very valid" and "very practical." Additionally, future research is advised with a larger sample size and longer implementation period to obtain more representative and generalizable results. Thus, the Tri N-based interactive learning media can serve as an innovative alternative for teaching Indonesian language in elementary schools, especially for developing students' early literacy skills. The media also has the potential to support teachers in implementing more creative, constructive, and values-oriented instruction aligned with national educational principles.

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