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The Effectiveness of the Animated Video-Based Tarl Model on Digital Literacy Skills In Elementary Schools

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A B S T R A C T

This study aims to analyze the effectiveness of the Teaching at the Right Level (TaRL) model based on animated videos in improving digital literacy skills of elementary school students. The research used a quasi-experimental method with a Non-Equivalent Control Group Design involving 28 grade V students of SDN Sari Kalampa, divided into experimental and control groups. The experimental group learned through the TaRL model with animated video integration, while the control group used conventional learning. Data were collected through pretest, posttest, observation, interview, and documentation, and analyzed using SPSS, JAMOVI, Rasch MINISTEP, SMARTPLS 4, and NVIVO. The results showed significant improvement in the experimental group, with an average posttest score of 84.29 and N-Gain of 0.69 (high category), compared to the control group with 65.36 and N-Gain 0.34 (medium). All five indicators of digital literacy increased, with the highest improvement in evaluating digital information (N-Gain = 0.74). These findings indicate that the animated video-based TaRL model is effective in improving students' critical thinking, ethical awareness, content creation, and collaboration. Thus, the model can be recommended as an innovative pedagogical strategy to support 21 st-century learning in primary schools.

1. Introduction

The development of information and communication technology has brought significant transformation to every aspect of life, especially education at the elementary school level. Digital literacy is not just the operational ability to use devices, but involves the ability to search, evaluate, process, and present information critically and ethically in a digital environment (Abdessamad et al., 2023; Suryani, 2020) These skills are especially urgent in the era of "Generation Alpha" where children from an early age are often exposed to digital content, multimedia, and online interactions (Martzoukou, 2023; Mfitahunajah et al., 2023). On the other hand, traditional learning models in many elementary schools in Indonesia still often lack the use of animation or video media as a systematic tool

to improve digital literacy, resulting in a gap between the potential of available technology and its use in learning. The urgency of this research arises because digital literacy in the future is no longer an addition but an essential part of the 21st century competencies that elementary school students must possess in order to be able to face global challenges, false information, and inequality of digital access.

The problem of this research is related to the low level of digital literacy among elementary school students, especially the critical ability to evaluate digital information sources and use multimedia effectively. Some recent studies show that the use of interactive multimedia or video can significantly improve digital literacy; for example, the study "Use of Interactive Multimedia to Improve Digital Literacy in Elementary Schools" reported an increase in digital literacy of about 38% from the beginning to the end of the intervention through the use of interactive media that includes video, animation, and other visual elements. In addition, the systematic review study "Digital Literacy in Teaching English for Young Learners: A Critical Research Review" shows that video-based instruction and digital storytelling can increase student engagement and digital literacy skills, but technology access and teacher readiness are still the main obstacles for these methods to be optimally implemented in a number of elementary school contexts(Garcia et al., 2024). Furthermore, observations in local situations (i.e. in X/Y elementary schools in region Z later) show that: most students are not skilled in evaluating the credibility of digital content, few students are able to make simple digital presentations or videos, and teachers have not routinely used animated videos in the digital literacy learning process.

The problem-solving model proposed in this study is the application of TaRL (Teaching at the Right Level) modified based on animated videos as the main medium. TaRL is a learning method that focuses on the current abilities of students, with initial diagnostics, grouping by level, level-based teaching, and frequent and intensive interventions (Banerji & Venkatachalam, 2023; Zraoula, 2024) Although the use of TaRL is primarily in basic literacy, new research in South Africa and Asia shows that similar methods when combined with high-quality media such as educational videos can accelerate the mastery of digital literacy competencies (Fitria & Handayani, 2024), (Kumar & Lee, 2025). In this context, animated videos allow for engaging visual and auditory representations, flexible repetition, and support independent and collaborative learning. The integration of TaRL with animated videos is expected to close the gap between students' digital literacy abilities and the demands of cutting-edge competencies.

On the state of the art side, relevant recent studies have examined digital literacy in elementary schools through interactive multimedia without intensive leveling. Systematic review study focusing on language learning using video-based instruction for young learners (Deswita & Dafit, 2024; Ramadhan & Aulia, 2022) demonstrate the power of video media, but not yet focused within the framework of TaRL; A study on interactive video production (Interactive Videos as Effective Tools for Media Literacy) indicates that student involvement in video media production strengthens the understanding of media literacy (Khulaifiyah et al., 2025; Zuwandi et al., 2023). However, there is not much literature that discusses

the specific effect of the animated video-based TaRL model on digital literacy in elementary school students in the Indonesian context or similar contexts with the characteristics of access gaps, variability in students' initial abilities, and limited resources. Thus, this study fills this gap by empirically testing whether the animated video-based TaRL model can be more effective than ordinary learning.

The novelty of this research lies in the systematic integration of the TaRL model with animated video as an intervention medium in digital literacy, not only as an additional medium, but as a core part of the diagnostic, implementation, and evaluation strategies. Another innovation is the focus on the critical evaluation aspect of digital sources and the production of simple content by students aspects that are relatively under-researched in the digital literacy intervention model in elementary schools in Indonesia. Furthermore, this study will use a quasi-experimental design that compares intervention and control groups with pretest-posttest, as well as qualitative measurements to capture changes in students' perceptions and digital literacy practices in depth.

The formulation of the problems studied in this study is: (1) is the animated video-based TaRL model more effective in improving the digital literacy skills of elementary school students than conventional learning?; (2) which aspects of digital literacy are most affected by this intervention: digital content evaluation, content production, or the use of digital media as a learning tool; (3) what is the perception of students and teachers towards the use of animated videos in the TaRL model? The objectives of the study are: (a) to measure the effectiveness of the animated video-based TaRL model on the digital literacy of elementary school students; (b) analyze the aspects of digital literacy that are most improved through interventions; (c) explore students' and teachers' perceptions of interventions as the basis for recommendations for larger-scale implementation.

2. Methodology

Research Type and Design

This study uses a quantitative approach with a quasi-experimental method because the research is carried out on naturally formed classroom conditions without randomizing the subjects. The research design chosen was the Non-Equivalent Control Group Design, which allowed researchers to compare the experimental group that was given treatment in the form of a Teaching at the Right Level (TaRL) model based on animated videos with a control group that used a conventional learning model.

This design was chosen because it provides flexibility in field situations where classes cannot be fully randomized, but still allows for testing the effectiveness of treatments with a high level of validity (Scott, 2021). The use of this design is relevant to the purpose of the research to evaluate the extent to which an animated video-based TaRL model can improve the digital literacy skills of elementary school students.

To ensure that the work can be replicated, this section presents clear technical information, including instruments, data collection, data analysis, and the research design itself. The structure of the design is shown in Table 2**.**

Table 2. Research Design (Non-Equivalent Control Group Design)

Experimental classes	**O_1**	**X**	**O_2**
Control class	O_1	-	O_2

Information:

O_1 = Pretest of digital literacy ability
O_2 = Posttest of digital literacy ability
X = Treatment in the form of an animated video-based TaRL model

Research Procedure

The research procedure in this study was carried out through four main stages, namely planning, implementation, evaluation, and reporting, which were systematically arranged to ensure the methodological integrity and validity of the data produced. At the planning stage, the researchers prepared the research proposal, designed the animated video-based TaRL model, and validated the digital literacy measurement instrument with the help of experts in education and digital literacy. During the implementation stage, the experimental class was given treatment using the TaRL model integrated with animated videos for six meetings, while the control class continued with conventional learning, and all classroom activities were observed and documented. At the evaluation stage, both groups were tested using the same posttest instrument, and additional data were collected through interviews, observations, and documentation to obtain a more comprehensive perspective. Finally, at the reporting stage, the results of quantitative and qualitative data analysis were compiled, interpreted, and written in the form of a scientific article to ensure that the research findings could be disseminated and replicated in similar contexts. Thus, the entire procedure not only followed a systematic sequence but also guaranteed that the study could be repeated by other researchers under comparable conditions.

a. Planning Stage
At the planning stage, the researcher first prepares a research proposal along with the digital literacy measurement instrument to be used. Furthermore, the instrument was tested for content validity through expert judgment by involving digital literacy and basic education experts to obtain instruments that are suitable for use. After that, the researcher identified two classes that had homogeneous characteristics based on initial academic data so that they could be compared in a balanced manner. Before the treatment is given, a pretest is carried out to determine the initial digital literacy ability of students in both classes. This planning stage was closed by preparing animated video media designed in accordance with the principles of TaRL so that it can be used optimally in the learning process.

b. Implementation Stage
At the implementation stage, the experimental group was given learning using an animated video-based TaRL model for six meetings, so that students could learn according to their ability level with the support of interesting and interactive media. Meanwhile, the control group continued to carry out learning using conventional methods in accordance with the applicable curriculum. During the learning process in both groups, the researcher conducted participatory observations and recorded various student activities to obtain more comprehensive supporting data.

c. Evaluation Stage
At the evaluation stage, the researcher conducted a posttest for both groups to determine the improvement of digital literacy skills after the treatment given. In addition, student and teacher perception data was collected through interviews and field notes to obtain a qualitative picture of the learning experience during the research. Furthermore, data analysis was carried out quantitatively and qualitatively using various software, namely SPSS, JAMOVI, MINISTEP RASCH, SMARTPLS 4, and NVIVO, so that the results of the study could be interpreted more comprehensively.

d. Reporting Stage
At the reporting stage, the researcher compiles a complete report on the results of the research along with the interpretation of the findings obtained from quantitative and qualitative data analysis. Furthermore, the researcher also compiles scientific articles based on the results of the research to be published in reputable journals so that they can contribute to the development of science and educational practices.

Subject or Research Participant

The subject of the study was a grade V student of SDN Sari Kalampa in Bima Regency. The determination of subjects was carried out by purposive sampling technique based on certain criteria to be relevant to the research objectives.

Inclusion Criteria:
1. Students are active in the school in the 2024/2025 school year.
2. Have minimal access to digital devices such as smartphones or tablets.
3. Follow the entire learning series from the beginning to the end of the research.

Exclusion Criteria:
1. Students with > 20% absence during the study.
2. Students with severe learning barriers that significantly affect digital skills. The classification of participants is presented in Table 3.

Table 3. Classification of Research Participants

Class	Number of Male Students	Number of Female Students	Total
Experiment	8	6	14
Control	6	8	14
Total	14	14	28

Data Collection Techniques and Procedures

Data collection was carried out with quantitative and qualitative approaches to provide a comprehensive picture. Digital Literacy Test (Pretest and Posttest): Complete with the interpretation of findings from quantitative and qualitative data analysis, so as to provide a comprehensive overview of the effectiveness of the applied model, Observations: Included in the report as supporting data that describes the activities of students and teachers during the learning process, Semi-Structured Interviews: reported to explore students' and teachers' perceptions of the effectiveness of animated video-based TaRL models, thereby providing a qualitative perspective, Documentation: in the form of notes, photos, and videos during the study are attached as authentic evidence that corroborates the findings and provides additional validity to the research results. The validity of the instrument was tested using the validity of the contents (expert judgment) and Rasch analysis with the MINISTEP application. The reliability of the instrument was tested using Cronbach Alpha via SPSS.

a. Data Collection Instruments
The instrument used is a digital literacy test based on digital literacy competency indicators. Each indicator has five questions that focus on the cognitive domains C1 to C4 according to the Revised Bloom Taxonomy. The specifications of the instrument are shown in Table 4.

Table 4. Digital Literacy Instrument Specifications

Indicator Code	Indicators	Specific Description	Context of the Question	Cognitive Domain
ID-1	Digital information evaluation	Ability to assess the credibility of digital sources	5 questions about verifying news and website information sources	C3
ID-2	Digital content production	Ability to create simple, multimedia-based content	5 questions about the steps to make a simple educational video	C4
ID-3	Use of digital media	Ability to use animated videos for self-paced learning	5 questions about interaction with learning videos	C2
ID-4	Digital ethical awareness	Understand the ethics of using digital media	5 questions about data protection and copyright	C2
ID-5	Digital collaboration	Collaborate on digital-based projects	5 questions about teamwork using collaborative applications	C3

b. Data Analysis Techniques
Data analysis is done in stages using multiple software to ensure valid, reliable, and measurable results. The data analysis techniques are summarized in Table 5.

Table 5. Data Analysis Techniques

Stages of Analysis	Purpose	Statistical Test	Application
Instrument Validity Test	Assess the suitability of the question item	Content validity, Rasch model	MINISTEP
Instrument Reliability Test	Knowing the consistency of the instrument	Cronbach Alpha	SPSS
Normality Test	Define data distribution	Shapiro-Wilk	JAMOVI
Homogeneity Test	Assess the similarity of variance between groups	Levene's Test	SPSS
Hypothesis Test	Measuring significant differences between groups	Independent Sample t-Test	SPSS
Effectiveness Analysis	Assessing improved learning outcomes	N-Gain	JAMOVI
Perception Analysis	Analyze qualitative data from interviews	Thematic Coding	NIV
Variable Relationship Analysis	Looking at the relationship between digital literacy indicators	PLS-SEM	SMARTPLS 4

3. Results and Discussion

Initial Classroom Conditions

The research was conducted in two classes of grade V at SDN Sari Kalampa, each consisting of 14 students. The experimental class had 8 male students and 6 female students, while the control class consisted of 6 male students and 8 female students. Both classes had relatively homogeneous academic abilities based on the results of the initial pretest, which showed almost identical average scores. Learning duration was six meetings, each lasting 90 minutes. The experimental class received treatment using the Teaching at the Right Level (TaRL) model with animated video integration, while the control class followed conventional learning according to the applicable curriculum. This design ensured that the comparison between the two classes was fair and that improvements could be attributed to the treatment given.
In addition to demographic balance, classroom conditions were also similar in terms of facilities. Both classes used the same learning environment with standard equipment such as blackboards, projectors, and students' personal notebooks. The main difference lay in the learning approach. The control class used teacher-centered explanations followed by exercises, while the experimental class used interactive animated videos embedded within the TaRL framework, which emphasized learning based on students' current ability levels. This condition created a clear comparison between conventional instruction and the new intervention model.

Learning Media in the Experimental Classroom

The experimental class used animated videos designed according to the principles of the TaRL model. The videos contained attractive visualizations, simple narratives, and interactive prompts to stimulate students' critical thinking and active responses. Each video lasted 7–10 minutes and was integrated into the lesson

sequence, beginning with diagnostic activities, continuing with group-based learning, and ending with reflection. Students could pause and replay the videos as needed, allowing differentiated learning according to individual readiness. This media proved effective in increasing student engagement, as observed during class activities where students were more focused and enthusiastic when the videos were played. The use of animation also made abstract digital literacy concepts easier to understand. The interface of the animated video is illustrated in Figure 1.

Figure 1. Animated Video Interface for Digital Literacy Learning

Figure 1 illustrates an animated video interface used as a medium to introduce the basic concepts of digital literacy to elementary school students. The video presents the material with colorful visuals, simple narration, and animated characters that make abstract ideas more concrete and easy to understand. Through this design, students are guided step by step to recognize the importance of digital literacy, starting from the ability to search for information, identify credible sources, and distinguish between valid and misleading content. The engaging presentation style not only attracts students' attention but also helps build a stronger foundation for further learning. This animated interface thus serves as an effective entry point to familiarize students with digital literacy skills. An instructional scene of these activities can be seen in Figure 2.

Figure 2. Instructional Scene of Animated Video-Based TaRL Activities

Figure 2 shows an instructional scene from an animated video that applies the Teaching at the Right Level (TaRL) approach in the context of digital literacy learning. The video emphasizes active student interaction by providing prompts, questions, and tasks that are adjusted to students' ability levels. In this scene, students are invited to evaluate information presented online and then discuss their reasoning, which trains critical thinking and decision-making. The visual elements in the animation, such as dialog boxes, animated characters, and interactive examples, create a classroom atmosphere that feels more engaging and collaborative. By integrating TaRL principles with animated video media, the learning process becomes more personalized, motivating students to actively participate and practice digital literacy skills according to their learning stage.

Description of Research Data

This study involved 28 students consisting of 14 students in the experimental class who received treatment in the form of a Teaching at the Right Level (TaRL) model based on animated videos, and 14 students in the control class who participated in conventional learning. The research was carried out in 6 meetings, where each meeting lasted for 90 minutes. Data was obtained through pretest and posttest of digital literacy skills developed based on five main indicators:

a.) Digital information evaluation
b.) Digital content production
c.) Use of digital media
d.) Digital ethical awareness
e.) Digital collaboration. The pretest and posttest results of students' digital literacy skills in the experimental and control groups, along with their standard deviations, are presented in Table 6.

Table 6. Average and Standard Deviation of Students' Digital Literacy Ability

Group	n	Pretest Average	SD Pretest	Posttest Average	SD Posttest
Experiment	14	47.86	5.21	84.29	4.89
Control	14	46.93	6.02	65.36	5.41

Based on Table 6 regarding the average and standard deviation of students' digital literacy ability, it can be seen that before the intervention, the average pretest score in the experimental group (47.86) was almost the same as the control group (46.93), which showed that the initial condition of the two groups was relatively balanced. However, after being given the treatment, the posttest results showed a significant difference, where the experimental group experienced an average increase in score to 84.29 with a standard deviation of 4.89, while the control group only reached an average of 65.36 with a standard deviation of 5.41. This indicates that the animated video-based TaRL model given to the experimental group is more effective in improving students' digital literacy skills compared to conventional learning applied to the control group.

Normality and Homogeneity Test

Before hypothesis analysis, the data were tested to meet the assumptions of normality and homogeneity using JAMOVI and SPSS. The results of the normality test for pretest and posttest data in both groups are shown in Table 7.

Table 7. Normality Test (Shapiro-Wilk)

Variable	Sig. Experiment	Sig. Control	Information
Pretest	0.217	0.286	Normally distributed data
Posttest	0.142	0.201	Normally distributed data

Based on Table 7 of the results of the normality test using Shapiro-Wilk, the significance value was obtained in the experimental group of 0.217 for the pretest and 0.142 for the posttest, while in the control group it was 0.286 for the pretest and 0.201 for the posttest. The overall significance value was greater than 0.05, so it can be concluded that the data in both groups, both before and after treatment, were normally distributed. Thus, the data meets one of the requirements of the parametric analysis assumption so that it can be proceeded to the hypothesis testing stage using appropriate statistical tests. Furthermore, a homogeneity test was conducted to examine the equality of variance between groups. The results are presented in Table 8.

Table 8. Homogeneity Test (Levene's Test)

Variable	F Calculate	Sig.	Information
Pretest	0.845	0.365	Homogeneous
Posttest	1.029	0.312	Homogeneous

Based on Table 8, the results of the homogeneity test using Levene's Test were obtained with a significance value of 0.365 for the pretest and 0.312 for the posttest. Both values are greater than 0.05, so it can be concluded that the variance between groups in the pretest and posttest data is homogeneous. This means that the distribution of scores in the experimental group and the control group is relatively the same, thus meeting the assumption of similarity of variance to be continued in the analysis of the parametric hypothesis test.

Hypothesis Test (Independent Sample t-Test)
Hypothesis tests were carried out to determine the difference in digital literacy improvement between the experimental and control groups. The results are displayed in Table 9.

Table 9. T-Test Posttest Test Results

Group	Mean Difference	t	Df	Sig. (2-tailed)
Experiment vs Control	18.93	7.210	26	0.000

Based on Table 9 of the results of the t-test on the posttest score, the mean difference value was 18.93 with a calculated t-value of 7.210 at the degree of freedom (df) 26 and a significance value of 0.000. Since the value of Sig. (2-tailed) is less than 0.05, H_0 is rejected and H_1 is accepted. This suggests that there was a significant

difference between the experimental group and the control group after treatment. Thus, the application of the animated video-based TaRL model has been proven to be more effective in improving students' digital literacy skills compared to conventional learning.

N-Gain Analysis

N-Gain analysis was used to determine the effectiveness of the intervention in more detail. Table 10 follows.

Table 10 N-Gain Analysis Results

Group	Pretest Average Score	Posttest Average Score	N-Gain	Category
Experiment	47.86	84.29	0.69	Tall
Control	46.93	65.36	0.34	Keeping

Based on Table 10 of the results of the N-Gain analysis, it can be seen that the experimental group experienced an increase in the average score from 47.86 in the pretest to 84.29 in the posttest with an N-Gain value of 0.69 which is in the high category. Meanwhile, the control group only increased from 46.93 in the pretest to 65.36 in the posttest with an N-Gain value of 0.34 in the medium category. These results show that interventions through animated video-based TaRL models are much more effective in improving students' digital literacy skills compared to conventional learning, as they are able to produce substantial and consistent improvements in experimental classes. This difference is visualized in the following Figure 3**.**

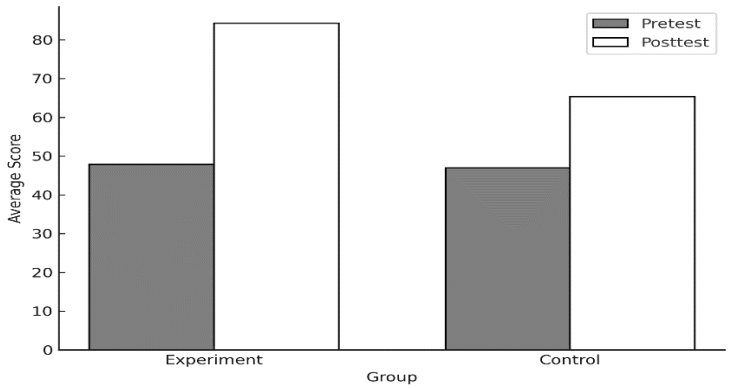

Figure 3. Comparison Graph of Pretest and Posttest Scores in the Experimental and Control Groups

Figure 3 shows a comparison of the average pretest and posttest scores in the experimental and control groups. It can be seen that in the pretest stage, the two groups had almost the same score, which was around 48, which indicates that the initial condition was relatively balanced. However, after treatment, the experimental group experienced a significant improvement with the average posttest score reaching more than 84, while the control group only increased to about 65. This significant difference in increase proves that the use of the animated

video-based TaRL model has a greater impact on improving students' digital literacy skills compared to conventional learning.

Results Based on Digital Literacy Indicators
The analysis of students' digital literacy improvement based on each indicator is presented in Table 11.

Table 11. Increase in Digital Literacy per Indicator

Indicators	Pretest Experiment	Posttest Experiment	N-Gain	Category
Digital information evaluation	46.71	86.43	0.74	Tall
Digital content production	45.50	82.14	0.67	Tall
Use of digital media	48.21	85.00	0.68	Tall
Digital ethical awareness	50.00	83.57	0.67	Tall
Digital collaboration	47.14	84.29	0.70	Tall

Based on Table 11, the results of the analysis of the increase in digital literacy per indicator show that all aspects of digital literacy in the experimental group have increased with a high category. The indicator that obtained the highest improvement was Digital Information Evaluation with an N-Gain value of 0.74, which confirmed the effectiveness of the animated video-based TaRL model in training students' critical thinking skills to assess the credibility of digital information sources. Meanwhile, the Digital Content Production indicator also increased with an N-Gain of 0.67, although lower than other indicators, which may have been influenced by the limited time of content creation practices during the learning process. Other indicators such as Digital Media Use (0.68), Digital Ethics Awareness (0.67), and Digital Collaboration (0.70) also showed high category results, so it can be concluded that the animated video-based TaRL model has a positive and comprehensive impact on improving various aspects of students' digital literacy.

Discussion

The results of this study show that the application of the animated video-based TaRL model significantly improves the digital literacy skills of elementary school students. This increase can be seen from the results of the t-test which showed a significant difference between the experimental and control groups, and was strengthened by the analysis of N-Gain which was in the high category. These findings are consistent with research (Banerjee et al., 2016),(Junianti et al., 2024) which states that the TaRL approach is effective because it focuses on the ability level of the students so that it allows teachers to personalize learning according to their individual needs. Thus, the use of animated video-based TaRL has been proven to be able to accommodate the diversity of students' abilities while strengthening the achievement of digital literacy.

The success of this model is also closely related to the use of animated videos as the main learning medium. Interactive visual media has been proven to increase student engagement, strengthen the process of internalizing concepts, and make

learning more engaging. Research (Kurniawan & Fitriani, 2022; Wilson & Brown, 2024) Shows that animated videos play an important role in encouraging active student engagement, especially those with visual and kinesthetic learning styles. In line with that, (Fitria & Handayani, 2024; Susanto, 2023) It also emphasized that the use of animated videos encourages a deeper understanding of media and digital literacy, so that students not only receive information, but are also able to process and apply it in the context of learning.

The digital literacy indicator that has increased the highest is Digital Information Evaluation with an N-Gain value of 0.74. This shows that animated video-based TaRL is effective in training students' critical thinking skills, particularly in recognizing false information and transmitting digital resources. These results support the findings (Khulaifiyah et al., 2025; Supeno et al., 2022) which emphasizes the urgency of digital literacy learning to focus on misinformation detection in the digital era. Theoretically, this research reinforces the view that digital literacy is not only determined by the availability of technology, but also influenced by a structured pedagogical approach. The integration of TaRL with animated videos makes learning more adaptive, visual, and contextual so it can be recommended as an innovative strategy to improve the digital literacy of elementary school students as a whole.

4. Conclusion

The results of this study demonstrate that the Teaching at the Right Level (TaRL) model integrated with animated videos is effective in enhancing the digital literacy skills of elementary school students. The intervention provided students with more adaptive and engaging learning experiences, allowing them to progress according to their individual ability levels while benefiting from interactive visual media. The improvement was evident across all indicators of digital literacy, particularly in evaluating digital information, creating simple content, and fostering collaboration. This suggests that the use of animated video-based TaRL does not merely strengthen technical skills but also cultivates critical and ethical awareness in digital contexts. Overall, this model can be recommended as an innovative pedagogical strategy to support 21st-century competencies in primary schools, bridging the gap between traditional classroom practices and the demands of digital learning environments.

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