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DEVELOPMENT OF SWIMMING LEARNING MEDIA TO IMPROVE THE UNDERSTANDING OF ELEMENTARY SCHOOL STUDENTS

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ABSTRAK

This research aims to develop digital learning media based on the RENANGKU application as an innovation in physical education learning media to introduce swimming sports material and improve the cognitive understanding of elementary school students. The method used in this research is Research and Development (R&D) with a 4D development model which includes the define, design, development, and disseminate stages. In the development process, the media was designed using the Canva application and continued with Smart Apps Creator to produce learning media that is interactive, structured, and suited to the characteristics of elementary school students. The suitability of the learning media was tested through a validation process by material experts, language experts, and media experts. The validation results showed a very good level of suitability, namely 96% from material experts, 98% from language experts, and 84% from media experts, so that the media was declared very suitable for use in learning. Furthermore, trials were conducted in small groups and large groups with feasibility percentages of 85% and 89.8%, respectively. The large-group trial involved 25 elementary school students. The results of media implementation showed an increase in students' cognitive understanding, which can be seen from the improvement in the average score from 74.93% to 77.92%. Based on these findings, the RENANGKU digital learning media has been proven to be feasible, practical, and effective as an alternative physical education learning media for swimming material in elementary schools.

Keyword: Digital Learning Media, RENANGKU, Cognitive Understanding.

INTRODUCTION

Sport is physical activity carried out regularly and in a planned manner to improve physical fitness. through various body movements such as walking, running, and swimming. In addition to increasing strength and endurance, exercise also plays a role in maintaining mental health through the production of endorphin hormones that help reduce stress and improve mood. Overall, exercise contributes to improving the quality of life because it is able to maintain a balance of physical and mental health. This is in line with (Lengkana et al., 2020), that exercise plays an important role in shaping physical fitness as well as individual psychological well-being, sports come from the word *Exercise* which means activities. Exercise provides benefits such as maintaining health, improving fitness, and helping to recover physical and mental health so that the body remains healthy and fit. In addition, sports also form sportsmanship, positive character,

and foster a sense of solidarity and togetherness (Safitri et al., 2021) The achievement of sports achievements is also supported by the application of the right science and technology.

Swimming is a branch of water sports performed by moving all limbs in the water to change position without touching the bottom. This activity can be carried out in swimming pools or open water by involving coordination of arm movements, leg movements, and proper breathing techniques. Swimming is beneficial for improving physical fitness, increasing muscle strength, flexibility, concentration, and respiratory function. This activity is classified as a sport with a low risk of injury, effective for maintaining heart and lung health, and is often used as a medium for physical rehabilitation therapy. In physical education, swimming is taught as a fundamental water safety skill that can enhance students' confidence, making it an essential component of the sports curriculum at various educational levels.

The development of modern technology has had a significant influence in various fields, including education. The use of technology can improve the effectiveness of learning through more interactive and personalized approaches. Technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) provide new opportunities to overcome limitations in conventional education systems (Luckin & Holmes, 2016). Artificial intelligence enables flexible learning experiences through student needs analysis, appropriate material recommendations, and supports teachers in understanding student development more comprehensively, for example through virtual tutoring systems that facilitate independent learning. Meanwhile, the Internet of Things enables the integration of physical and digital devices to create interconnected learning environments, such as wearable devices, classroom sensors, and cloud-based systems that improve learning management and expand access to education, especially for students in remote areas (Kevin Asthon, 2010).

In this context, the RENANGKU digital learning media represents an implementation of digital technology in physical education learning to address the limitations of swimming literacy among elementary school students. Swimming literacy problems often arise due to limited swimming facilities, minimal instructional time, safety concerns, and students' lack of prior exposure to water activities. RENANGKU was developed as an interactive digital learning application that presents swimming concepts, movement techniques, safety procedures, and learning evaluations in an accessible multimedia format. Through the integration of digital learning features, RENANGKU helps students understand swimming concepts cognitively before entering real water practice, thereby increasing learning readiness, confidence, and conceptual understanding. Therefore, RENANGKU serves as a technological innovation that bridges the gap between theoretical knowledge and practical swimming experience in physical education learning.

Use of learning media based on Information, Communication and Technology is an important need in increasing the effectiveness of the effectiveness of the learning process. in physical education, the use of ICT helps teachers deliver the material is presented in a more interesting and easy to understand way. However, student's learning outcomes still often face obstacles due to low learning effectiveness and lack of student motivation, so that the understanding of the material is not optimal, in addition, some teachers still face limited infrastructure facilities and lack of understanding of students' learning needs, so learning tends to use conventional methods without appropriate media support. Therefore, the development of science and technology requires teachers to innovate by integrating information technology in learning. The use of various technology-based media, such as digital modules, videos, and web-based platforms, is able to create more interactive, interesting, and improve the quality of education as a whole.

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understanding of students' learning needs, so learning tends to use conventional methods without appropriate media support. Therefore, the development of sience and technology requires teacher to innovate by integrating information technology in learning.

The use of various technology-based media, such as digital modules, videos, and web-based platforms, is able to create more interactive, interesting, and improve the quality of education as a whole. Several relevant studies show the importance of developing digital learning media in physical education. Research (Maghfiroh et al., 2023) developing interactive digital comics on pencak silat materials, (Amanullah, 2020) Developing media-based flipbook digital to support learning in the era of the industrial revolution 4.0, , (Handoyo et al., 2023) develop interactive multimedia media on badminton materials, and (Christianto, 2019) Researching Effectiveness mobile learning in cricket sports materials at the State University of Malang, the resul of the study show that digital learning media is able to increase students' knowledge, interest, and learning motivation. However, digital media that specifically introduce swimming sports for elementary school students are still limited. Therefore, this study developed the digital learning media RENANGKU (Getting to Know Swimming Sports) as an innovation to improve elementary school students' understanding of swimming sports.

METHOD

This research and Development (R&D) approach, wich aims to produce a product through a series of processes that include needs analysis, design, development, and product feasibility testing. According to (Alia Rohani & Anas, 2022) this method is designed so that researchers not only understand the theory, but also be able to create practical solutions that are applicable, especially in the context of education. In its implementation, this study adopts a 4D model developed by Thiagarajan and Semmel (in Kirana et al., 2024) This model was chosen because it was considered suitable for developing educational products. The main advantage of the 4D model lies in its systematic and thorough structure, allowing the development process to take place in a directional and effective manner.

1. Quantitative Descriptive Analysis

Quantitative descriptive analysis was used to process data obtained from questionnaires completed by respondents to evaluate the feasibility and effectiveness of the developed learning media. The questionnaire instrument was developed based on learning media evaluation indicators adapted from recent studies on educational technology assessment and digital learning evaluation. The indicators consisted of:

a. **Content Feasibility** including suitability of learning objectives, accuracy of swimming material, relevance to curriculum standards, clarity of concept presentation, and usefulness of learning content in supporting students' understanding.
b. **Language Aspect**, including sentence clarity, readability according to elementary school students' characteristics, communicative language use, and consistency of terminology in digital learning materials.
c. **Media Design Aspect**, including visual appearance, layout organization, typography, color harmony, multimedia attractiveness, and suitability of interface design in technology-based learning media.
d. **Interactivity and Usability**, including ease of navigation, user engagement, accessibility of menus, responsiveness of features, and effectiveness of digital interaction within learning environments.
e. **Learning Effectiveness**, including improvement of students' cognitive understanding, learning motivation, learning independence, and effectiveness of technology integration in supporting learning outcomes.

The collected data were analyzed using a Likert scale consisting of several assessment categories ranging from very inappropriate to very appropriate. The results were converted into

percentage scores to determine the feasibility level and effectiveness of the developed learning media (Jurnal et al., 2025).

2. Qualitative Descriptive Analysis

This technique is used to describe the results of observations, interviews, as well as responses or inputs from experts (materials, media, and language) obtained through questionnaires in addition, the result of the validation of learning media were also analyzed quantitatively through an assessment sheet prepared using the Likert scale.

Stages of Analysis . The steps taken in the data analysis process in this study include:

a. Collect all validation instruments that have been filled in by relevant experts.
b. Calculate scores from questionnaire data to obtain percentages in each assessment category, using the Likert scale formula.
c. Calculating the score from the question data to obtain the percentage in each assessment category, using the Likert scale formula.

$$Percentage = \left(\frac{Score\ of\ assesment}{Result\ maximum\ expeted\ score}\right) x\ 100\ \%$$

Convert percentage results into a table of eligibility criteria to find out if the learning media meets the standards that have been set.

Score in percent (%)	Egibility Categories
< 21 %	Very unworthy
21 – 40 %	Not eligible
41 – 60 %	Quite feasible
61 – 80 %	Worthy
81 – 100 %	Highly Worthy it

Table 1. Media Eligibility Criteria
(Pratiwi et al., 2025)

The data analysis from the questionnaire was obtained based on the students' responses, the effectiveness criteria used in the effectiveness of the media are presented in the following table:

Achievement Rate (%)	Qualifications
> 80 - 100	Highly Effective
> 60 – 80	Effective
> 40 – 60	Quite Effective
> 20 – 40	Less effective
> 0 – 20	Ineffective

Table 2. media effectiveness criteria
(Dwiyansaputra et al., 2021) with modifications)

Score Range (%)	Knowledge Qualifications
81 – 100 %	Excellent
61 – 80 %	Good
41 – 60 %	Enough
21 – 40 %	Less
0 – 20 %	Very Less

Table 3. Criteria for Assessment of Student Knowledge/Cognitive (Modified from Arikunto, 2010 & Permendikbud)

Data analysis was obtained based on the level of student understanding measured through the results of the work on the questions. The criteria for the effectiveness of learning media are compiled based on these results and presented in the following table:

Average Score	Interpretation
81 – 100 %	Very high understanding
61 – 80 %	High understanding
41 - 60 %	Moderate understanding
21 – 40 %	Low understanding
0 – 20 %	Very low understanding

Table 4. Interpretation of students' Cognitive Learning Outcomes (Sudjana, 2017)

RESULTS

The results of this research are in the form of a digital application-based learning media product called RENANGKU which was developed to introduce swimming and improve the cognitive understanding of elementary school students. This media is designed as a more interesting and interactive learning tool as well as to analyze students' responses and responses to its use in the learning process, research using the Research and Development (R&D) method with a 4D model (Four-D Models) which includes the stages of definition, design, development, and disseminate. The following is a description of the results of media development at each stage:

Definne Stage

This stage aims to identify and formulate initial needs that will be the basis for the development of RENANGKU digital learning media. In this study, the definition stage was carried out through a series of systematic activities, including needs analysis, field observations, and in-depth interviews with physical education teachers to obtain comprehensive and relevant data.

Design Stage

This stage is the initial design process of RENANGKU learning media which is compiled based on the needs of students and the results of analysis at the definition stage. Planning is carried out systematically through the following steps.

1. The design of the material in the RENANGKU media is prepared based on credible reference sources, such as basic swimming guidebooks and physical education modules. The materials developed include:
   a. Definition of Swimming, contains a brief explanation of the sport of swimming.
   b. Types of Swimming, contains the introduction of several swimming styles that are tailored to the characteristics of elementary school students.

c. Basic Swimming Techniques, including breathing techniques, leg movements, arm movements, and gesture coordination which are presented in simple language and visual illustrations so that students can easily understand.

2. Visual Design The visual design of the media is developed using the Canva platform with an attractive, interactive, and communicative appearance according to the characteristics of elementary school students, including:
   a. Bright Colors, the use of harmonious color combinations to increase interest in learning and create a fun learning atmosphere.
   b. Image Illustration, use child-friendly illustrations to help understand basic swimming concepts and movements.
   c. Simple Navigation, the media layout is made systematic and easy to operate with clear navigation buttons so that learners can access the material smoothly.

Figure 1. Initial Display of Media

3. Compiling Questions and Answers

RENANGKU learning media is equipped with an evaluation feature in the form of multiple-choice quizzes to measure students' understanding of the learning material. The system provides immediate feedback in the form of true or false markers on each answer. After all the questions are solved, the system displays the final score as a result of the learning evaluation.

Figure 2. Initial Display of the Quiz

4. Preparation of

Narrative Material in learning media is prepared using simple, clear, and communicative language so that it is easy for elementary school students to understand. The presentation of material is supported by relevant images and videos to clarify concepts and increase student involvement in learning.

5. Video Tutorial

RENANGKU learning media tutorial video is equipped with learning videos from the YouTube platform in HD (High Definition) quality. Video integration aims to help students understand the material more concretely through examples of movements that are displayed directly.

Figure 3. Video Display

Development Stage

This stage is the core process in producing learning media. At this stage, the development of RENANGKU media is carried out based on a pre-designed design, accompanied by a series of trials and validation to ensure that the media meets the set feasibility standards.

1. Media Creation The initial prototype of RENANGKU media was developed using Canva's graphic design software and the interactive media development platform Smart Apps Creator. The visual design that has been created in Canva is then integrated into Smart Apps Creator for further development, including navigation settings, adding background music, and managing display transitions, all visual elements, text, and interactive features, including evaluation quizzes and learning videos, designed into a single convenient and easy-to-use media unit. Media navigation is created using the hotspot feature as a link between pages and learning features. Smart Apps Creator was chosen as the main platform because it is able to produce interactive applications that are user-friendly and accessible through various devices, thus supporting learning flexibility.

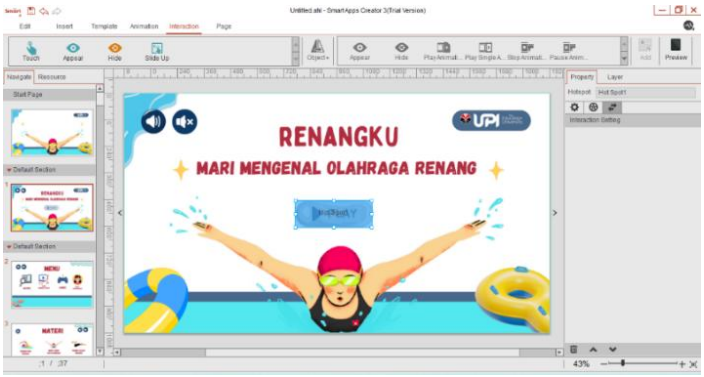

Figure 4. Design Display in the Smart Apps Creator Application

2. Product Validation Test. Before being tested on students, this media is first validated by experts:
   a. Linguist

   The validation of linguists was carried out on November 28, 2025 by Dr. Prana Dwija Iswara, M.Pd., to assess the suitability of the use of language to be communicative and in accordance with the characteristics of elementary school students. The assessment was carried out using 10 linguistic indicators with a Likert scale of 1–5, the validation results showed that

RENANGKU learning media obtained a score of 49 out of 50 (98%) and was declared very suitable for use without revisions to the linguistic aspect.

b. Material Expert

The validation of RENANGKU digital learning media materials was carried out on December 9, 2025 by Dr. Rizal Ahmad Fauzi, S.Pd., M.Pd., to ensure the suitability of the material with learning competency standards and media feasibility for elementary school students. The assessment used 10 indicators with a Likert scale of 1–5 which included the accuracy of the material, the systematics of presentation, the suitability of students' cognitive development, and media interactivity, the validation results showed that RENANGKU media obtained a score of 48 out of 50 (96%) and was categorized as very feasible to disseminate, with suggestions for minor improvements in the linguistic aspects of the material.

c. Media Member

The validation of RENANGKU digital learning media by media experts was carried out on January 2, 2026 involving Dr. H. Enjang Yusup Ali, S.Si., M.Kom. The assessment was carried out using 10 indicators which included aspects of design, navigation, visualization, and effectiveness of material delivery, The validation results showed that RENANGKU media obtained a score of 42 out of 50 (84%) and was declared suitable for use as a digital learning medium.

Disseminate Stage

The disseminate stage in the development of RENANGKU digital learning media aims to test the effectiveness and acceptance of media by elementary school students. This stage includes two forms of trials, namely small group and large group trials, to obtain student responses related to the ease of use, attractiveness, and usefulness of media in supporting the learning process.

a. Small Group Trials

The small group trial was carried out at SDN Gudang Kopi I Sumedang involving 15 grade V students as research subjects. This activity aims to find out students' understanding, the attractiveness of media, and the ease of use of learning media. Students used the media independently and filled out a response questionnaire consisting of 10 indicators with a score scale of 1–4, the results of the trial showed that RENANGKU digital learning media obtained a feasibility percentage of 85% with a very feasible category, so that it met the criteria to continue in the large group trial.

b. Large Group Trials

The large group trial was carried out at SDN Tegalendah Sumedang involving 25 grade V students. Students used the media independently then filled out a response questionnaire containing 10 indicators with a score scale of 1–4, the results of the trial showed that RENANGKU digital learning media obtained a feasibility percentage of 89.8% with a very feasible category, so that it was declared feasible and effective to be used in physical education learning in elementary schools.

Yes	Test Media	Percentage	Category
1.	Small	85, %	**Highly feasible**
2.	Large	89,8 %	**Highly feasible**

Table 5. Percentage of Small Group and Large Group Trial Results

The trial was carried out in two stages, namely:

1. A small group at SDN Gudang Kopi I Sumedang involving 15 grade V students.

HASIL ANGKET RESPON SISWA SDN GUDANG KOPI 1															
NO	Nama Siswa		Nomer Butir Pertanyaan Angket										Jumlah	Skor Maksimal	%	% Rata-rata
			1	2	3	4	5	6	7	8	9	10	S	N		
1.	AI		3	4	2	4	3	2	4	3	3	4	32	40	80	
2.	DA		3	3	4	4	3	2	4	4	4	3	34	40	85	
3.	AA		3	3	4	3	4	2	3	2	2	4	30	40	75	
4.	CR		2	3	4	3	4	4	2	3	3	4	32	40	80	
5.	TA		4	4	4	4	4	4	4	4	4	4	40	40	100	
6.	SG		3	3	3	3	4	3	4	3	4	4	34	40	85	
7.	FHM		3	3	3	3	3	4	3	3	3	3	31	40	77,5	
8.	GI		3	3	4	3	4	3	3	4	4	3	34	40	85	
9.	AND		3	3	4	4	3	3	4	4	3	3	34	40	85	
10.	SZ		3	3	3	4	3	3	3	3	3	4	32	40	80	85
11.	FI		3	3	4	3	4	3	4	3	4	3	34	40	85	
12.	NA		4	4	3	4	4	4	4	4	3	4	38	40	95	
13.	AA		3	4	3	3	4	3	3	4	3	4	34	40	85	
14.	AJR		3	4	4	3	3	4	3	4	4	4	36	40	90	
15.	MA		3	3	4	4	3	3	4	4	3	4	35	40	87,5	
Jumlah		S	46	50	53	52	53	47	52	52	50	55	510			
Skor Maks		N	60	60	60	60	60	60	60	60	60	60				
%			76,66667	83,33333	88,33333	86,66667	88,33333	78,33333	86,66667	86,66667	83,33333	91,66667				
% Rata-rata			85													

Table 6. Small Group Trial Results

2. And a large group at SDN Tegalendah Sumedang with 25 grade V students as samples.

The results of the trial showed an increase in students' positive responses to RENANGKU media, with the percentage increasing from 85% in the small group trial to 89.8% in the large

HASIL ANGKET RESPON SISWA SDN TEGALENDAH																
NO	Nama Siswa		Nomer Butir Pertanyaan Angket										Jumlah	Skor Maksimal	%	% Rata-rata
			1	2	3	4	5	6	7	8	9	10	S	N		
1.	FR		3	2	2	3	4	3	3	4	4	3	31	40	77,5	
2.	HM		4	2	3	3	4	3	4	3	4	3	33	40	82,5	
3.	AR		3	4	3	4	4	3	4	3	3	4	35	40	87,5	
4.	RA		4	4	3	4	3	3	4	4	4	3	36	40	90	
5.	MN		3	4	4	4	3	3	4	4	4	3	36	40	90	
6.	TNA		4	3	4	4	4	3	3	4	3	4	36	40	90	
7.	AP		3	4	4	4	3	3	4	3	4	3	35	40	87,5	
8.	DH		4	3	4	4	3	4	3	4	3	4	36	40	90	
9.	RN		3	4	4	4	3	4	4	3	4	4	37	40	92,5	
10.	KC		3	4	4	4	3	4	4	3	4	3	36	40	90	
11.	FI		3	4	2	3	3	4	3	3	4	4	33	40	82,5	
12.	TA		4	4	4	4	3	4	3	4	4	4	38	40	95	
13.	MH		3	4	4	4	4	4	4	4	4	4	39	40	97,5	
14.	AA		4	3	3	4	4	4	3	4	4	4	37	40	92,5	
15.	FZKS		3	3	3	3	3	4	3	3	3	4	32	40	80	89,8
16.	ARA		3	3	4	3	3	4	3	4	3	3	33	40	82,5	
17.	GH		4	3	3	4	4	4	3	4	4	4	37	40	92,5	
18.	AR		3	4	3	4	3	4	3	4	4	3	35	40	87,5	
19.	ILM		3	4	4	4	4	4	4	4	4	4	39	40	97,5	
20.	FFJ		3	4	4	3	3	4	3	3	3	4	34	40	85	
21.	MA		4	4	3	4	3	4	4	3	3	4	36	40	90	
22.	FFPS		3	4	4	4	4	4	3	3	4	4	37	40	92,5	
23.	RSA		4	4	4	3	4	4	3	4	4	4	38	40	95	
24.	SA		3	4	4	4	4	4	4	4	4	4	39	40	97,5	
25.	SW		4	4	4	4	4	4	4	4	4	4	40	40	100	
Jumlah		S	85	90	88	93	87	93	87	90	93	92	898			
Skor Maks		N	100	100	100	100	100	100	100	100	100	100				
%			85	90	88	93	87	93	87	90	93	92				
% Rata-rata			89,8													

Table 7 Results of Large Group Trials

group. These results show that learning media is included in the category of being very feasible for use in learning to introduce sports in elementary schools. This increase shows that well-designed digital learning media is able to improve student motivation and learning outcomes (Ghofur, 2020 (in Durrotun Nafisah, 2020).

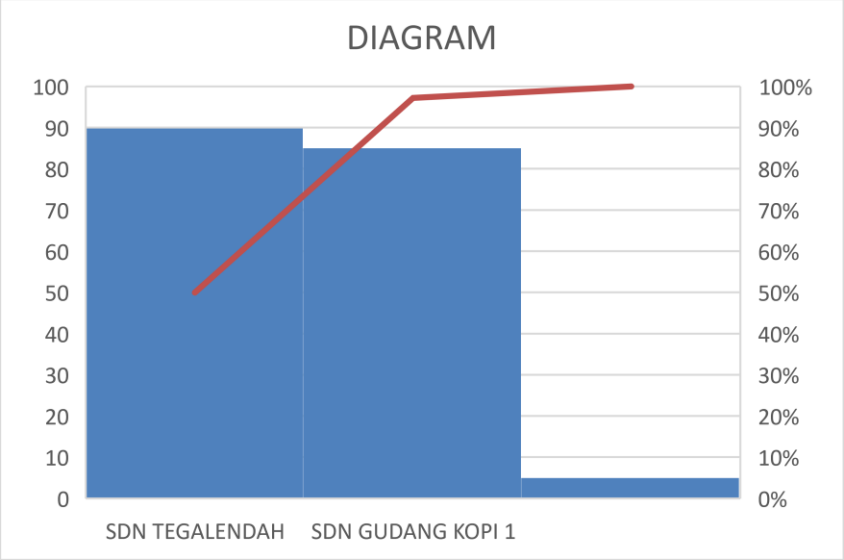

Figure 5. Small Group Test Diagram Table and Large Group Test

Cognitive Percentage Small Group Trials & Large Group Trials

1. Small Group Trials

The small group trial was carried out at SDN Gudang Kopi I Sumedang involving 15 grade V students as research subjects. This trial activity aims to obtain an initial overview of the effectiveness of learning media in increasing students' understanding of the material presented. Based on the results of data analysis, there was an increase in the cognitive aspect of students which was shown through an increase in the level of material understanding by 74.93%, so that the learning media developed was considered to be able to make a positive contribution to improving students' cognitive abilities in the learning process.

2. Large Group Trials

After the implementation of the small group trial, the research was continued with the large group trial stage to obtain a more comprehensive picture of the effectiveness of the developed learning media. The results of the analysis showed a further increase in the cognitive aspect of students, namely from the previous percentage of comprehension of 74.93% in the small group test to 77.92% in the large group test. This increase shows that the use of learning media is able to have a sustainable positive impact on the development of students' cognitive abilities in understanding learning materials more optimally.

No	Student Cognitive	Persentase	Kategori
1.	Small	74, 93 %	High Understanding
2.	Large	77, 92 %	Very High Understanding

Table 8. Percentage of Small Group and Large Group Trial Results

Based on the results of small group and large group trials, the learning media developed showed effectiveness in improving Students' cognitive abilities. In a small group trial involving 15 grade V students of SDN Gudang Kopi I Sumedang, the level of students' cognitive comprehension reached 74.93%, then increased to 77.92% in the large group trial. These results show an increase in students' ability to understand concepts, remember materials, and process learning information more systematically. The increase confirms that the use of digital learning media is

able to support learning that is oriented towards strengthening students' cognitive domains. This is in line with (Sudirjo & Sudrazat, 2024), that physical education learning not only emphasizes the aspect of movement skills, but also the development of cognitive abilities through understanding concepts and knowledge of movement so that the learning process becomes more meaningful. Thus, the learning media developed was declared effective in improving students' cognitive understanding of the learning material.

DISCUSSION

Define Stage

Stages defines It is carried out through problem identification and needs analysis to determine the direction of learning media development (Hendratno et al., 2023), The needs analysis was carried out through interviews with PJOK teachers at SDN Gudang Kopi I Sumedang and SDN Tegalendah Sumedang. The results show that there is no digital learning media for swimming materials and that there is still limited student understanding of the material. A comprehensive needs analysis is the basis for designing relevant media and according to the needs of elementary school student According to Fitri dkk. 2023, (in Manik & I Wayan Widiana, 2023).

Design Stage

Stages Design aims to prepare an initial draft of the media as a guideline for development (Arkadiantika, 2019 (in Wijayanti & Waitaby, 2024). RENANGKU media was designed using Canva with 38 slides of material tailored to the cognitive characteristics of elementary school students. The design includes eye-catching visuals, simple layouts, relevant illustrations, interactive quizzes as formative evaluations, as well as the integration of video tutorials to help with the understanding of swimming concepts and techniques. Design refers to the principle of multimedia learning through the optimal integration of visual and verbal elements (Sadiman, 2014. (in Nabila & Mawaddah, 2024).

RENANGKU Media Design

was developed with a multimedia approach that integrates text, images, audio, video, and educational games. The visuals use bright colors and kid-friendly illustrations to increase learning motivation. The navigation system is designed to be simple and intuitive through key buttons such as Start, Material, Quiz, and Return. The integration of illustrations and video tutorials aims to create an interactive, engaging, and easy-to-understand learning experience for students independently.

Development Stage

At the stage development, Canva's design was further developed using Smart Apps Creator (SAC) into a functional, interactive app. Development includes the preparation of navigation user-friendly, the addition of background music, the integration of video tutorials from YouTube, and proportional layout settings for easy to understand. Interactive digital media has been proven to be able to improve learning outcomes through more meaningful learning experiences (Kusuma, 2020 (in Okra & Novera, 2019), this stage ended with expert validation, namely language validation by Dr. Prana Dwija Iswara, M.Pd., material validation by Rizal Ahmad Fauzi, S.Pd., M.Pd., and media validation by Dr. H. Enjang Yusup Ali, S.Si., M.Kom. The validation results showed that the media met the feasibility standards with several minor improvement suggestions (Kusuma, 2020 (in Okra & Novera, 2019), so that the media is declared ready to be tested.

Disseminate Stage

Stages disseminate It is carried out through dissemination and media trials to students to find out the level of effectiveness and acceptance of users. Implementation was carried out on a limited basis by providing a questionnaire of students' responses to the use of RENANGKU media. Media dissemination can be done through digital learning platforms or storage devices according

to user needs (Jafnihirda et al., 2023). This stage aims to ensure that the media is suitable for use in learning the introduction of swimming in primary schools.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the RENANGKU learning media is suitable for use in learning after undergoing a series of analysis, development, and expert validation processes. The validation results indicated high feasibility levels, with percentages of 96% from material experts, 98% from language experts, and 84% from media experts, all categorized as feasible for implementation in the learning process. At the implementation stage, the learning media was tested through a small-scale trial at SDN Gudang Kopi I Sumedang, obtaining a feasibility score of 85%, followed by a large-scale trial at SDN Tegalendah Sumedang with a result of 89.8%. These findings demonstrate increased media acceptance and effectiveness in broader learning situations. Furthermore, the use of RENANGKU learning media was proven to improve elementary school students' cognitive understanding of swimming material. Students' understanding increased from 74.93% in the small-group trial to 77.92% in the large-group trial, indicating a positive change in cognitive learning outcomes after media implementation. Therefore, RENANGKU learning media can be categorized as effective and appropriate for use as an alternative digital learning medium to introduce swimming material at the elementary school level while supporting interactive and technology-based physical education learning.

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