

Research article

The Development of Ular Tangga Nusantara (Larganusa) as Social Studies Learning Media for Elementary Schools During the COVID-19 Pandemic

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Abstract.

This study aimed to determine: (1) the development process of the *Ular tangga nusantara* (Larganusa) or Nusantara ladder snake learning media; (2) the appropriateness of the media of Larganusa; (3) the response of teachers and students to Larganusa; (4) the increase in student achievement as a result of using these media; and (5) the effectiveness of using the Larganusa. This was research and development research which used the Borg and Gall model. Data were collected through interviews, questionnaires, and tests and analyzed descriptively. The results were as follows: (1) the Larganusa was developed from information gathering and field testing; (2) the media developed were declared fit for use with very good criteria, indicated by the assessment of material experts with a score of 88% and media expert assessment with a score of 90%; (3) the response of students and teachers was very good, indicated by a teacher score of 96% and a student score of 88%; (4) student learning achievement increased – the average pretest value was 59.8 and the average posttest value after using the media was 85.0; and (5) the media of Larganusa was effectively used in learning, as shown by the results of the paired sample t-test which indicated a significant effect.

Keywords: Ular tangga nusantara (larganusa) game, learning media development, social sciences, elementary school

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1. Introduction

Education is a basic thing needed by humans around the world. Education is very important for people's lives because education can educate the life of the nation and state, not only in Indonesia. Education is a right that every child has. Education is used as an effort to help the souls of students both physically and mentally towards a better human civilization [1] and to carry out learning related to knowledge, attitudes, and skills accompanied by an educator [2]. The education system in Indonesia refers to the National Education System which is an education system that will bring progress and

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development to the nation and respond to the challenges of the ever-changing times as stated in the Republic of Indonesia Law NO. 20 of 2003 on SISDIKNAS [3].

Social Sciences (IPS) is one of the subjects in the primary and secondary curriculum. Social studies subjects are implemented in the form of learning as stated in the Regulation of the Minister of Education and Culture (Permendikbud) Number 21 of 2016 concerning Basic and Secondary Education Content Standards [4]. IPS is a grouping of knowledge that aims to study human relationships in social life in society concerning human life, which involves all their behavior and needs. [4-5]. Social studies learning is expected to create students who can adapt to society [4, 6-7].

The learning process in education units in Indonesia based on Government Regulation (PP) number 19 of 2005 concerning National Education Standards Chapter IV article 19, paragraph (1) is held interactively, is inspiring, fun, challenging, motivates students to actively participate, and provides space. sufficient for the initiative, creativity, and independence according to the talents, interests, and physical and psychological development of students. To make this happen, educators do not only use the classroom learning model with the lecture method. In learning, there are activities to choose, determine, and develop methods to achieve the desired learning outcomes[8]. Interesting and innovative learning is needed so that students are active in learning [9-10] so that social studies learning media is needed to help the learning process[11].

Learning media is anything both physical and technical in the learning process that is used to transmit messages which can stimulate students' thoughts, feelings, attention, and willingness to learn [12]. The functions of learning media are: (a) Clarify the presentation of messages so that they are not too verbalize (in the form of mere written or spoken words) (b) Overcoming the limitations of space, time, and sensory power, (c) The use of appropriate and varied learning media can be overcome by the passive attitude of students [13]. With the existence of media, learning will be more varied and not monotonous. Monotonous learning will make students quickly bored and less interested in the material being taught, so that innovative learning media are needed to support the learning process according to the characteristics. Material and characteristics of students [14]. In elementary school learning, the use of learning media in the form of concrete media [15-16] is expected to provide learning and enjoyable experiences for students [17] and can increase student motivation and learning achievement. While the use of learning media that is less than optimal in learning activities will affect student learning outcomes or student achievement [18].

Learning achievement is the level of humanity that students have in accepting, rejecting, and assessing information obtained in the teaching and learning process

[19]. Learning achievement is the result achieved by students in terms of knowledge, skills, and learning experiences [20] (during the teaching and learning process within a certain period [21]. Student learning achievement can be determined by conducting daily assessments or final assessments.

Based on the results of interviews with grade IV teachers at SD N Pakunden 2 on November 19, 2020, information was obtained that student achievement in social studies learning was still low, whereas many as 93.33% of the total students had not reached the specified minimum completeness criteria (KKM), namely 75. (as shown in table 1).

TABLE 1: List of Score Grade IV Social Studies Subject SD N Pakunden 2.

No.	Name	Score	Info
1	ALP	63,33	not complete
2	AW	69	not complete
3	ASA	65	not complete
4	AKA	58,67	not complete
5	AY	66,67	not complete
6	ADR	73,33	not complete
7	AAB	63,33	not complete
8	FY	68,67	not complete
9	FJH	66,67	not complete
10	FA	68,33	not complete
11	HP	71,67	not complete
12	NSDB	71,67	not complete
13	SKS	71,67	not complete
14	SM	80	complete
15	VAM	71,67	not complete
Σ Score			1029,68
Means Score			68,64
Σ complete			1 (6,67%)
Σ not complete			14 (93,33%)

One of the reasons for the low student achievement is that there are no learning media used to assist the social studies learning process in class IV, so the material has not been conveyed properly to students. In the learning process, the teacher only uses thematic book media. In addition, the learning process in grade IV tends to use the lecture method in delivering material, so that learning cannot run effectively because students just sit, stay still, and listen to the explanation from the teacher.

Based on the problems that occurred, the researcher chose an alternative problem solving by developing the Nusantara Staircase Snake (Larganusa) media in social

studies learning material Theme 7 The Beauty of Diversity in My Country Sub-Theme 2 The Beauty of Cultural Diversity in Class IV SD N Pakunden 2. Learning media in the form of games is an alternative solution learning process in schools [22] which can arouse enthusiasm and have an influence on children’s development [23]. With the Nusantara Staircase Snake (Larganusa) media, students will learn while playing, thus spurring students to be active, besides that students will feel happy and enthusiastic when the learning process takes place. When going through the boxes on Larganusa media, students will indirectly remember or memorize the diversity of traditional houses in Indonesia. This research is entitled "Development of the Archipelago Snakes and Ladders Game (Larganusa) as a Social Studies Learning Media for Class IV Elementary Schools".

2. Method

The method used in this research is development research or known as Research Development (R&D). R&D research is research conducted to develop a certain concept or procedure [24]. This development research uses the development steps of Borg & Gall [25] as shown in Figure 1. This research only reached stage 7, due to the obstruction of situations and conditions during the Covid-19 pandemic.

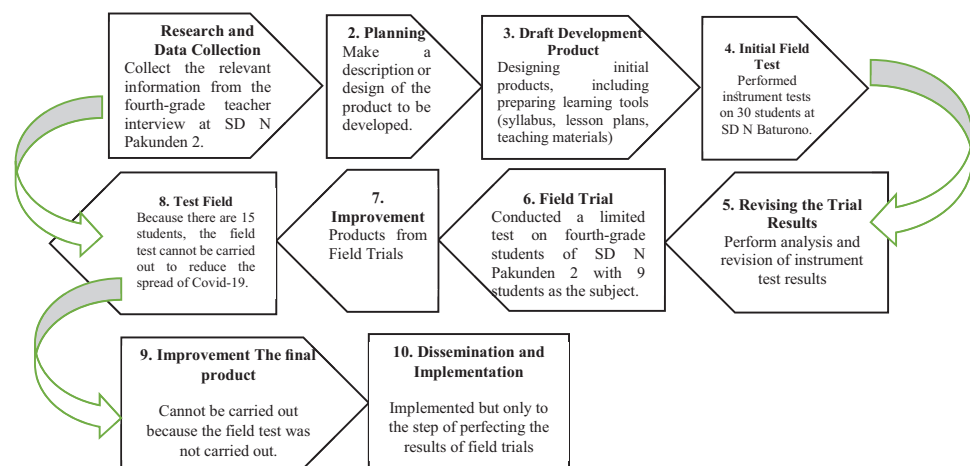


Figure 1: Research procedures.

This research was conducted at SD N Pakunden 2 in the academic year 2021/2022. The research subjects were the fourth-grade students of SD N Pakunden 2 as many as 9 students. The research method in this study is listed in Table 2 as follows.

TABLE 2: Research method.

Data	Data Collecting Technique	Data Analysis
Larganusa's eligibility from the media side	Media expert validation questionnaire	$\frac{\text{percentage gain scored}}{\text{maximum score}} \times 100 = \text{score}$
The eligibility of Larganusa from the material side	Material expert validation questionnaire	$\frac{\text{percentage gain scored}}{\text{maximum score}} \times 100 = \text{score}$
Teacher response	Teacher response questionnaire	$\frac{\text{percentage gain scored}}{\text{maximum score}} \times 100 = \text{score}$
Students Response	Student response questionnaire	$\frac{\text{percentage gain scored}}{\text{maximum score}} \times 100 = \text{score}$
Improved learning achievement	Test	$\frac{\text{Average total student scores}}{\text{total all student score}} \times 100 = \text{score}$
Larganusa media effectiveness	Test	$t = \frac{\sum d_1}{\sqrt{\frac{N \sum d_1^2 - (\sum d_1)^2}{N-1}}}$

The validity test was also used to determine whether or not the pretest and posttest questions from the results of the initial field trials were valid. The data analysis technique to calculate the validity test used the following formula:

$$r_{1,2} = \frac{N \sum X_1 X_2 - (\sum X_1)(\sum X_2)}{\sqrt{(N \sum X_1^2 - (\sum X_1)^2)(N \sum X_2^2 - (\sum X_2)^2)}}$$

Description ;

$r_{1,2}$ = The correlation coefficient sought

N = Number of subjects

X_1 = Pre-test score

X_2 = Post-test score

(Sunarti dan Selly, 2014: 92)

A reliability test is used to determine whether the pretest and posttest instrument questions that have been made are reliable or not. Reliability testing can be done using calculations with the following formula:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{(N \sum X^2 - (\sum X)^2)(N \sum Y^2 - (\sum Y)^2)}}$$

Description ;

$r_{1,2}$ = T :

r_{xy} = Product moment correlation

N = Numbers of respondents

$\sum X$ = Total score variable X

$\sum Y$ = Total score variable Y

Suharsimi (Sunarti dan Selly, 2014: 100)

A normality test is used to determine whether the data is normally distributed or not. A normality test was conducted on the students' pretest and posttest results. To test normality in this study, the Kolmogorov-Smirnov test and the Saphiro-Wilk test were used. Sig. (Significance) or probability value > 0.05 then the data is normally distributed.

While the Paired Sample T-Test was used to determine the effectiveness of the developed learning media. The formula used in the calculation of the Paired Sample T-test is as follows:

$$t = \frac{\sum d_i}{\sqrt{\frac{N \sum d_i^2 - (\sum d_i)^2}{N-1}}}$$

Description :

t = t score

d = difference between posttest and pretest scores

N = numbers of sample

3. Result and Discussion

3.1. Development Product

From the needs analysis and problem identification, the researchers developed learning media for class IV social studies material. Development is a process for developing and validating products that will be used in education and learning [26]. In this study the media developed was in the form of the game Snakes and Ladders Nusantara (Larganusa)). The development of Larganusa media was based on the absence of learning media used to assist in the social studies learning process. In addition, the learning process in class IV tends to use the lecture method in the delivery of material, so that learning cannot run effectively From the results of the identification in consultation with the class teacher, it was found that the students' need for learning media in social studies subjects was then devoted to the diversity of traditional houses in Indonesia.

Larganusa product planning is done by making product drawings/designs (picture 2). The size of the product is adjusted to the characteristics of elementary school students who like to play and work in groups [27-28]. So the size of the product is designed with a size that is not too small, namely 80 cm x 95 cm so that it can be used in groups and

considering the current conditions during the Covid-19 pandemic to keep a distance when playing Larganusa media.

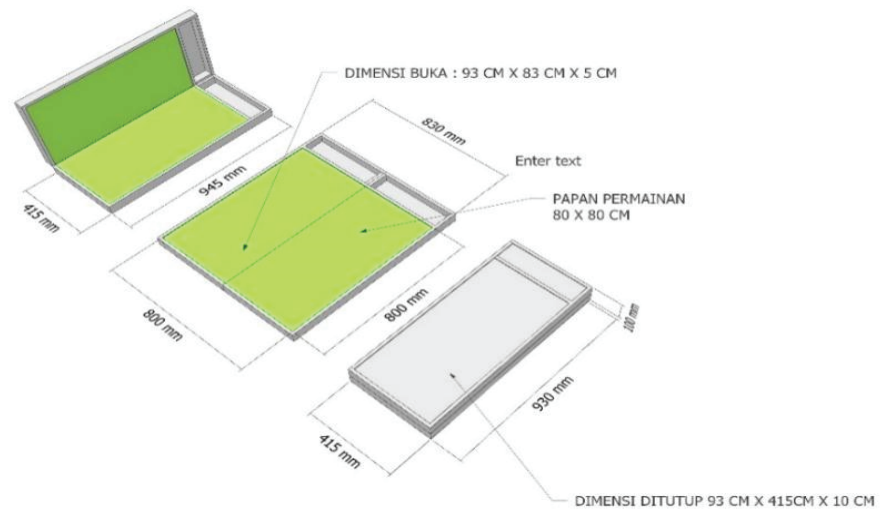


Figure 2: Media Design of *Larganusa*.

Next, the researcher made an initial product plan (Figure 3). The material used in the manufacture of Larganusa media is durable and safe, namely teak wood. Larganusa products have storage drawers for storing textbooks or game cards.



Figure 3: Product Basic Plan.

The researcher made a final product plan by adding pictures/stickers to the inside and outside of the Larganusa media board (Figure 4). On the outside of the game board, there is an image of a map of Indonesia and the inscription LARGANUSA (ULAR TANGGA NUSANTARA). While on the inside of the game board (game arena) there are 64 plots equipped with pictures of the diversity of traditional houses in Indonesia.



Figure 4: Rencana Akhir Produk.

From the development of Larganusa products, it is expected to provide benefits in the learning process, including 1) Uniform delivery of material 2) Clearer and more interesting learning 3) The learning process is more interactive 4) Time and energy efficiency 5) Improve the quality of learning outcomes 6) Learning can be done anytime anywhere and anytime 7) Foster a positive learning attitude towards learning processes and materials 8) Increase the teacher's role in a more positive and productive direction [29].

3.2. Media Eligibility

Learning media developed before being used for research must go through a validation stage [30]. The feasibility of a media can be known through the quality of the material and media aspects of the product being developed. Validation of feasibility Media Larganusa is carried out by material experts and media experts. The assessment of material experts is carried out by Mr. Zamrudin, S.Pd as a fourth-grade teacher at SD N Pakunden 2. Based on the assessment of material experts on Larganusa media as a whole, a percentage score of 88% is in the percentage interval 85% - 100% then obtained an A value with the category "Very Good" (Table 3) So it can be said that the Larganusa learning media in the material aspect has quality with very good criteria and is suitable for use in learning.

The media expert assessment was carried out by Mrs. Mahilda Dea Komalasari, M.Pd as a lecturer at PGRI Yogyakarta University. From the assessment given by media

TABLE 3: Material Expert Assessment Results.

No.	Statement	Score
1	The suitability of the material with KI and KD.	4
2	Kesesuaian materi dengan Indikator.	4
3	Clarity of the formulation of learning objectives.	3
4	Clarity of the formulation of the content of the material with learning objectives.	5
5	The accuracy of the use of language under the cognitive development of students.	5
6	The language used is easy to understand.	5
7	The suitability of the content of the material with the developmental stage of students.	3
8	Completeness of the material presented..	4
9	The collapse of the material used.	4
10	Keruntutan tingkat kesukaran materi yang disajikan.	3
11	The suitability of giving sample questions with the material.	4
12	The suitability of giving examples of questions with the cognitive development of students.	4
13	The attractiveness of the material to the learning interest of students.	5
14	The attractiveness of the material to the attention of students.	5
15	The suitability of the items with the indicators.	5
16	Clarity of questions.	5
17	Question writing accuracy.	5
18	Answer key accuracy.	5
19	Answer writing accuracy.	5
20	Accuracy of working instructions.	5
Total		88
Average Score		4,4
Criteria		Very Good

experts, overall a score of 90% was obtained, then the category "Very Good" was obtained (Table 4). So it can be said that the Larganusa media has eligibility criteria A.

Based on the explanation above, the feasibility of the learning media product of Snakes and Ladders Nusantara (Larganusa) can be declared suitable for use in the

TABLE 4: Media Expert Assessment Results.

No	Aspect	Score
1	The durability of the materials used	5
2	Safety of materials (media) against the reach of children	5
3	The attractiveness of the media display according to the fourth-grade elementary school students	5
4	Readability of information in the media	4
5	The appropriate font size used	4
6	The combination of colors in the media	4
7	Clarity of instructions for using media	4
8	Ease of use of media	4
9	Media support to help to learn activities	5
10	The accuracy of media selection to improve the ability to study social studies material Theme 7 The Beauty of Diversity in My Country Sub-theme 2 The Beauty of Cultural Diversity in My Country	5
Total		45
Average Score		4,5
Criteria		Very Good

learning process. Learning media can provide fun learning and experiences for students [1] and can increase students' motivation and learning achievement. The use of media in learning involves active students in the learning process [31]. With the use of Larganusa products, it can help students in learning and easily understand the material presented by the teacher regarding the diversity of traditional houses in Indonesia.

3.3. Teacher and Student Response

Data collection on teacher responses and student responses was carried out by filling out questionnaires directly by teachers and students after receiving learning by applying the learning media that had been developed, namely Larganusa. The teacher's response questionnaire assessment in the limited test obtained a percentage score of 96%. The percentage score of 96% is in the 85%-100% interval, so it has the "Very Good" criteria. The subject of the teacher's response was the fourth-grade teacher at SD N Pakunden 2, namely Mr. Zamrudin, S.Pd.

TABLE 5: Teacher Response Result.

No	Statement	Score
1.	Media Larganusa uses materials that are safe for the reach of children	5
2.	Media Larganusa has an interesting shape	5
3.	The form of Larganusa media can improve student learning achievement	5
4.	Media Larganusa makes students bored of studying social studies	5
5.	Information in Larganusa media is easy for students to understand	5
6.	Writing letters in Larganusa media is easy for students to read	4
7.	Media Larganusa has an interesting color combination	5
8.	The colors of traditional houses in Larganusa media make students interested in learning Theme 7 The Beauty of Cultural Diversity in My Country Sub-theme 2 The Beauty of My Country's Cultural Diversity	5
9.	The use of Larganusa media is easy for students to play	4
10.	Instructions for using Larganusa media are not clear	5
11.	Media Larganusa makes it easier for teachers to deliver material	5
12.	Media Larganusa makes it easier for students to learn	5
13.	Media Larganusa makes it difficult for students to study in groups	5
14.	Media Larganusa helps students to be actively involved in the direct practice of learning	5
15.	Media Larganusa helps students learn independently	5
Total		73
Average Score		4,8
Criteria		Very Good

Assessment of student responses in a limited trial that has been carried out on 9 students obtained a score of 479 from a maximum score of 540. Furthermore, a percentage of 88% is obtained which is in the interval of 85% - 100%, which means it has a very good score criterion. The subject of the student response was the fourth-grade students of SD N Pakunden 2, totaling 9 students.

TABLE 6: Student Response Result.

No	Statement	Score
1.	Media Larganusa has an interesting shape	42
2.	The form of Larganusa's media made me interested in studying social studies	45
3.	Media Larganusa has beautiful colors	44
4.	The colors of traditional houses in Larganusa's media are boring	43
5.	Writing letters on Larganusa media is easy to read	45
6.	The writing of the letters on the Larganusa media is less attractive	44
7.	Media Larganusa makes it easier for me to learn	44
8.	Media Larganusa makes it difficult for me to study in groups	44
9.	Media Larganusa allows me to study without being accompanied by a teacher	42
10.	Larganusa game media is easy for me to understand	43
11.	Media Larganusa makes it easy for me to understand social studies material Theme 7 The Beauty of Diversity in My Country Sub-theme 2 The Beauty of Cultural Diversity in My Country	43
12.	Larganusa media is difficult for me to use	45
Total		479
Average Score		
Criteria		Very Good

3.4. Improved Learning Achievement

The development of the Nusantara Ladder (Larganusa) media in a limited trial can also improve student learning achievement, this shows the success of learning after using the Nusantara Ladder (Larganusa) media. Learning achievement is evidence of learning success or the ability of students to carry out learning activities according to the weight they have achieved [19]. Learning achievement is influenced by several factors, namely factors from within students (internal factors) which include health, and external factors (external factors) which include the influence of the community environment, school environment, family environment.

The assessment of improving learning achievement starts from an assessment before using the medium of Snakes and Ladders Nusantara (Larganusa), the researchers conducted a pretest on 9 students and obtained an average pretest score of 59.8. This shows that the average score obtained by students is still below the specified minimum completeness criteria, which is 75 (Table 7).

TABLE 7: Pretest Data Result.

No	Student Name	Pretest Score	Criteria
1	NY	50	not pass
2	KAN	59	not pass
3	FSI	68	not pass
4	ALD	63	not pass
5	ABL	50	not pass
6	SH	77	pass
7	ASP	77	pass
8	PRR	45	not pass
9	BWC	50	not pass
Total		539	
Average		59,8	

From this analysis, the researcher then conducts teaching and learning activities using the medium of Snakes and Ladders Nusantara (Larganusa) and then gives a post-test to students to compare achievement results. study before and after using Larganusa media (Table 8). It is known that the average value after using the Nusantara Ladder Snake (Larganusa) media is 85, which means that it is above the specified learning completeness criteria, which is 75. Students who score above the KKM are 100%. Based in the data above, the value of the average of the pre-test and post-test shows that the learning media of Snakes and Ladders Nusantara (Larganusa) affects student achievement in social studies subjects.

TABLE 8: Posttest data result.

No	Student Name	Postest Score	Criteria
1	NY	75	pass
2	KAN	80	pass
3	FSI	85	pass
4	ALD	80	pass
5	ABL	85	pass
6	SH	95	pass
7	ASP	90	pass
8	PRR	85	pass
9	BWC	90	pass
Total		765	
Average		85	

Comparison of student achievement results based on the average value can be illustrated by the following graph:

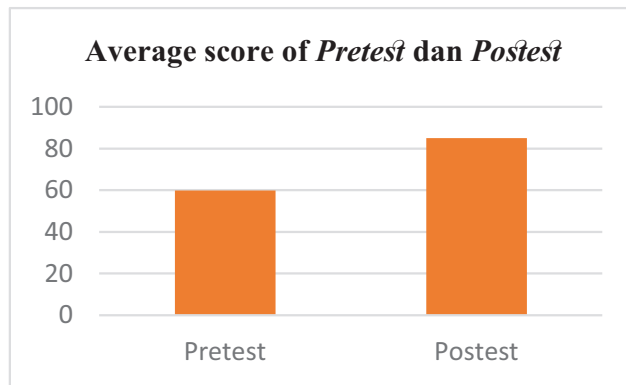


Figure 5: Pretest and posttest values comparison chart.

3.5. Effective Use of Media

The effectiveness of learning is one of the quality standards of education and is often measured by the achievement of goals [32-33]. The effectiveness of the use of media can be seen from the results of the Paired Sample T-test [34-35]. Before conducting the Paired Sample T-test, the data used must be a normal distribution. So that a prerequisite test (normality test) must be carried out first to find out whether the data is normally distributed or not. From the results of the pretest normality test with the Kolmogorov-Smirnov test, the Sig value is 0.155 and the Saphiro-Wilk value is Sig 0.208. Because the Sig Kolmogorov value is obtained -Smirnov and the value of Sig Saphiro-Wilk is greater than 0.05, it can be concluded that the pretest results are normally distributed, while the results of the Posttest normality test using the Kolmogorov-Smirnov test obtained a Sig value of 0.200 and Saphiro-Wilk obtained a Sig value of 0.830. Kolmogorov-Smirnov and the Sig Saphiro-Wilk value is greater than 0.05, it can be concluded that the posttest results are also normally distributed (Table 9).

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRETEST	.237	9	.155	.892	9	.208
POSTEST	.167	9	.200 [*]	.963	9	.830

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Figure 6: Pretest and posttest normality test results.

Furthermore, the Paired Sample T-test was carried out. The Paired Samples Statistics test shows the descriptive value of each variable in the paired sample. The pretest

has an average (mean) of 59.89 from 9 data (students). Posttest has an average value (mean) of 85 out of 9 data (students). This is shown that the result of the pre-test and post-test experienced a significant change (meaning), from the results of the pre-test and posttest it was proven that the post-test was higher than the pre-test (Table 10).

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	POSTEST	85.00	9	6.124	2.041
	PRETEST	59.89	9	12.129	4.043

Figure 7: Paired samples statistics test results.

Paired Sample T-test results obtained a significance value (2-tailed) is 0.000 ($p < 0.05$). This shows the effectiveness of the Nusantara Ladder (Larganusa) media to improve the learning outcomes of fourth-grade students in social studies learning (Table 11).

TABLE 9: Test Results paired sample T-test.

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	-25.111	10.529	3.510	-33.204	-17.018	-7.155	8	.000

4. Conclusions

The development of the Nusantara Ladder Snake (Larganusa) media is the development of social studies learning material Theme 7 The Beauty of Diversity in My Country Sub-theme 2 The Beauty of My Country’s Cultural Diversity for the fourth grade of elementary school. The development process was carried out according to the research steps of Borg & Gall, 2021 [23-25] which consisted of ten steps as follows: 1) Research and data collection 2) Planning 3) Product draft development 4) Initial field testing 5) Revising results trial 6) Field trial 7) Completion of the product of field test results 8) Field implementation test 9) Completion of the final product 10) Dissemination and implementation. However, the researchers did not conduct research and development

at stages 8, 9, and 10. This is because the situation and conditions were hindered during the Covid-19 pandemic.

The feasibility of the Nusantara Ladder Snake (Larganusa) media was seen from the results of the assessment of material experts and media experts who stated that it was feasible and good to be used in the learning process. The overall assessment of the material experts obtained a percentage score of 88%. When viewed in the guidelines table 18, which is in the percentage interval of 85% - 100%, the value of A is obtained in the "Very Good" category. The assessment is given by media experts, overall got a percentage score of 90%. When viewed in the guidelines table 18, the category "Very Good" is obtained.

Teacher responses and student responses to the medium of Snakes and Ladders Nusantara (Larganusa) based on a limited trial obtained a percentage score of 96% on the teacher's response with the "Very Good" criteria and the student response obtained a percentage score of 88% with the "Very Good" criteria. From these results, it can be concluded that there is a very high interest from students in participating in learning using learning media.

The increase in student achievement is seen from the assessment before using the Nusantara Ladder (Larganusa) media, the average pretest score was 59.8. This shows that the average value obtained by students is still below the KKM (Minimum Completeness Criteria) which is 75. Then teaching and learning activities are carried out using the Nusantara Ladder Snake (Larganusa) media, the average value after using the media is 85 which means it is above the completeness criteria The set learning rate is 75. From the data, the average value of the pretest and posttest shows that the learning media of Snakes and Ladders Nusantara (Larganusa) affects student achievement in social studies subjects.

The effectiveness of using the Nusantara Ladder Snake (Larganusa) media in this study was seen from the results of the pretest and posttest which were then carried out. The results of the Paired Sample T-test obtained a significance value (2-tailed) was 0.000 ($p < 0.05$). This shows the effectiveness of the media of Snakes and Ladders Nusantara (Larganusa) to improve the learning outcomes of fourth-grade students in social studies learning.

The suggestions for the use of the product in this study, namely the media of Snakes and Ladders Nusantara (Larganusa) can be developed further on material aspects, such as ethnic diversity, traditional clothing, regional musical instruments, folk songs, not only limited to traditional house materials. In addition, the results of this study can be used as a reference in relevant research for future researchers.

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