

Development of Domica Media (Domino Fraction) Based on Local Products to Improve Numeracy in Grade IV of Elementary Schools

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Abstract

Literacy numeracy is important in the Merdeka curriculum to help students make data analysis and retrieval decisions. Knowledge about local products introduces them to a diverse culture and improves their love of products domestically. The research method used is the research and development of the ADDIE model. Data collection in the study includes interviews, questionnaires, and tests. The methods used in the study This is using (R&D). There are 14 students at SDN 2 Sukorejo, 14 at SDN 2 Gandusari, 6 at SDN 2 Ngrayung, and 20 at SDN 1 Wonorejo. The research results show that the validity of Domica media is already worth using. Expert validator results in Material, Media, and Language got an average of 96% "very good," and expert practitioner obtained 95% "Very Eligible." The trial product is carried out in two stages: scale small and scale big. Questionnaire response: Student scale tests were small, 94%, and "Very Interesting." The questionnaire response student scale of 96% "Very Interesting," and the questionnaire teacher response scale of 96% "Very Interesting. The use of Domica media is stated to be effective after the N-Gain test. The mean value test result is 61.39 or > 56. So, effective use of Domica learning media is needed to increase the ability of numeracy students in grade 4 school.

Keywords: Numeracy, media domica, product local

1. INTRODUCTION

Education is one of the main pillars of a country's development. Curriculum development has become very important in reaching the objective of optimal education. Minister of Education, Culture, Research, and Technology Regulation number 12 2024 stated that a Curriculum is a set of plans and arrangements about objectives, content, materials lessons, and the method used as guidelines for organization activity learning to reach the objective.

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Citation in APA style: Anjani, A.A., Wardhani, I.S.K., Setiawan, A. (2025). Development of Domica Media (Domino Fraction) Based on Local Products to Improve Numeracy in Grade IV Elementary Schools. *JOSAR*, Vol. 10. No. (1):90-98.

Received:
February, 10st 2025

Revised:
February, 27st 2025

Published:
March, 18st 2025

Education is certain. In Indonesia, the education system has experienced a changeover curriculum as many as eleven times, starting in 1947 with an elementary curriculum and continuing to the final curriculum, the freedom that is now used. The curriculum is always updated, but balancing rapid progress in knowledge and technology in education is one of the factors affecting the improvement of the curriculum (Gumilar et al., 2023).

Curriculum This is designed to help students develop competencies in the 21st century, like breakdown problems, creativity, communication, and collaboration. In addition, the Merdeka Belajar curriculum focuses on the material that is felt important so that in unit education matters, this teacher can give more learning about competence base for students is literacy and numeracy (Mulyono & Sulistyani, 2022). Therefore, that matters to become a supply generation successor is empowered to compete in the progress in education that will come. The World Economic Forum 2015 agreed that mastery of six literacy bases becomes knowledge that must be mastered by students, parents, and the whole inhabitant public, including students. Six literacies cover writing, numeracy, science, digital, finance, culture, and citizenship (Ayuningtyas & Sukriyah, 2020). One of the aspects from chapter six is important, but in the world of education, there is an absence of stability from the aspect of numeracy.

Ongoing process learning is an essential aspect of it. Supporters of learning are known for learning media. With the existing skills accompanied by progress technology in education, teachers need to innovate in introducing learning media that can adapt to the development of technology Industry 5.0 (Fricticarani et al., 2023). Teachers should use learning media so that students are not bored with learning, can engage attention, and motivate students to reach objective learning in an active, creative, effective, efficient, and fun way (Magdalena, 2021). Therefore, the role of a teacher in understanding accurate, precise, and comprehensive classification and selection of media type is crucial, which is important in conveying Content message learning from the source message to students in a way accurate and expected can increase the quality of education.

Creating quality and effective education, motivating students to be fond of learning, and giving good examples and models in various matters related to implementation learning are objective media innovations in learning (Ariffullah, 2023). Innovation is a new idea, thought, or process in a social situation, and certain ones are used to answer or solve a problem. Innovation in learning is very much needed, such as through the game, which is very suitable for students. Learning based on the games is a learning method with draft games designed to facilitate learning. Introduction The product's local role is important in educating students because it can increase awareness of diverse cultures and the potential for the economy in the environment around them. According to Ramadhan (2017), " understanding about product local helps students value inheritance culture as well as create a sense of pride in identity area." In the context of everyday life, products not only reflect an area of identity but also contribute to the economy and society. By understanding and appreciating the products of locals, students can develop a sense of love for their homeland and, at the same time, play a role in supporting a sustainable local economy.

Observation and interviews were conducted in four different elementary schools for the level of understanding of numeracy students. At SDN 2, Gandusari, the 4th-grade teacher, stated that the ability of numeracy students to learn mathematics, especially in the material fractions, is not yet at its maximum. Although students can learn and process data, some are not enthusiastic Because their background lacks support. Media used in learning mathematics in the form of PPT and objects concrete, but the introduction of

products locally is Still limited. At SDN 2 Sukorejo, teachers reported that numeracy was good, but understanding students' material fractions, such as reading fraction images, is still not enough maximum, with results showing that part big student has Not yet reached expected standards. Numeracy learning is limited to bazaar activities and PPT media. At SDN 1 Wonorejo, teachers expressed that many still struggle even though some students can understand fractions and numbers. The media is used in the form of objects around, but the introduction of the product is still limited to P5 activities. Finally, at SDN 2 Ngrayung, the teacher mentioned that some students still had difficulty understanding numeracy, with limited media use in PPT and methods lectures.

Conditions in the field were obtained from observation of results and interviews. Innovations can be made to present a medium in which load material is contextual and appropriate for cognitive students' development stages. The recommended media in matter This is a Domica (Domino Fractions) Based media Product Local. Media Domica (Domino Fractions) Based Product Local is a medium in the form of game-designed cards with attractive and customized images with characteristics of students in grade IV. Furthermore, the card will load the product locally, which is within the scope of Regency Trenggalek. The product local in The Domica card was developed to describe conformity from what students see, hear, and say. Based on those who have already researched, researchers mean to develop a medium for more varied teaching and fun. Domino cards focused on material fractions and integrated with local products, titled "Development of Domica Media (Domino Fractions) Based on Product Local for Increase Numeracy Student Grade IV Elementary School."

2. LITERATURE REVIEW

The connection between numeration and fractional domino media based on product local is significant in supporting students' learning process. Media domino fractions not only function as tools to help students understand draft fractions but also integrate elements of product local that provide more context in learning. Using this media, students can Study fractions while recognizing various products local to them, like rice, crafts, handicrafts, or food. This helps students understand numeracy in a way that is more applicable and relevant to life.

2.1. Numeracy

Ability numeracy is an essential skill to help students learn mathematics, which involves using, understanding, and analyzing mathematics to solve everyday problems (Baharuddin et al., 2021). Ability This covers skills such as counting base with accuracy and speed, thinking logically, and solving problems systematically and critically (Hazimah & Sutisna, 2023). Along with the development of technology, capability numeracy students also develop, which includes understanding draft more mathematics depth, the ability to formulate and complete problem mathematics correctly, and the ability to make decisions based on data and analysis.

Characteristics ability Numeracy is also seen in the ability to count fast, analyze information in various forms (graphs, tables, maps), and ability students to think logically and question things that have not been understood. Supporting factors that influence numeracy students' ability include coordination between teachers and parents, good communication in learning, and facilities and means of adequate education (Prianto &

Putri, 2017). Indicators of ability numeracy cover calculation, the ability to think logically, solve problems, and differentiate patterns numerically and their relationships (Sitriani et al., 2019). Students who master indicators can think analytically and creatively and finish problem mathematics with Good.

2.2. Domica Media

Media is a component important to learning. The media plays an important role in conveying messages. In Arabic, it is called "wasail," which means "way" or "path" (Pagarra et al., 2022). In general, media psychology can make abstract things more concrete (real), so it is a learning medium that makes learning easier on a school basis (Kosim et al., 2024). The media is like tools teachers use to convey information in conditioned learning to add knowledge, change attitudes, or plant skills through abstract and concrete content for the student school base.

Domica Media is a modification from the game Domino cards used in learning mathematics, in particular for teaching draft fractions. In this medium, every card has two sides: one containing fractions in the form of numbers and the other describing the product of local Regency Trenggalek. Through games, students can Study while playing to make learning more interesting and enjoyable (Nurhamidin & Suprijono, 2018). Concept fraction Alone is important for close mathematics, the relation with life every day, and can connect with the domino game to make it easier to understand students (Malika & Amir, 2018). Domica media helps control material fractions and introduces products locally in a not directly owned way. Lots benefits, such as increasing enthusiasm of students, stimulating their ability to think, and giving experience to learning something new; this media also has several shortcomings, such as need time long manufacturing time, more expensive costs compared to regular domino cards, as well as management the class that is needed attention extra.

The existing engaging media is easy to use. Also, his ability to make learning more effective and interactive, especially for school students, is essential. Students like learning based on games. As for Domica, media is easy to follow, with steps that guide students in playing while studying and utilizing available cards.

2.3. Products Local

Local products refer to goods and services produced in a particular area, reflecting identity, local wisdom, and using local resources and traditions (Tifany & Moningka, 2015). According to KBBI, a product is a good or service produced with added value, while local refers to a place or area. Local products can include the agricultural sector, handicrafts, and creative industries and contribute to regional economic growth by creating jobs and increasing community income (Susanto et al., 2021). In addition, local products also play an important role in cultural preservation and environmental sustainability. In Trenggalek Regency, most of the people work as farmers. They depend highly on nature as a source of life, producing various agricultural products such as the famous durian, mangosteen, bananas, and mangoes. Processed products from agricultural products in Trenggalek Regency, such as mango, krupuk puli, Kritik Tempe, and alen-alen, are characteristic of the region and support the economy and welfare of the local community.

3. METHODS

Approach research used by researchers in the study This is Research and Development with the ADDIE model. This data was taken with observation, interviews, questionnaires, and tests. The population used in the study is student class IV in the District Gandusari, which has 367 students. (Source: Student data year 2024/2025 teachings KORWILDIKCAM Gandusari) with the use of a purposive sampling technique. Purposive sampling is the technique of considering sample data sources. The purposive sampling technique selects a group subject based on characteristics assessed by one's relatedness with characteristic features or characteristics from the population that will studied (Sugiyono, 2018). Samples in the study: This is from four school bases, namely SDN 1 Wonorejo with the amount of 20 students, SDN 2 Gandusari with 14 students, SDN 2 Sukorejo with 14 students, and six students at SDN 2 Ngrayung—observation involving teachers, students, practitioners. As for the way data was collected through observation, teacher interviews, teacher questionnaires, questionnaire responses to students, questionnaire practitioners, questionnaire validation expert media, questionnaire validation expert material, questionnaire validation expert language, and accompanied by tests.

The research uses a combination of qualitative and quantitative data. Qualitative data covering studies library. Library study involves the researcher examining literature and other relevant sources to strengthen understanding of theoretical and contextual research. In comparison, quantitative data was counted using SPSS 25. After the data was collected, the researcher analyzed it through 5 main stages: Analyze, Design, Develop, Implement, and Evaluate. Data presentation involves organizing data that has been reduced to a format that can be understood, such as a table, graph, or narrative, to make it easier to interpret and analyze. Lastly, the stage of taking a conclusion is when the researcher makes an interpretation and draws a conclusion based on the data presented and analyzed to answer questions in the research and develop a deeper understanding of the phenomenon being studied (Rijali, 2018).

4. RESULTS

Recapitulation validation test results in expert materials, media, and language are listed in Table 1.

Table 1. Recapitulation of Expert Validation Values

No.	Source Data	Score (%)	Criteria
1.	Expert Media	93%	Very worthy
2.	Expert Material/ Contents	87.5%	Very worthy
3.	Expert Language	91%	Very worthy
	Average	90%	Very worthy

The results are Based on Table 1 above. The expert test recapitulation shows an average percentage of 92%. Based on this average percentage, Domino Media's fraction That has already been developed is included in the "Very Eligible" category.

After the validation, experts determined that the media was worthy of application, so the Domica media was ready to be implemented in schools. The results of the students' pretest and posttest are as follows.

Table 2. Recapitulation of Large-Scale Pretest and Posttest Values

Range Mark	Amount Student		Presentation		Information
	Pretest	Posttest	Pretest	Posttest	
91- 100		9		71.42%	Very Good
81- 90	1	14	71.42%	23.8%	Good
71- 80	7	13	13.28%	2.38%	Enough Good
61- 70	8	10	4.76%	2.38%	Not Enough Good
00- 60	31		2.38%		Very Not good

Recapitulation pretest results show average ability numeracy, namely 85. Based on Table 2, recapitulation's highest pretest result percentage is 71.46%, with a range value of 81-90, which indicates the "good" category. The highest posttest result percentage is 71.42%, which shows the "very good" category. There is a significant improvement in Domino media fractions, which can be said to be effective.

The final stage of the ADDIE development model is the evaluation. At this evaluation stage, the researcher analyzes data to successfully apply fractional domino learning media. Researchers use SPSS software to perform prerequisite tests, data analysis, and hypothesis testing to determine the numeracy of Grade 4 students.

Table 3. Normality Test

CLASS	Kolmogorov- Smirnov ^a			Shapiro- Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
PRETEST	0.135	54	0.015	0.958	54	0.057
POST	0.154	54	0.003	0.964	54	0.105

The normality test is used to determine whether the data obtained is normally distributed or not. The normality test is done using Kolmogorov Smirnov and SPSS 25.0 program assistance, with a level of significance of 0.05. If the significance results mark measurement ability numeracy students > 0.05, then the results mark measurement ability numeracy students normally distributed.

Table 4. Hypothesis Testing

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	PRE_TEST	-	17.21077	3.84844	-	-	19	0.003
	POST_TEST	13.00000			21.05489	4.94511	3.378	

Based on Table 4, sig was obtained. The value (2-tailed) for the pretest and posttest is 0.03. It can be concluded that Ho is rejected, which means There is a difference in ability numeracy before and after the use of Media Domica learning media.

Table 5. N-Gain Test

	N	Minimum	Maximum	Mean	Std. Deviation
GAIN	54	- .12	0.29	0.0937	0.10699
Valid N (listwise)	54				

The N-Gain test is used to determine the difference between pretest and posttest scores. Based on Table 5 above, the effectiveness test ability numeracy gets a value of .0937 if presented to 93.7, which is categorized as "Effective."

5. DISCUSSION

Based on several conditions in the field obtained from results observation and interviews. Innovations can be implemented by implementing the media in its contextual and appropriate material with cognitive students' stages of development. The recommended media in matter This is a Domica (Domino Fractions) Based media Product Local. Media Domica (Domino Fractions) Based Product Local is a media in the form of game-designed cards with attractive and customized images with characteristics of students who are in grade IV. Moreover, the card will load products locally in the scope of Regency Trenggalek. The local product in the Domica card was developed to describe conformity from what students see, hear, and say, as well as take lessons directly from potential locals around the student.

Use card house. This can be used by two people up to 4 people. Steps to use simple Enough because it is shared equally. With method play hompimpa moreover first, then play in accordance turn that is obtained. The students play in a way that takes turns. Students who have finished first the card or the amount the least number of cards is the winner. The students still hold many cards, saying to be the losers or what will be arranged and shuffle the cards if they play again. Innovative study while playing is expected to increase students' interest in learning. Domica card: This has excess among them integrated with the product area, shaped into a practical card that is portable and easy to carry for playing. As for the latest media domica, this is designed with Attractive colors and two-sided cards that can be used as Outlook New. Students need to know and understand the benefits of potential locals in the environment around the student. That alone can differentiate it from other areas.

Based on the matter mentioned, understanding numeracy is very important for students who get lessons in mathematics. Remembering one's different characteristics and needs, understood entirely by the teacher, is related to the individual's talents, interests, and intelligence (Agustin et al., 2021). Mastery material in good math needs to be supported by engaging media for efficient and effective learning. Therefore, applying media such as dominoes to material fractions is essential. Besides playing, it is also possible to learn and think critically. Domino games are an alternative learning media that can be used to overcome obstacles when understanding material fractions. Not yet fully understood by students. In learning fractions, the domino game can become a learning medium that educates participants. No experience of boredom or difficulty learning fractions. Game This uniqueness can invite participants to learn fractions without realizing it Because they are late in games.

6. CONCLUSION

Based on an analysis of students in the grade 4 school base, they found that they require engaging learning media to increase their ability to numeracy. Domino fraction learning media, which is visual and contains materials, images, and interesting numbers, is packed into a game to increase interest in students in studying ability numeracy. After testing by media, material, and practitioner experts and getting positive responses from teachers and students, this media was declared valid, practical, and engaging with an average value of 90%, which includes the "very valid" category. Domino Media fractions are designed to increase ability numeracy in material fractions in lesson mathematics class 4, where students can Study in a way following instructions given. Test the effectiveness of using Domino fraction media and show a significant result with sig. The value (2-tailed) pretest and posttest is 0.00, which shows differences in the ability of numeracy students before and after using this media. In addition, the results of the N-Gain effectiveness test showed the mean N-Gain value is 93.71, which is more significant than 56, so that can concluded that the use of fractional domino learning media is effective For increasing ability numeracy in students in grade 4 school base.

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