



## Development of Number Card Media in Mathematics Learning for Elementary School Students

**Askhabul Jannah** ✉, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

**Irwandi**, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

**Azmil Hasan Lubis**, Universitas Islam Negeri Ar-Raniry Banda Aceh, Indonesia

**Nora Maulida Julia**, SMP IT Al Farabi Bilingual School, Indonesia

✉ [200209089@student.ar-raniry.ac.id](mailto:200209089@student.ar-raniry.ac.id)

**Abstract:** Learning media is one of the important aspects in a learning process. Learning media can facilitate the achievement of learning objectives. This study aims to develop mathematics learning media in the form of number cards. This research is a research and development. The development model used is ADDIE. The subjects of this study were media experts, material experts, class teachers and students. Data were collected using a questionnaire technique. The data obtained were then analyzed using descriptive statistical techniques. The results of the study showed that the number card media was declared feasible and practical for use in elementary school mathematics learning. This is evidenced by the results of the feasibility test conducted by media experts and material experts, each of which obtained the category "very feasible". Furthermore, the results of the product practicality test by teachers and students also showed that the product developed in this study was in the category "very practical". Therefore, number card media can be used as an alternative media in elementary school mathematics learning.

**Keywords:** Number card media, mathematics learning, elementary school students

**Received** July 15, 2024; **Accepted** September 10, 2024; **Published** September 30, 2024

**Citation:** Jannah, A., Irwandi, Lubis, A. H., & Julia, N. M. (2024). Development of Number Card Media in Mathematics Learning for Elementary School Students. *Journal of Indonesian Primary School*, 1(3), 12 – 23.

Published by Mandailing Global Edukasia © 2024.

### INTRODUCTION

Mathematics learning should be given to all students, especially in elementary education to equip students with the ability to obtain, select, and manage information. Mathematics learning provides good numeracy skills needed to solve problems in the form of questions to get the correct answers (Mujib, 2019). However, there are still many elementary school students who have not been able to solve math problems even though they are simple (Ilma et al., 2017; Lubis, 2019; Rahmawati, 2013). This is evidenced by low scores in working on test questions. There are various factors that cause these low scores, including the delivery of material dominated by lecture methods and direct assignments, so that children with disabilities will have difficulty solving these problems (Laksono et al., 2016; Lubis & Wangid, 2019). Mathematics learning is more optimal if it uses learning media.

Learning media is a vehicle for conveying information or learning messages to students (Arsyad, 2011; Ningsih et al., 2023; Putra et al., 2023). With the presence of media in the mathematics learning process, it is expected to help teachers improve students' learning understanding (Lubis, 2023; Lubis & Dasopang, 2020; Nurliza et al., 2024). Therefore, teachers should present media in every learning process in order to achieve the desired goals. Learning media are tools, methods and techniques used in order to make communication and interaction between teachers and students more effective in the education and teaching process at school.

According to Jean Piaget's cognitive development theory, there are 4 stages of children's cognitive development, one of which is the Concrete Operational stage, namely at the age of 7-12 years (Lefa, 2014). The concrete operational stage is characterized by the development of logical thinking skills, but only for physical objects and making teaching materials based on students' intellectual development (from concrete to abstract). One example of a child's cognitive development at the concrete operational stage is that children can understand that water can freeze and melt, are able to organize and sort crayons by color, and so on. The effect of this cognitive development on mathematics learning is that elementary school students need learning media in an effort to understand abstract mathematical concepts (Hakim & Windayana, 2016).

Students who experience deficiencies in the aspects of abstraction, generalization, and deductive and inductive reasoning abilities as well as their numerical abilities will have difficulty learning mathematics, because these abilities are basic abilities that determine success in learning mathematics (Krisdiana et al., 2014; Wangid et al., 2020). Mathematics is said to be abstract because objects or symbols in mathematics do not exist in real life (Waskitoningtyas, 2016). Learning mathematics is essentially learning concepts, conceptual structures, finding relationships between concepts and their structures. For example, students who have difficulty understanding the commutative and associative properties of addition will have difficulty solving problems that involve these laws in their solutions (Masykur et al., 2017).

The use of media in learning greatly influences the success of learning (Absa et al., 2023; Harvianto, 2021; Lubis & Lubis, 2024). In accordance with its use, the material and level of student thinking must also be adjusted by the teacher. Thus, teachers must be able to adjust what media is appropriate and whether the media is suitable for the students to be taught (Fatimah & Maryani, 2018; Fujiastuti et al., 2019). The advantages of learning media are that they are concrete, images can overcome space and time, overcome limitations of observation, clarify a problem so that it can prevent or correct misunderstandings (Yunita & Wijayanti, 2017). Referring to the advantages of image media, it is possible that the use of image media in mathematics learning will obtain better student learning outcomes (Aprinawati, 2017). So, success in learning is greatly supported by the selection of appropriate methods and media.

Mathematics is not just something related to numbers and figures. Students need deep seriousness when following the learning process so that learning objectives are achieved easily (Safitri et al., 2020). Mathematics learning theories are different from the theories taught in other subjects. Learning mathematics is not needed to memorize definitions but how to be able to understand the concepts or topics taught. Teachers as components of education and teaching play a major role in the success of mathematics learning. However, in reality, students often fail to follow the mathematics learning process, because they are bored in learning, which makes mathematics learning outcomes low.

Based on the results of a preliminary study conducted using observation techniques on August 10, 2023 at the State Elementary School 8, Banda Aceh City, problems were found in the form of learning media that did not support the learning process and hindered the objectives of mathematics learning. One of the learning objectives that was hampered by the lack of learning media was children's development in terms of cognitive development in recognizing numbers. This was obtained based on direct observations

from initial observations carried out in the classroom during the learning process, children were not yet able to determine number symbols. Furthermore, the results of the researcher's initial interview with the second grade teacher regarding the condition of children's cognitive development in recognizing numbers, which explained that the aspect of children's cognitive development had not developed according to the explanation above.

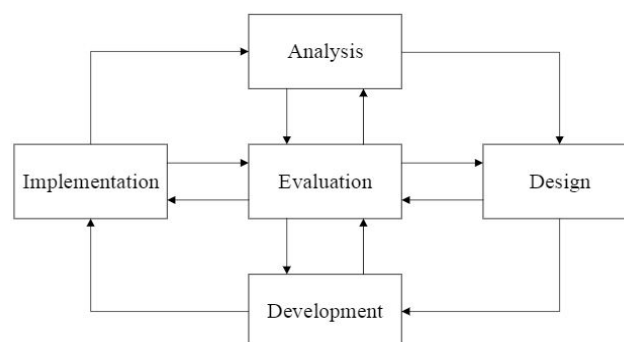
In students of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City, many of them have different understanding abilities, some are quick to respond, some have difficulty understanding so they need time to study individually with their teachers, some are quick to respond but do not dare to actively speak, some are lazy to learn, reluctant to listen to teachers who explain or are reluctant to do assignments and so on. Many of them also have a tendency towards their learning style so that their interest in learning mathematics decreases. The need for learning media for students can not only overcome the limitations of their experience but can also produce uniformity of observation, can arouse the desire and activity of learning, can instill basic concepts that are correct, concrete, and realistic related to their understanding, and provide a comprehensive experience from the concrete to the abstract.

Number card media is one of the media made of colored cardboard and pictures so as to attract students' attention in learning mathematics. This number card media is useful for fostering children's understanding in adjusting numbers and numbers. So that in this way, students during learning will be directly involved in the learning process which results in increased understanding of determining mathematical number symbols for students. From the explanation above, there has been no research that has examined the title at the Madrasah Ibtidaiyah level.

## **METHODS**

The research method used by researchers in this study is a type of development research method or often called Research and Development, this research method is used to produce a particular product and also measure the level of feasibility of the product. Development research is a process or steps in developing a new product or completing a product that has existed for a long time but there are slight improvements and must be accounted for.

The research and development process consists of studying research findings related to the product to be developed, developing products based on findings, product validation where the product will be validated by experts. And revising the product if there are suggestions for improvement so that it can be a product that is suitable for use. In accordance with the purpose of this study, namely to develop a product that will be used for learning. So the product produced in this study is the development of Number Card Media. With the development model used in this study is the ADDIE model which has several stages, namely: analysis, design, product development and manufacture, implementation, and evaluation.



**Figure 1.** *Research Design*

The research conducted by the author took place on Jl. Sultan Malikul Saleh, Lhong Raya, Banda Raya District, Banda Aceh City in the odd semester of 2023/2024. The target subjects in this study were teachers of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City, namely class II homeroom teachers, for the response test and suggestions from teachers. In addition to the response test from teachers, in this study there was also a feasibility test from experts, namely media experts and material experts from lecturers as validators.

The instruments used in data collection in this study are by conducting observations, interviews and also questionnaires. Instruments or measuring tools in data collection have a very important role in obtaining data. This is because data is a depiction of the variables to be studied, and whether or not the data is correct greatly affects the quality of the research.

The data analysis technique in this study is a descriptive statistical data analysis technique. Descriptive statistics are statistics used to analyze data by describing or depicting data that has been collected as it is without intending to bring conclusions to the public or generalization. Presentation of descriptive data can be done through the presentation of tables, scales, percentage calculations. The scale used in the questionnaire data distributed is a Likert scale which is used to measure attitudes, opinions, and perceptions of a person or group of people about social symptoms or events.

## **RESULTS**

This research produces a development product, namely the Number Card Media to determine the number symbol based on the place value of second-grade students of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City. This Number Card Media has gone through a validation stage by 1 validator, namely a media expert validator and a material expert validator with very feasible criteria. Then this Card Media has been tested on 1 mathematics teacher and 40 second-grade students with very interesting criteria. This study uses the ADDIE development model with the following steps.

### **1. Analysis**

#### **a. Problem**

The first stage of this analysis is to analyze the importance of developing Card Media in learning and to analyze the feasibility and requirements of developing Card Media and to analyze the feasibility and needs of Card Media to be developed. Based on this, the researcher conducted initial observations and conducted interviews with second-grade teachers of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City on August 10, 2023. The purpose of the interviews was to find out what problems were faced by class teachers during the mathematics learning process regarding whole number material, the researcher looked for alternatives that could be done to overcome the problems faced by teachers.

#### **b. Needs Analysis**

Based on interviews obtained by researchers and observing and observing learning in the second grade of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City in Mathematics, the needs of students at the school are that students need a media that makes it easier to learn, especially in determining number symbols. Students also need media that can motivate so that learning is interesting. Students also need media to be able to understand the material so that they do not get bored and tired. Based on these problems, it can be seen that the problem found in this study is the unavailability of learning media that makes it easier for teachers and students to learn. The solution to this problem is to develop number card media to improve students' understanding in determining number symbols.

### c. Problem Solving

Based on the problems above, the right solution to use is to use cards in mathematics learning so that students can understand the material so that they do not get bored and tired of learning.

## 2. Design

The second stage of the ADDIE development model is design. In the design stage of the Card Media design that researchers will develop are number cards. This phase includes: First, making a design or designing number card media. Second, choosing the tools and materials that will be used to make number card media and designing assessment instruments to measure product performance.

### a. Product Design Planning

At this stage, the researcher designed the card media according to the needs required by the teacher, namely the number card media. The researcher created the design of this number card media using the Corel Draw application, here is the design of the card media that will be made. Here is the sequence of product design, 1) measuring the length and width of the number card according to the characteristics of the students so that it is easy to hold; 2) designing the number card so that the card looks attractive to students; 3) then printed in A4 size and cut into nine parts with each card 9 cm long and 6.6 cm wide; 4) then the stage of making a number card holder so that it is easy to store; 5) making a frame for the place and box for each number card; 6) measuring the length and width of the number card holder then cutting each side of the box; 7) then painted with varnish then attached with stickers that have been designed to look attractive

### b. Determining Tools and Materials

At this stage, researchers choose materials that can be used for a long period of time and use materials that are safe when used in learning. The stages carried out are 1) Materials that will be included in the number card media, namely, recognizing units, tens, hundreds and distinguishing number names and number symbols to determine number symbols; 2) Determining the size and type of paper, namely ivory paper 310 grams A4 size; 3) Determining the size of the card and each number card has a length of 9 cm and a width of 6.6 cm; 4) Determining the type of card font used, namely Chocolate Bar Home and Home School; 5) Determining the number font, namely using PNG Numeric; 6) Determining the sticker design font, namely Papyrus, Gretoon Highlight, Berlin Sans FB, Amaze and Snow For Santa; 7) Determining the number of cards in each section, namely the number recognition section as many as 20 cards; 8) Designing images and materials displayed on number cards and stickers using the Coreldraw X7 2015 application; 9) Determining stickers, namely Glossy Sticker Paper; 10) Determine the place of the card using a block board.

## 3. Development

After the card media has been made in real form, the researcher reviews the number card media to be validated by the validator team to test the feasibility of the product being developed. At the validation stage, there is one validator. This means one media expert and one material expert. The data obtained through the validation of the number card media by the validator team is quantitative data.

### a. Media Expert

The validation referred to in this study is the result of evaluation and modification of media experts on the product in the form of number card media. This media validation consists of 11 statements regarding the developed card media. The validator then provides an assessment by marking the score category consisting of five assessment scales. Table 1 below shows the results of the review by two media experts on the number card media.

**Table 1. Media Expert Validation Results**

Aspect	Indicator	Score
<b>Physical/ Appearance</b>	The shape, design, color and size combination and content of the number card media are made interesting for learning.	25
<b>Media Quality</b>	The use, accuracy of material selection, and strength of the number card media can last for a long time and be durable.	13
<b>Media Functions</b>	Card media and the practicality of number cards can be used inside and outside the classroom, easy to store and move. And able to foster interaction between teachers and students.	15
<b>Total Score</b>		<b>53</b>
<b>Average</b>		<b>53</b>
<b>Percentage</b>		<b>96,3%</b>
<b>Criteria</b>		<b>Excellent</b>

The average score obtained from one media expert validator is: 53. Meanwhile, the maximum score is calculated from the largest likert scale score multiplied by the number of statement items, so that the maximum score is  $5 \times 11 = 55$ . After the maximum score is obtained, all scores can be entered into the following formula.

$$P = \frac{53}{55} \times 100\% = 96,3\%$$

The percentage results obtained are then grouped into evaluation interpretation criteria for eligibility with a very feasible category, with little input from media experts. There are several things that need to be changed and added again according to suggestions from media validators.

b. Material Expert

The validation referred to in this study is the result of the evaluation and modification of material experts to the product in the form of number card media. This material validation consists of 10 statements regarding the material contained in the card media. The validator then provides an assessment by marking the score category consisting of five assessment scales. Table 2 below shows the results of the material expert review of the number card media.

**Table 2. Material Expert Validation Results**

Aspect	Indicator	Score
<b>Material Quality</b>	The number card media used can provide a real picture of the number symbols. And make students understand the form of numbers and are able to foster interaction between teachers and students and are able to encourage students' thinking skills.	23
<b>Material Suitability</b>	The number card media is in accordance with the basic competencies and core competencies in the curriculum. Suitability of the material The completeness of the material is in accordance with the characteristics of the students. The scope of the material contained in this number card media is appropriate	23
<b>Total Score</b>		<b>46</b>
<b>Average</b>		<b>46</b>

<b>Percentage</b>	<b>92 %</b>
<b>Criteria</b>	<b>Excellent</b>

The average score obtained from two expert media validators is 50. Meanwhile, the maximum score is calculated from the largest liket scale score multiplied by the number of statement items, so that the maximum score obtained is  $5 \times 10 = 50$ . After the maximum score is obtained, all scores can be entered into the following formula.

$$P = \frac{46}{50} \times 100\% = 92\%$$

The percentage results obtained were then grouped into evaluation interpretation criteria for feasibility with a very feasible category, with a little input from material experts.

#### 4. Implementation

After the assessment stage was carried out on the number card media product, it was declared suitable for use in research without any revision by media experts and material experts. Furthermore, a trial stage was carried out on April 26, 2024 at Madrasah Ibtidaiyah Negeri 8 Banda Aceh City involving 1 teacher and 35 second grade students.

During the study, the researcher introduced himself, then the researcher explained a little material about whole numbers, number values and symbols of whole numbers and their place values. then introduced the number card media and practiced how the number cards that were developed worked. The researcher used a teacher response questionnaire to test the teacher's perception of the number card media made by the researcher.

##### a. Teacher Response

Table 3 below shows the percentage of teacher response results to the number card media in determining number symbols, number values and place values of whole numbers for the second grade at State Elementary School 8, Banda Aceh City.

**Table 3. Teacher Response Test Results**

<b>Aspect</b>	<b>Indikator</b>	<b>Score</b>
<b>Material</b>	Number Card Media is in accordance with the basic competencies and core competencies in the curriculum. And the use of number cards can make students understand the form of symbols of whole numbers, and the media displayed can clarify the material.	19
<b>Media Quality and Appearance</b>	The Number Card media displayed clarifies the material and is safe to use in learning. The card media that is made is attractive and strong so that it can be used for a long time.	22
<b>Media Functions</b>	Number Card Media is able to foster interaction between teachers and students, Practicality of Number Card Media is easy to store and can be used inside and outside the classroom. The scope of the material contained in this Number Card Media is right along with instructions for use so that it is easy to use.	25
<b>Total Score</b>		<b>66</b>
<b>Average</b>		<b>66</b>
<b>Percentage</b>		<b>88%</b>
<b>Criteria</b>		<b>Excellent</b>

The average score obtained from the teacher's response is: 66. Meanwhile, the maximum score is calculated from the largest likert scale score multiplied by the number of statement items, so that the maximum score is  $5 \times 15 = 75$ . After the maximum score is obtained, all scores can be entered into the following formula.

$$P = \frac{66}{75} \times 100\% = 88\%$$

The percentage results obtained were then grouped into evaluation interpretation criteria for attractiveness with a very interesting category. The teacher commented that by using children's card media, interaction between teachers and students was more fostered so that this learning was easier for students to understand.

#### b. Student Response

Table 4 below shows the percentage score of the results of students' responses to the Number Card Media in finding and determining number symbols, number values and place values of whole numbers for the second grade at State Elementary School 8, Banda Aceh City.

**Table 4.** *Student Response Test Results*

Aspect	Statement	Student Answer	
		No	Yes
<b>Uses of Media</b>	I am enthusiastic about following math lessons using number card media. Using number card media makes me understand and remember the material clearly and the use of card media is not dangerous.	-	171
<b>Quality and Appearance</b>	In my opinion, the number card media is very interesting. The appearance of the symbols on the card media can make me understand the material, the size of the media is very clear so I have no trouble seeing it.	-	170
<b>Frequency</b>		341	9
<b>Score</b>		682	9
<b>Total Score</b>		<b>691</b>	
<b>Percentage</b>		<b>98,71%</b>	
<b>Criteria</b>		<b>excellent</b>	

The data from the student response questionnaire obtained from 35 students by answering 10 questions based on the answer choice category using the Guttan scale, namely score 1 = no and score 2 = yes. The total score obtained is 691 from 10 statement items. The total maximum score can be calculated based on the largest guttam scale multiplied by the number of statement items and multiplied by the number of students who assessed, so that the maximum score is  $2 \times 10 \times 35 = 700$ . After the maximum score is obtained, all scores can be entered into the following formula.

$$P = \frac{691}{700} \times 100\% = 98,71 \%$$

After being converted based on the Gutman scale, the results show very practical criteria.

## **DISCUSSION**

From the results of data collection conducted on number card media to explain the meaning of whole numbers and determine their symbols based on place value using a concrete model in the second grade of Madrasah Ibtidaiyah Negeri 8 Banda Aceh City is the final result of the product of this research development. The development of the ADDIE model based on Dick and Carry's theory involves five steps: analysis, design, development, implementation, and evaluation.



First, the analysis stage, the researcher analyzes the learning process based on the findings in the learning process. The teacher has not provided learning media that make it easier for teachers and students to learn. The teacher uses a learning book to deliver the material on whole numbers. However, students need a media that makes it easier to learn, especially in determining the number symbols. Students also need media that can motivate so that learning is interesting. Students also need a media to be able to understand the material so that they do not get bored and tired. Based on these problems, it can be seen that the problem found in this study is the unavailability of learning media that makes it easier for teachers and students to learn. The solution to this problem is to develop number card media to improve students' understanding in determining number symbols.

Teachers still experience obstacles in providing learning materials to students. This is due to the lack of information technology facilities available in schools and the internet does not reach all classes. Furthermore, the analysis stage of needs requires a media in learning made of materials that are safe when used and durable and its unique shape allows students to be active during the learning process with an attractive media display. This is in line with Rusefendi's opinion about the requirements in making learning media that must be met.

The second stage of design, At this stage the researcher makes a design or designs the number card media that will be developed including: making a design or designing the number card media, the researcher makes the card media design using the Corel Draw application which consists of the overall design of the card media and the parts on the card media. Then determine the tools and materials that will be used to make the number card media, here the researcher looks for materials that are easy to find in the environment. The researcher chooses materials that are strong and can be used for a long time and are not dangerous when used.

Not only focusing on the tools and materials used to make this card media, but researchers must also ensure that the card media made must be in accordance with the learning objectives, suitability with student characteristics and suitability with student learning styles. This is in accordance with Susilana's opinion about things that must be considered in selecting media: first, the suitability of the card media with the learning objectives to be achieved. Second, the suitability of the card media with the material, namely the depth of the material given to students in learning. Third, the suitability of the card media with student characteristics. Fourth, the suitability of the card media with the theory raised in the research until it has been validated. Fifth, the suitability of the card media with the student's learning style. Then the researcher also designed an assessment instrument to measure product performance, the instruments that must be made are: media expert and material expert validation sheets and teacher response questionnaires.

Third, development, at this stage is the process of making card media based on the design that has been made. After the card media is finished being made in real form, a review is carried out by the supervising lecturer before being validated by media experts and material experts to produce number card media and ready to be assessed by media expert and material expert validators. This media assessment is carried out by media experts, namely lecturers from the elementary madrasah teacher education study program and material experts, namely teachers, so that the shortcomings of the developed product can be identified.

The fourth stage of implementation, namely testing the product in activities to determine its suitability so that the card media can be used as a learning medium in the teaching and learning process. This trial involved mathematics teachers and 35 students at Madrasah Ibtidaiyah Negeri 8 Banda Aceh City. Before explaining the number card media, the researcher first introduced himself. The researcher distributed a teacher response questionnaire containing 15 statements regarding the media and materials on whole numbers.

From the results of the teacher questionnaire, positive responses were obtained regarding the appeal of the developed number card media. This can be seen from the results of the percentage of teachers obtaining 88% with a very practical category. Teachers also hope that by using children's card media, interaction between teachers and students will be fostered, so that this learning is easier for students to understand. This trial was conducted on 35 second grade students by being given a questionnaire containing 10 statements related to the developed card media. Based on student responses, positive responses were obtained to the card media that the researcher had developed. The total percentage score obtained from 35 students was 98.71% with a very practical category. This means that the use of number card media is practical and can be used in learning activities.

The last stage is evaluation, at this stage the researcher makes the final stage modification to the number card media that has been tested in learning. The card media that has been tested in learning allows researchers to review the results based on the answers that have been filled in. so that researchers see which parts need to be improved to produce a product that is truly practical and of high quality.

Number card media makes it easier for teachers to provide learning materials and help students understand materials that suit their needs. Because it is equipped with real forms, students can also see and touch it directly. With the existence of practical activities as proof of determining number symbols and place values in numbers, it makes learning activities fun. Students are also very enthusiastic because the form of this number card media is practical and interesting.

This is in line with According to Indriana, the card media that meets the following criteria: first, the card media used must be tangible. This means that students can touch, see, hear, and directly observe the card media. Second, the card media used is a form of communication or interaction between teachers and students. Third, learning card media can be used for learning inside or outside the classroom. Fourth, the card media used in learning must be in accordance with the teaching method.

Based on the results of data analysis from the feasibility of the expert team, and the practicality of the teacher response questionnaire and the student response questionnaire, it can be concluded that this number card media is very feasible and very practical to use and develop in learning, especially in mathematics subjects in explaining the meaning of whole numbers and determining their symbols based on place value.

## **CONCLUSION**

The results of the study indicate that the number card media developed in this study is declared feasible and practical. This is in accordance with the results of the feasibility test on the Number Card Media by the media expert validator getting a percentage value of 96.3% and the material expert validator getting a percentage value of 92%. The overall percentage results from the validator team got an average value of 94.15% with very feasible criteria. The results of the practicality test of teacher responses at MIN 8 Banda Aceh City to the number card media got a value with a percentage of 88% and the overall percentage results from teachers got an average value of 88% with very practical criteria. The results of the practicality test of student responses at Madrasah Ibtidaiyah Negeri 8 Banda Aceh City to the Number Card Media got a percentage value of 98.71% with very practical criteria.

## **REFERENCES**

- Absa, M., Setiawan, T., Fatwa, I., & Hidayat, A. T. (2023). MLP Neural Network in Google Colaboratory to Predict Mechanical Properties of Manufactured-Sand Concrete. *Jurnal Mantik*, 6(4), 3679–3687.
- Aprinawati, I. (2017). Penggunaan Media Gambar Seri untuk Meningkatkan Kemampuan

- Berbicara Anak Usia Dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 1(1), 72–80.
- Arsyad, A. (2011). *Media Pembelajaran*. Jakarta: PT Raja Grafindo Persada.
- Fatimah, A., & Maryani, K. (2018). Visual Literasi Media Pembelajaran Buku Cerita Anak. *Jurnal Inovasi Teknologi Pendidikan*, 5(1), 61–69. <https://doi.org/10.21831/jitp.v5i1.16212>
- Fujiastuti, A., Wulandari, Y., & Suwartini, I. (2019). Pengembangan Media Flash berbasis Komik dalam Pembelajaran Menyimak Cerita Rakyat. *JTP-Jurnal Teknologi Pendidikan*, 21(3), 201–213.
- Hakim, A. R., & Windayana, H. (2016). Pengaruh Penggunaan Multimedia Interaktif dalam Pembelajaran Matematika untuk Meningkatkan Hasil Belajar Siswa SD. *EduHumaniora/ Jurnal Pendidikan Dasar Kampus Cibiru*, 4(2), 1–13.
- Harvianto, Y. (2021). Pengaruh Media Pembelajaran Interaktif terhadap Hasil Belajar Pendidikan Jasmani selama Masa Pandemi Covid-19. *Jurnal Porkes*, 4(1), 1–7.
- Ilma, R., Hamdani, A. S., & Lailiyah, S. (2017). Profil Berpikir Analitis Masalah Aljabar Siswa Ditinjau dari Gaya Kognitif Visualizer dan Verbalizer. *JRPM (Jurnal Review Pembelajaran Matematika)*, 2(1), 1–14.
- Krisdiana, I., Apriandi, D., & Setyansah, R. K. (2014). Analisis Kesulitan yang Dihadapi oleh Guru dan Peserta Didik Sekolah Menengah Pertama dalam Implementasi Kurikulum 2013 pada Mata Pelajaran Matematika (Studi Kasus Eks-Karesidenan Madiun). *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, 3(1).
- Laksono, Y. S., Ariyanti, G., & Santoso, F. G. I. (2016). Hubungan Minat Belajar Siswa terhadap Prestasi Belajar Matematika Siswa dalam Pembelajaran Kooperatif Tipe STAD Menggunakan Komik. *Jurnal Edukasi Matematika Dan Sains*, 1(2), 60–64.
- Lefa, B. (2014). The Piaget Theory of Cognitive Development: An Educational Implications. *Educational Psychology*, 1(9), 1–8.
- Lubis, A. H. (2019). Upaya Peningkatan Hasil Belajar Siswa Sekolah Dasar melalui Model Cooperative Learning Tipe Numbered Heads Together. *FORUM PAEDAGOGIK*, 11(2), 127–143.
- Lubis, A. H. (2023). The Interactive Multimedia Based on Theo-Centric Approach as Learning Media during the Covid-19 Pandemic. *JPI (Jurnal Pendidikan Indonesia)*, 12(2), 210–222.
- Lubis, A. H., & Dasopang, M. D. (2020). Pengembangan Buku Cerita Bergambar Berbasis Augmented Reality untuk Mengakomodasi Generasi Z. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 5(6), 780–791.
- Lubis, A. H., & Lubis, S. S. W. (2024). Development of Newsletter Media in Thematic Learning for Elementary School Students. *Indonesian Journal of Education and Social Humanities*, 1(1), 28–36.
- Lubis, A. H., & Wangid, M. N. (2019). The Analysis of Students' Discipline Character in Mathematics Learning. *3rd International Conference on Current Issues in Education (ICCIE 2018)*, 118–123.
- Masykur, R., Nofrizal, N., & Syazali, M. (2017). Pengembangan Media Pembelajaran Matematika dengan Macromedia Flash. *Al-Jabar: Jurnal Pendidikan Matematika*. <https://doi.org/10.24042/ajpm.v8i2.2014>
- Mujib, M. (2019). Penjenjangan Kemampuan Berpikir Kritis Matematis Berdasarkan Teori Bloom Ditinjau dari Kecerdasan Multiple Intelligences. *Desimal: Jurnal Matematika*, 2(1), 87–103.

- Ningsih, Y. S., Mulia, M., & Lubis, A. H. (2023). Development of Picture Storybooks with TheoAnthropoEco Centric Approach for Elementary School Students. *AL-ISHLAH: Jurnal Pendidikan*, 15(2), 1888–1903.
- Nurliza, M., Lubis, A. H., & Lubis, S. S. W. (2024). Word Square Model Used by Poster Media to Improve Primary School Student Learning Outcomes. *Journal of Indonesian Primary School*, 1(1), 19–28.
- Putra, M. E., Supriadi, S., & Fatwa, I. (2023). Pengembangan Media Pembelajaran Interaktif Kahoot pada Studi Kerja Dasar Kelas X Teknik Otomotif SMKS Hasanah Pekanbaru. *Journal on Teacher Education*, 4(4), 377–383.
- Rahmawati, F. (2013). Pengaruh Pendekatan Pendidikan Realistik Matematika dalam Meningkatkan Kemampuan Komunikasi Matematis Siswa Sekolah Dasar. *Prosiding SEMIRATA 2013*.
- Safitri, W. Y., Haryanto, H., & Rofiki, I. (2020). Integrasi Matematika, Nilai-Nilai Keislaman, dan Teknologi: Fenomena di Madrasah Tsanawiyah. *Jurnal Tadris Matematika*, 3(1), 89–104.
- Wangid, M. N., Rudyanto, H. E., & Gunartati, G. (2020). The Use of AR-Assisted Storybook to Reduce Mathematical Anxiety on Elementary School Students. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(6), 195–204.
- Waskitoningtyas, R. S. (2016). Analisis Kesulitan Belajar Matematika siswa Kelas V Sekolah Dasar Kota Balikpapan pada Materi Satuan Waktu Tahun Ajaran 2015/2016. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, 5(1), 24–32.
- Yunita, D., & Wijayanti, A. (2017). Pengaruh Media Video Pembelajaran terhadap Hasil Belajar IPA Ditinjau dari Keaktifan Siswa. *Sosiohumaniora: Jurnal Ilmiah Ilmu Sosial Dan Humaniora*, 3(2), 153–160.