

Development of Creamka Media to Improve Counting Skills of Grade 2 Students of Ngadi Elementary School

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ABSTRACT : This study aims to determine the difficulties experienced by grade 2 students of SDN Ngadi in solving stacked addition and subtraction problems and to improve their arithmetic skills. This study uses the Research & Development method with the ADDIE model consisting of 5 stages, namely analysis, design, development, implementation, evaluation. The subjects of the study were 28 students with a limited test of 8 students and a broad test of 20 students. The data collected were qualitative and quantitative data to determine the validity, practicality and effectiveness. The results of the study (1) The results of the validation of media experts were 82% and material experts were 84%. So that the validity of the creamka media was obtained on average of 83% with very valid criteria. (2) The results of the teacher response questionnaire were 82% and students were 96,4%. So that the results of the practicality of the creamka media were obtained on average of 89,2% with very practical criteria. (3) The effectiveness results were 82%, meaning that the effectiveness test had very effective criteria. From the Paired Samples Test, it shows a Sig. 2-tailed) of 0.000, which means there is a significant difference between the pre-test and post-test results.

KEYWORDS -Compound addition and subtraction, creamka media, learning media, numeracy

I. INTRODUCTION

Learning is a teaching step taken by students and teachers to achieve efficient and effective learning goals. Learning is an interaction between students, teachers and media to achieve certain competencies through learning activities carried out directly or indirectly (Wahyuni, E., 2020). According to Rosnawati (2021) learning is an activity that is carried out intentionally or unintentionally, so that changes occur into knowing and being able. Learning targets are measured through differences in student attitudes and abilities. Learning also requires subjects to be studied. Media is a bridge in charge of channeling information to the party in charge of the recipient, for example television media, computer media, and other media (Jauhari, 2018). With the media, students become more active because they can directly use the learning media. The media created has been adjusted to the students' personalities and they will not get bored while participating in the learning process, especially in mathematics subjects. According to Fahrurrozi & Syukrul (2017) mathematics is a systematic discipline, which studies patterns of relationships, ways of thinking, art, and language, all analyzed with a logical and deductive approach. This science is very useful for humans in understanding and overcoming various problems in the social, economic and natural fields.

Observation results in class 2 of Ngadi Elementary School, it was found that there were still many students who made mistakes in working on problems with stacked addition and subtraction material. Teachers

still carry out monotonous learning, which only relies on books, students have difficulty understanding the material. Based on information revealed by the teacher during the interview, that students have difficulty in how to store numbers in stacked addition and how to borrow numbers in stacked subtraction. They are also still confused about the correct placement of numbers when working on problems of stacked addition and subtraction material. In addition to the results of observations and interviews, In addition, documentation data was also obtained in the student learning ability test. Based on student documentation data, 49% of students scored above the Achievement Criteria and 51% of students scored below the Achievement Criteria. It is known that 51% of students have not achieved scores above the achievement criteria, which means that these students have not mastered the material of stacked addition and subtraction.

The solution to the above problem is to use media that suits the needs and personalities of students. The media that is in accordance with these problems is visual media. According to Ulfah (2019) visual media means media that only involves the sense of sight. The media is a board with the media name creamka (Ice Cream Numbers). Creamka media with ice cream designs, fruit baskets and cherry fruit where the cherry fruit can be removed because there is a magnet to move the tens answer into the basket for the technique of storing in stacked addition. And cherry fruit is used for borrowing techniques in stacked subtraction. The media is reversible which there are 2 sides that can be used to place the material of stacked addition and stacked subtraction. There are also questions about stacked addition and subtraction that are used for working problems in the media or can also be direct questions given by the teacher.

Creamka (Ice Cream Numbers) media is the solution to the above problem. Creamka media was chosen because it has the advantage of being able to attract students to be happier and more active in learning the material of stacked addition and subtraction and increasing student numeracy. This media is made by considering the ability of students to easily understand the material and using an attractive design. This media is very suitable for numeracy-based math subjects. This innovative media is in the form of a back and forth board containing stacked addition and subtraction with an ice cream shop design which students will be very interested in the media. Creamka media really supports students to be active in participating in learning, because all students are very able to try the media.

Research conducted by Suharmanto (2014) in the form of board media proved to be valid because it facilitated students in the learning process. Student interest in learning also increases and students can also try board media directly. Research conducted by Endarwati & Purba (2025) in the form of board media proved to be valid because the results of student post tests increased after using board media. The results of research conducted by Khanifa Himmatul Laila (2020) proved valid because it made students understand better and post test scores increased after using the board media. This research aims to find out the difficulties experienced by grade 2 students of Ngadi Elementary School in solving stacked addition and subtraction problems. This study also aims to develop creamka (Number Ice Cream) media to improve the valid, practical and effective numeracy skills of grade 2 students of Ngadi Elementary School While the benefits of this research are for more enjoyable learning that is good according to ideal conditions, introducing new ideas to students and teachers and helping to solve problems in elementary schools.

II. METHOD

This study uses the R&D method. R&D is a study that produces the latest products and functions to determine the quality of the media (Sugiono, 2016). This development research uses quantitative and qualitative descriptive analysis methods. Quantitative data in the form of questionnaire scores, pre-tests and post-tests, while qualitative data in the form of input and suggestions from experts. This Creamka (Number Ice Cream) media development research uses the ADDIE model which includes analysis, design, development, implementation, and evaluation (Sugiyono, 2020).

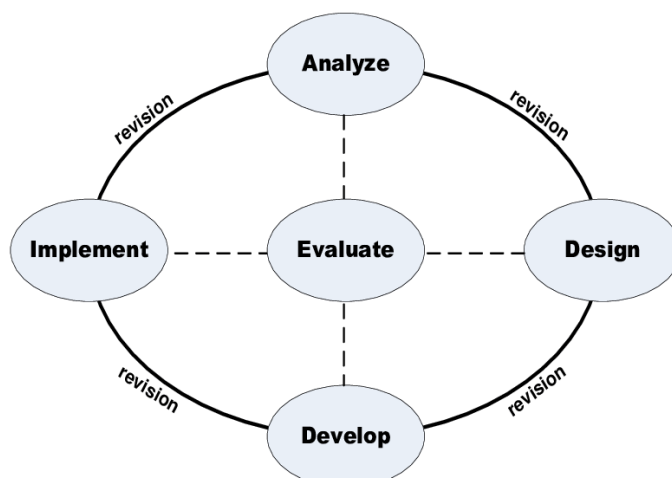


Figure 1. ADDIE Development Model

The location of this research is located at Ngadi Elementary School, Mojo Subdistrict, Kediri District. The reason the researcher chose this location was because there was no learning media in the learning process. Researchers developed creamka (Ice Cream Numbers) this is used to help students who have difficulty during learning. Grade 2 students of Ngadi State Elementary School were the subjects of this study. Limited trials were conducted by 8 students and extensive trials were conducted by 20 students. The finished product will be tested in learning activities aimed at obtaining information related to the media to be developed. Product data can be seen below:

Table 1. Data Distribution and Research Instruments

No	Data	Instrument	Respondent
1	Need Assesment	Observation and interview	Teacher and students
2	Validity	Validation sheet of media experts and material experts	Media experts and material experts
3	Practicality	Teacher and student response questionnaire	Teacher and students
4	Effectiveness	Pre test and post test	Students

The data obtained were analyzed descriptively quantitatively by calculating the number of scores, then calculating the percentage according to the method proposed by Riduwan (2018), using the following formula:

$$\frac{\text{Total score obtained}}{\text{Maximum number of scores}} \times 100\%$$

Table 2. Score Guidelines

Description	Score
Very Good	5
Good	4
Good Enough	3
Less Good	2
Not Very Good	1

Source: Adopted from Sugiyono (2015)

III. RESULT

In this research, The model used is ADDIE, which consists of several stages as follows:

1. Analysis

The first stage in the ADDIE model is analysis. At the analysis stage, observations, interviews and documentation data were conducted. After observation, it was found that the teacher only used lecture methods and was monotonous, students were not active during the learning process, the teacher did not provide guidance to student so that those who could not would remain unable and learning facilities were only LKS books and teacher books. The results of the interview found that students get low scores on stacked addition and subtraction material, students pay less attention when the teacher explains, the teacher has never used learning media, students' interest in learning is less enthusiastic and only a few students are active. Meanwhile, from the documentation data, it is found that students still do not understand the concept of working on stacked addition and subtraction. It is evident from the documentation data that some students still do not know the technique of storing, in the answer the tens are not stored above so that the answer becomes wrong. While in stacked subtraction some students still do not know the borrowing technique, so that if they find a problem that cannot be subtracted the student reverses the number that should be subtracted, resulting in the wrong answer.

Solutions from the results of observations, interviews and documentation data using media to improve students' learning abilities and interests. Make students more active because they can try learning media directly. Creamka media is also adapted to the world, characteristics and needs of students.

2. Design

This stage is often known as media design. At the design stage, the media form is made as well as possible, including the selection of materials, colors, images, shapes, material needs, media material needs and others. In the media, there is material on each side of the board, namely stacked addition and stacked subtraction. There is also a rope that can be used to hang the media. Creamka media is a new learning media that contains material and images in accordance with the material and the world of students in order to increase students' enthusiasm for learning. Creamka media design (Ice Cream Numbers) as follows:

a. Stacked Addition

Table 3. Product Image and Summation Description Arranged


Figure	Description
	<p>In the media display section you can see the media title, material discussed in the media, basket images, ice cream images in pink, orange and green. There are cherries which are used as a storage technique for answering tens, then there are instructions for the arrow where the cherries are stored in a basket. Cherries can be removed if the stacked summation does not require a storage technique, because the back of the cherries contains a magnet. There are also places used to place instructions on the shape and use of the media.</p> <p>The material used In making this media is 4 layers of cardboard and the front of the outside is covered with thick cardboard. Then on display I use laminating with size A1. The materials I use are also safe for students and harmless.</p>

Figure 2. Stacked Addition Creamka Media Display



Figure 3. Instructions for the form and Use of Creamka Media in Arranged Addition

Instructions for the shape and instructions for using the media are in the bottom right corner of the media. The instructions for shape and use are listed as shown in the picture below.



Figure 4. Arranged Addition Questions

There are stacked addition problems and story problems coated with laminating. The teacher asks students to randomly select a problem from the problem display provided first, so that students cannot see the problem they will get, then they are asked to work on it in the media.

b. Compound subtraction

Table 4. Product Image and Compiled Reduction Description

Figure	Description
	<p>In the media display section, you can see the media title, the material discussed in the media, images of ice cream in purple, pink and orange. There are cherries used for borrowing techniques in tens. Cherries can be removed if the stacking reduction does not require a borrowing technique, because the back of the cherry contains a magnet. There are also places used to place instructions on the shape and use of the media.</p> <p>The material used in making this media is 4 layers of cardboard and the front of the outside is covered with thick cardboard. Then on display I use laminating with size A1. The materials I use are also safe for students and harmless.</p>

Figure 5. Stacked Reduction Creamka Media Display

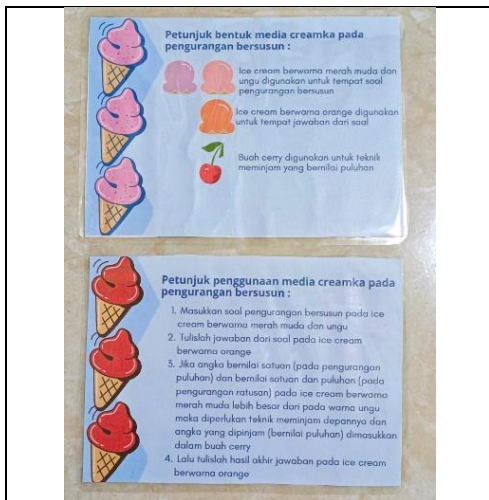


Figure 6. Instructions on the Form and Use of Media in Stacking Reduction

Instructions for the shape and instructions for using the media are in the bottom right corner of the media. The instructions for shape and use are listed as shown in the picture below.



Figure 7. Arranged Reduction Questions

There are stacked addition problems and story problems coated with laminating. The teacher asks students to randomly select a problem from the problem display provided first, so that students cannot see the problem they will get, then they are asked to work on it in the media.

3. Development

At the development stage, creamka (Ice Cream Numbers) media will be made for learning media. The implementation of the validity test is carried out by media experts and material experts, by explaining the product, media expert validation sheet, material experts to the validator to assess the feasibility of the product by providing comments and suggestions. The resulting product will be tested to assess the validity of the product. Product validity data will be obtained through an expert validation process. The criteria are as follows :

Table 5. Product Validity and Practicality Criteria

Criteria	Percentage
Invalid/not practical	0% - 20%
Less valid/less practical	21% - 40%
Quite valid/quite practical	41% - 60%
Valid/practical	61% - 80%
Very valid/very practical	81% - 100%

Source: Adopted from Asmiati et al., (2020)

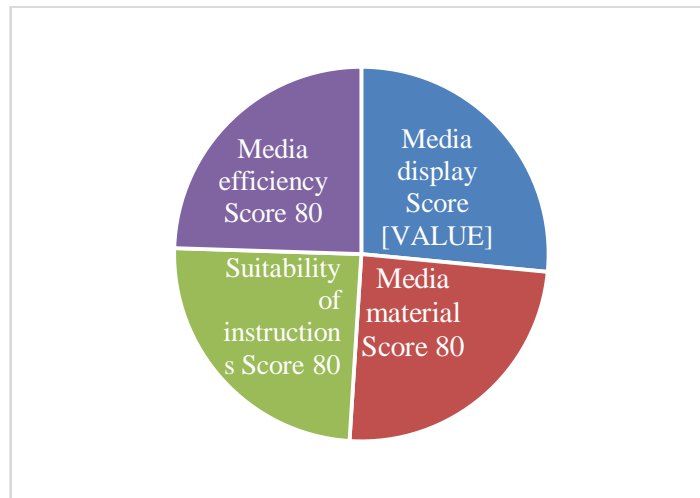


Diagram 1. Media Expert Validation Results Aspects

Based on diagram 1, the media validation result score for the media display aspect is 86,6, the media material aspect is 80, the instruction suitability aspect is 80 and the media usefulness aspect is 80. So the media expert assessment gets a percentage of 82% which has very valid criteria.

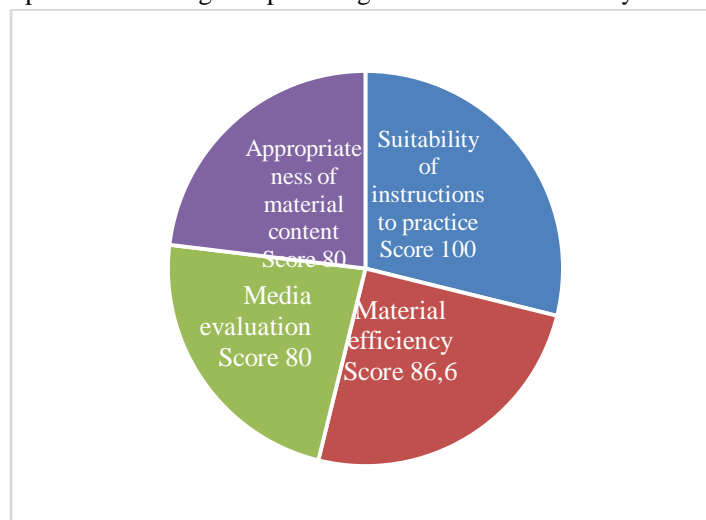


Diagram 2. Aspects of Material Expert Validation Results

The validation score of the material on the aspects of the suitability of the material content, the suitability of the practical instructions, the usefulness of the material and the media assessment can be seen in the diagram above. The assessment of the material expert obtained 84% with very valid criteria. So the creamka media (Number Ice Cream) obtained an average of 83% with very valid criteria.

4. Implementation

The implementation stage is the process of applying the development product. At the implementation stage, trials are used to see the response and assess the quality of the product produced. There are 2 types of tests before the product is used, namely limited tests and broad tests, which include giving pre tests, post tests and response questionnaires. The limited test was conducted by 8 students and the broad test was conducted by 20 students. With the aim of finding out how important creamka (Ice Cream Numbers) media is and to examine the effectiveness of the development product.

Practicality test is conducted to see the practicality of the product. The instrument used is a response questionnaire. Respondents involved in testing the practicality of the product consisted of teachers and students.

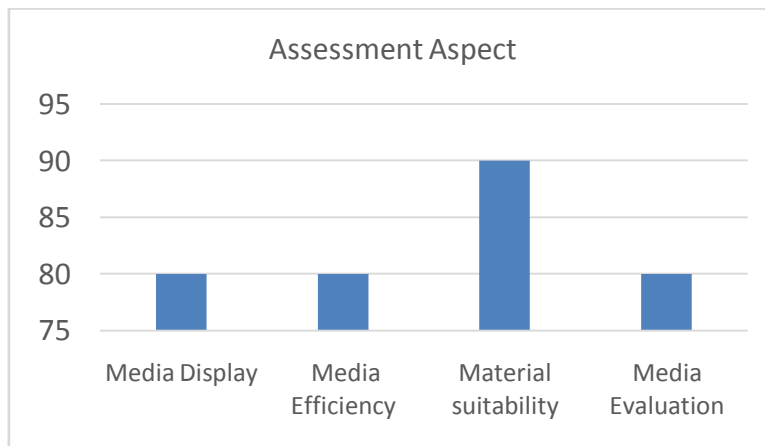


Diagram 3. Aspects of Teacher Response Questionnaire Results

The score of the teacher response questionnaire on the media display aspect scored 80, the media efficiency aspect scored 80, the material suitability aspect scored 90 and the media evaluation aspect scored 80. It can be concluded that teacher response questionnaire results score get a score percentage of 82% with very practical criteria.

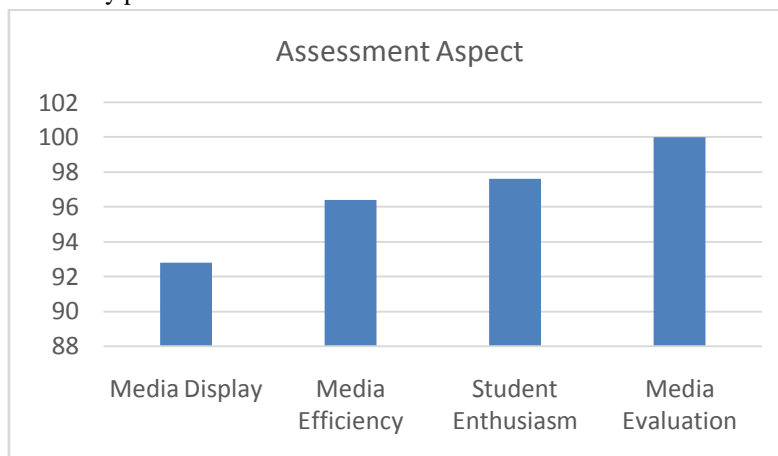


Diagram 4. Aspects of Student Response Questionnaire Results

Scores on aspects of media display, media usability, student interest and media assessment are seen in the diagram above. So the student response questionnaire obtained 96,4% and teachers 82%. The practicality test obtained an average of 89% with very practical criteria. In addition to looking at the practicality of the product, test instruments are also needed to prove the effectiveness of the media. The product is said to be effective if the average obtained from the post-test is greater than the achievement criteria. The limited effectiveness test below:

Table 6. Results of Pre-Test and Post-Test Limited Trials

No	Criteria for Achievement of Learning Objectives	Pre Test Score	Completeness of Pre Test Results	Post Test Score	Completeness of Post Test Results
1	78	30	Not Completed	100	Completed
2	78	90	Completed	100	Completed
3	78	50	Not Completed	100	Completed
4	78	80	Completed	70	Not Completed
5	78	50	Not Completed	60	Not Completed

6	78	40	Not Completed	90	Completed
7	78	100	Completed	90	Completed
8	78	20	Not Completed	90	Completed
Percentage above achievement criteria		62,5%	-	75%	-
Percentage below achievement criteria		37,5%	-	25%	-
Average percentage score		57,5%	-	87,5%	-

From the table above, it shows that the average result of the limited test obtained 87,5%, meaning that the media effectiveness test in the limited test had very effective criteria. The effectiveness test of the wide test is as follows:

Table 7. Results of Initial Test and Final Test Area Test

No	Criteria for Achievement of Learning Objectives	Pre Test Score	Completeness of Pre Test Results	Post Test Score	Completeness of Post Test Results
1	78	30	Not Completed	100	Completed
2	78	30	Not Completed	100	Completed
3	78	50	Not Completed	100	Completed
4	78	80	Completed	100	Completed
5	78	30	Not Completed	80	Completed
6	78	0	Not Completed	100	Completed
7	78	30	Not Completed	90	Completed
8	78	50	Not Completed	100	Completed
9	78	30	Not Completed	70	Not Completed
10	78	100	Completed	90	Completed
11	78	20	Not Completed	60	Not Completed
12	78	30	Not Completed	20	Not Completed
13	78	40	Not Completed	80	Completed
14	78	0	Not Completed	70	Not Completed
15	78	0	Not Completed	70	Not Completed
16	78	30	Not Completed	100	Completed
17	78	40	Not Completed	90	Completed
18	78	30	Not Completed	100	Completed
19	78	40	Not Completed	100	Completed
20	78	30	Not Completed	20	Not Completed
Percentage above achievement criteria		10%	-	70%	-
Percentage below achievement criteria		90%	-	30%	-
Average percentage score		34,5%	-	82%	-

From the table above, the data from the test results on the effectiveness of the creamka media (Ice Cream Numbers) through the post-test results obtained an average percentage of 82% which means that the effectiveness test of this media has very effective criteria on the material of stacked addition and subtraction. The test result data obtained was then processed using Paired Samples Statistics which can be seen in the following table:

Table 8. Paired Sample Statistical Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre Test	34.5000	20	23.94621	5.35454
	Post Test	82.0000	20	24.83631	5.55357

Source: Paired Samples Statistic Test Table 7

The average value of the pre-test results is 34,5 against the average post-test of 82. Proving that the students' post-test scores have increased. Furthermore, the data was tested through the Paired Samples Test which is useful for determining significant differences in students' pre-test and post-test scores., the following are the results of the Paired Samples Test:

Table 9. Paired Samples Test Results

		Paired Samples Test							
		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Pair 1	Pre Test - Post Test	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
		-47.50000	29.89015	6.68364	-61.48902	-33.51098	-7.107	19	.000

Source: Paired Samples Test Table 7

The test results conducted using the Paired Samples Test show that Sig. 2-tailed) of 0.000 means that the pre-test and post-test results have significant differences.

5. Evaluation

At the needs analysis stage, an analysis of the problems that occur will be carried out and used to determine the product, namely the creamka media (Ice Cream Numbers). At the design stage, an evaluation of the initial design is carried out, after being evaluated at the development stage, an expert validator is carried out to obtain input and suggestions, namely "The media made is interesting, adapted to the characteristics of children (grade 2), maybe later the form/model of the question can be developed so that it can develop HOTS in students". While input and suggestions from material experts are "The media is in accordance with CP. However, the media can be used not only in phase A but also in phase B".

IV. DISCUSSION

Media is one of the effective means of delivering learning by students about how to achieve learning goals (Widodo & Wahyudin, 2018). According to Daniyati et al. (2023) media is something in the form of people, objects, and the surrounding environment to communicate messages in the context of learning. Media aims to stimulate students' attention, interest, and thinking power during learning. Board media is a device designed in the form of a board, which is used to provide information and stimulate studentstinking power and interest. Some examples of board media include flannel boards, magnetic boards. (Kamaladini et al., 2021). This media is very effective for the purpose of delivering summarized and condensed information. In addition, visual media is often known as images and plays an important role.

The validity of creamka (Ice Cream Angka) media products obtained a percentage of 82% media expert validity and 84% material expert validity. Then the validity results obtained an average percentage of 83% with very valid criteria.

The practicality of creamka (Ice Cream Numbers) media products obtained a percentage of student practicality of 95,7% and teacher practicality of 82%. Then the practicality results obtained an average percentage of 89,2% with very practical criteria.

The effectiveness of creamka (Ice Cream Numbers) media through the average post test of the limited trial got a percentage of 87,5% and the broad trial got a percentage of 82%. Then the effectiveness results obtained an average percentage of 84,75% with very effective criteria because the average value obtained is greater than the predetermined Learning Objective Achievement Criteria.

The level of learning outcomes can be interpreted as an indication of an update in the quality of learning. Based on research conducted by Salsabila and Puspitasari (2020) factors such as motivation, interest in learning, intelligence, and learning methods have a significant influence on improving student learning outcomes. So, the Creamka (Number Ice Cream) media is very valid, very practical and very effective in improving the ability and learning outcomes of mathematical skills.

V. CONCLUSION

From the research that has been done, the results of the use of creamka media (Ice Cream Numbers) in mathematics, the sum and subtraction material has been proven to be valid, practical and effective. This is proven by the results of media expert validation of 82% and material expert validation of 84% with an average percentage of 83%, which means that this product validation test has very valid criteria. The product practicality test obtained a student practicality percentage of 95,7% and teacher practicality of 82% with an average percentage of 89,2%, which means that this product practicality test has very practical criteria. Meanwhile, the testing of the effectiveness of the creamka media (Ice Cream Number) through the post-test obtained an average percentage of limited tests of 87,5% and broad tests of 82%, which means that the effectiveness test of this media has very effective criteria because the average value obtained from the post-test is greater than the achievement criteria. Based on this data, it has been proven that creamka media (Ice Cream Numbers) is suitable for learning in addition and subtraction materials for grade 2 in elementary schools.

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