Multimedia Development Flash *Calistung* Through the Introduction of Animals for Elementary School Students

Nor Saleha[1*], Endang Purwaningsih[2], Riska Pristisni[3]

[1] Primary Education, Postgraduate Program, State University Of Malang, Malang, Indonesia.
[2] Department of Physics Faculty MIPA, Faculty MIPA, State University Of Malang, Malang, Indonesia.
[3] Primary Education, Postgraduate Program, State University Of Malang, Malang, Indonesia.

Abstract: In the learning process, the use of media in learning becomes one that must be used and utilized by teachers, because Learning media has a very important role, by using the teaching and learning process media makes it easier for students to understand a material that will be conveyed. The purpose of this research is to develop flash multimedia as a learning media focusing on reading, writing and counting exercises, and this multimedia makes students more practical, and effective in improving students ' Calistung skills. This research method uses R & D with Lee & Owens model which has 5 stages (analysis, design, development, implementation, and evaluation stage). The subjects of this study were first grade students of SDN Jatimulyo 5 as an experimental class and SDN Sukun 3 Malang control, with a total of 20 students in field trials. The results showed that the validity of multimedia multimedia products 83.1%, the practicality of teacher users 91.6%, the practicality of students 95.8%, and the effectiveness of using the Test Independent Sample t-Test GIS (2-tailed) of 0.034 is smaller than the significant level set at 0.05. Based on the results obtained, it can be concluded that flash multimedia can be developed as a learning medium, in Indonesian and mathematics subjects that focus on reading, writing and counting Grade I elementary school students in improving the ability to read, write and count beginning.

Keywords: Calistung; Flash; Multimedia

Introduction

The development of the curriculum which was originally thematic learning which was originally a teaching and learning process that combines all subject content into one topic of discussion that is tailored to an integrated theme from the environment around students so as to facilitate students in the. Thematic learning is expected that learners can understand the three realms of Bloom (Anshory et al., 2018; Lubis & Azizan, 2019). Three domains according to bloom according to Ulfah & Arifudin (2021) states that cognitive domain, this cognitive domain emphasizes knowledge, skills, and intellectual; affective domain emphasizes attitudes and interests; and psychomotor domain emphasizes motor skills of learners. In improving the learning process students can be helped by parents or a teacher so that students can increase the potential, thinking ability, creative, and problem solving and others contained in the students (Sofyan, 2019). The program of the Minister of Education and Culture, Mr. Nadiem Makarim, wants to implement an independent learning curriculum that learning has a pleasant atmosphere. The purpose of this learning freedom is for teachers, students and parents to get a pleasant atmosphere (Nasution, 2022). Independent learning is also a form of adjustment to restore the essence of assessment. The concept of independent learning for the national education system that can later provide school independence to freely argue on basic competencies and assessments that are in

accordance with school needs and goals (Anggreini & Priyojadmiko, 2022). In the curriculum of merdeka elementary school there are several subjects, namely: Science, Social Studies, Pkn, religion, English, Mathematics, and Indonesian. Learning Calistung (reading, writing and counting) in elementary school has a very important role because calistung is the basis for improving knowledge mastery competencies (Muhyidin et al., 2018). In calistung there are several subjects consisting of Indonesian subjects, Indonesian learning in elementary school has four aspects, namely skills in listening, speaking, reading and writing.

Learning the ability to read and write is a basic skill that unfortunately not all individuals acquire adequately. Some of the reasons include the lack of teachers and time in school, but along with that, the great increase in access to information through the Internet and the development of Information Technology have made literacy skills even more essential for many people (Genlott et al., 2013). Reading is one type of language skills that are open to information, and can gain new knowledge and experience, all of which are obtained from reading students can broaden horizons (Nation, 2017). In the initial reading and writing skills of low grade students, there are factors that affect students ' reading skills, namely students have difficulty recognizing letters, reading word for word, errors in pronunciation and in writing letters that have similar shapes (Rohman, 2020). Reading is included in learning Indonesian is a subject that must be studied in elementary school because this lesson is the beginning of students to communicate with the surrounding environment (Yamin, 2007). Hence the importance of Grade 1 elementary school students to improve their Speaking, Listening, Reading and writing skills.

Writing is also the same thing that is important in learning reading skills beginning, in addition to reading writing can also make students able to gain knowledge and information. Writing is also a creative process in expressing an idea that is made in the form of writing has a purpose (Arum & Ismi, 2022). Writing as a material form, clearly reflects cultural codes and symbols and shows social intentions and goals. However, perceiving the activity of writing only through seeing, hearing and also human-centered thinking can limit the understanding of how non-human elements contribute to its creation (Smith, 2021).

Given that reading and writing are very important roles for students, reading should be taught early on. But the basic skills that every student should have in addition to reading, writing and counting are also very important skills (Tahmidaten & Krismanto, 2020).

Counting is one part of mathematics, in numeracy skills that are indispensable in everyday life, the ability

to count is developed starting from the beginning of the concept of knowing numbers, the ability to calculate operations using symbols and numbers (Fidayanti et al., 2020). Mathematics has a significant representation as one of the subjects at the basic level around the world. Mathematics education plays a key role in shaping children into individuals who are able to think critically, responsibly, and cooperatively in social interactions. Therefore, efforts to develop critical thinking skills among mathematics students have been a major concern in the field of mathematics education for (Sachdeva et al., 2021). It is assumed that the ability to count is a universal ability. It is assumed that the ability to count is a universal ability. All children who are 6 or 7 years old are expected to master counting well, except those who face significant learning difficulties. calculations and calculation procedures develop together during the learning process of numeracy (Carbonell-Jornet et al., 2022). Students ' ability in calistung (reading, writing and counting) is very important especially for lower grade students efforts to improve the ability of students in calistung can use technology, so that students keep up with the Times.

The rapid development of the Times is currently very influential on the context of 21st century learning ranging from the curriculum that is always changing to adjust to the Times. In the implementation of current learning always involves technology as a necessity in the 21st century, ranging from the use of learning media that are operated using computers, laptops, gadgets and other electronic media to make learning more effective and efficient. Therefore, the rapid development of technology makes people turn into an all-online society, starting from the use of the internet through computers, laptops, mobile phones and other electronic media. Utilizing technological advances can make students at the time of learning to be more colorful and fun (Surur, 2021) & (Tahel & Ginting, 2019).

In the learning process, the use of media in learning becomes one that must be used and utilized by teachers, because learning media has a very important role because by using the media the teaching and learning process makes it easier for students to understand from a material that will be conveyed. The benefits obtained if using Learning media can increase learning motivation and can also attract students ' attention (Susilo, 2020). Learning Media has various types, namely: audio media, visual media, and there is also multimedia which is currently often used along with technological developments etc. Multimedia is a learning media from the results of computer technology that is programmed in such a way, so that it has a wider appearance and function. This Multimedia can be operated through a computer / laptop, with multimedia

can more quickly understand the concepts learned or taught (Fiantika & others, 2023) & (Suryadi, 2015).

Multi is a collection of several types or varieties derived from nouns from latin. While the media in latin medium is something that is used as an intermediary in conveying, and delivering information or knowledge (Hernaningtyas et al., 2014). Multimedia can be interpreted as the integration between several media software ranging from images, text, graphics, video, sound, animation etc.are combined with a digital file on the computer and then packaged as attractive as possible, which can later be used in conveying information to the public (Kharisma et al., 2015). Another opinion about interactive multimedia is conveyed by (Sa'adah et al., 2020) which states that multimedia as a combination of various media such as images, video, animation and text combined into one computer-based program in order to facilitate interactive communication. This Multimedia that will help teachers and students in the learning process takes place.

Based on initial observations and interviews at SDN Jatimulyo 1 Malang. On October 05, 2022, together with Class I Teachers, they revealed several problems encountered by class I Teachers, there were 5 students who were not fluent in reading and were not able to recognize the letters of the alphabet, and were not able to string letters into a word. Here, too, the teacher said that the learning done only relies on student textbooks or printed books and worksheets in the teaching and learning process which resulted in a lack of interest in students to learn. While there are also students who have not been able to count and recognize numbers, and counting operations, but for other students need to get used to the practice of reading, and counting (CALISTUNG).

This is due to the covid-19 pandemic, the curriculum used is also a new curriculum, an independent curriculum and lack of attention from parents in guiding their children to learn Calistung because parents are busy at work. When viewed from the completeness of supporting tools in learning, first grade students on average already have mobile phones, laptops and computers and students are able to operate them. In conditions like this, teachers should be able to use to be more creative in the learning process of Calistung, but on the other hand teachers have also provided learning that focuses on Calistung using LKS and books from the government only, and make students less interested in this learning because the media and teaching materials used are still less interesting the existence of interactive multimedia which is a media that can facilitate the needs and in the delivery of effective and innovative information, because this multimedia contains various media such as images,

video, writing, and sound become in one view (Rahmadianto & Sultan, 2018).

Another research by Jummita et al. (2021) with the title " Media Fun Thinkers based on Calistung questions on the theme of 7 objects, animals and plants around me for elementary school students in Grade 1" the results of this research focus on honing students ' basic skills, and producing print media based on calistung questions. This Media is very helpful for students in honing their reading, writing and counting skills. As for other research conducted by Rosmalita, et al 2022 entitled "development of Android-assisted Calistung Learning Media for Early Childhood" this research produces Calistung media that focuses on supporting learning in the classroom and also independently using android-based applications and the effectiveness of the media based on the results of previous research it can be concluded that in previous research there were similarities and differences in this research. The equation done by the previous study with this study both use the material Calistung as a form of initial learning. The difference is that previous research using android media and also concrete media, and the development model used in previous research using ADDIE. Based on the description of the previous research above, the need for research development with the title "development of Multimedia Flash for Grade 1 Elementary School students.

Method

This development research uses the type of Research and Development. This research and development uses the Lee & Owens development model, the selection of this development model because the Lee & Owens model has electronic-based media development specifications such as multimedia, games, e-books, videos and learning modules that are systematically developed (Lee & Owens, 2004).

Lee & Owens development model there are 5 stages used in producing a technology-based product. the first stage is the analysis stage, at the analysis stage is divided into 2 parts, the first part is the need analysis in this stage is a needs analysis which is a systematic step to determine the gap between the actual situation with the desired situation, this stage is carried out by interviews and observations with class teachers of first grade students. The second is the front-end analysis which is a collection of ways used to bridge the gap in accordance with reality and expectations to solve the problem. This analysis includes student Analysis, Analysis of important events, task analysis, situation analysis, technology analysis, goal analysis, media analysis, data availability analysis, and cost analysis, which is the

result of observations and interviews conducted at the state elementary school jatimulyo 05 malang.

The first front end analysis, is the analysis of students to determine the characteristics of students in Grade I elementary school. Multimedia Development Flash will be tailored to the characteristics of learners. The analysis includes the number of students in the first grade of elementary school, the characteristics and effectiveness of the media in learning. The second analysis of technology to determine the ability of technology in SDN Jatimulyo 05 Malang. The school has various facilities that support the learning process in using multimedia. The school has computer labs, projectors, and active speakers in every classroom. The third analysis analyzes the situation related to the environment in which students learn both at school and at home. This analysis is needed to determine the condition of the place, so that students can conduct learning activities with conducive situations. The fourth task analysis assignment of learning materials by students through the tasks given by educators. The learning material taken is considered difficult for students to understand. So, in the selection of learning materials that will be developed in multimedia. The fifth analysis of events is important to know the things that need to be taught to students, and to improve the performance to be done in completing the needs analysis. Sixth objective analysis to analyze the objectives of multimedia learning developed. The formulation of objectives has also been adjusted to the competencies that have been designed. Seventh problem analysis this analysis focused dalan selection of multimedia learning as what students need today. The results of this analysis as determining the media and learning materials that suit the needs of students. Eighth media analysis to develop the content and appearance of the media. Many different types of learning media exist, but the creation of a learning media must be tailored to the needs of students and field conditions. The ninth analysis of existing data is carried out to provide solutions related to the problems encountered, namely finding sources of information, collecting information obtained, assessing information based on learning, needs and goals, choosing to make products, evaluating and documenting results. The tenth stage of cost analysis is used to determine the cost required in the manufacture of learning media. Activities at this stage include the design of costs, use of costs, and explanation of the cost records that have been issued in detail (Sugiyono, 2013).

The second stage of the lee & owens model is design planning, multimedia design flash for Grade I Elementary School students. The design is done in accordance with the needs of students in Grade I Elementary School, media developed in the form of technology that uses a laptop/ computer, multimedia there are animations that are made as attractive as possible with the concept and form of the researcher, the development of material obtained from the achievement of learning Grade I elementary school with the content of Indonesian and mathematics. Each has a learning achievement phase A in accordance with Class I and the goals used as the achievement of student learning outcomes.

The third stage of development is the stage of multimedia development in accordance with the design that has been designed. Before the implementation phase, media and material validation must be carried out by a team of media experts and a team of material experts. The fourth stage is the implementation of this stage is carried out to determine the development of media and determine the effectiveness of media on products that have been developed through product trials first (Lee and Owens 2004). Implementation is carried out on Grade I students at SD Negeri Jatimulyo 05 Malang. Validate the media expert team and material before the media is implemented. Multimedia flash can be tested to the audience. The trial involved first grade students of SDN Jatimulyo 5 Malang as subjects. The last stage is the evaluation of this stage revisions based on the results of the implementation of Multimedia products and the results of the assessment questionnaire. Assessment is also seen from the effectiveness of students, namely from the results of pretest and postest learners. Then make a conclusion from the results of the questionnaire assessment and the results of the implementation of the media. So it can be concluded that the research will be improved from the results of the validation results from a team of media experts, materials, and learning and research aspects of the media at the time of application of flash Multimedia, so that media development can be developed in order to be better description.

Data analysis techniques used in the development of flash multimedia using descriptive qualitative and quantitative analysis techniques collected from questionnaires of media experts and materials on flash multimedia. In the analysis of the validity of the media using a modified rating scale type scale, consisting of 4 categories of assessment scores (Akbar Sa'dun 2022). Using the Formula 1.

$$V - ah = \frac{TSe}{TsH} X 100\% \qquad (1)$$

Description:
$V - ah$: expert validity
TSe : total score empirical validator
TsH : maximum expected score

After calculating using the formula then generate a percentage score, further categorize according to the following categories.

Table 1. Category validity of data analysis in percentage

Achievement Rate (%)	Qualification	Description
85.01 – 100	Very good	Very decent no need for revision
70.01 – 85.00	Good	Decent no need for revision
50.01 – 70.00	enough	Less feasible, need to be revised
01.00 – 50.00	Less	Not worth it, needs to be revised

Multimedia flash Member said to be valid/feasible if the results of the acquisition score with a minimum score of 61%. The Data aims to obtain qualitative data that is to conclude the overall results. The Data aims to obtain qualitative data that is to conclude the overall results. Then the data is processed into a descriptive analysis.

Data analysis of media practicality seen from the response of first grade students of SDN Jatimulyo 05 Malang which amounted to 20 students. Practicality is measured using a Likert scale, this measurement scale will get answers with a score Category 4 = strongly agree 3 = agree 2 = disagree 1= strongly disagree. Assigning values using Formula 2.

$$V - pg = \frac{TSe}{TSh} X 100\% \qquad (2)$$

Description :

$V - pg$	:	user Validator
TSe	:	total score empirical validator
TSh	:	Ideal score / maximum expected score

Table 2. Guidelines for the practicality of data analysis in percentage terms

Achievement Rate (%)	Qualification	Description
85.01 – 100	Very good	Very practical, without revision
70.01 – 85.00	Good	Practical, need a little revision
50.01 – 70.00	Enough	Less practical, need a lot of revision
01.00 – 50.00	Less	Impractical

Multimedia flash is said to be practical if the results of the acquisition score with a score of at least 61%. The Data aims to obtain qualitative data that is to conclude the overall results. Then the data is processed into a descriptive analysis. Products can be said to be effective if they have differences in student learning outcomes before and after using the media. The effectiveness of the media seen from the improvement of pretest and postest results mastery of the material from data collection using a test instrument in the form of questions. Calculation of data collection using the normalized gain formula (N-gain). Test the effectiveness of this product using Pre-Experimental Design Type One Group Pretest and single group Posttest, by Formula 3.

$$O_1 \times O_2 \qquad (3)$$

Description :

O_1	:	pretest scores
x	:	treatment by using multimedia flash
O_2	:	posttest scores

Quantitative values obtained from the results of pre-test and post-test and analyzed the numbers to determine whether there are differences in student learning outcomes before and after the use of Flash multimedia and to determine the effectiveness of the use of flash multimedia. Pre-test and post-test results were analyzed using Independent t-Test. Hypothesis analysis was done using SPSS software.

Result and Discussion

In this study conducted student observations and interviews with first grade teachers of SDN Jatimulyo 1 malang, in order to know more about the needs of learning media in accordance with the characteristics of first grade students. Based on the results of interviews with Class I Teachers, they found obstacles where class I students lacked focus in learning, as well as the ability to read, write and count at the beginning students had difficulty, agree with (Rohman, 2020). Therefore, there is a need for Learning media assistance, especially digital media that can increase student learning interest (Syarifuddin, 2022). So that students can use multimedia to improve the ability of Calistung which has features in 1 application.

Based on the study of this problem, researchers developed multimedia flash to improve the ability of first grade students in calistung. Multimedia flash is a learning media that contains material for reading, writing and counting exercises according to the stages that use the appearance of animal themes. The features contained in this multimedia are the main menu, video instructions for use, sub menus in one learning material, exercises for each subject and evaluation. Here's a look at multimedia flash.

Figure 1. Cover View

Figure 2. Display the main menu

On the initial display there is the name multimedia flash member reading, writing and counting) and there is a start button to enter the main menu. The main Menu there are 4 menu options, namely learning achievement, Indonesian material menu, mathematics and evaluation. Then in the sub menu of each subject there are stages of the material being studied, and at the end of the material there is also a quiz menu for students to repeat the lessons that students have learned. While on the menu instructions for use there are video steps in using multimedia flash.

Figure 3. Display submenu material

Submenu on Indonesian material there are several materials ranging from knowing letters,syllables, vowels and consonants, writing animal names, and quizzes. While in mathematics there are several materials, namely, knowing numbers, addition concepts, subtraction concepts and quizzes.

Figure 4. Display of evaluation questions and the results of the score obtained

On the multimedia display there are buttons in accordance with the instructions of the instructions for use, which can make it easier for students to use it. In the evaluation menu there is a discussion after the students answer the question and at the end of the evaluation question will appear the score that students get from the evaluation question.

After the development of this product, then the next step is to perform product validation tests conducted by media and material experts to measure that this product is feasible to use as a learning medium developed by researchers. In this validation stage, there are 3 aspects that are considered integrated, language and media delivery. The results of the validation stage of media and material experts as follows Table 3.

Table 3. Media expert validation result

Aspects	Validation score
Considered integrated	21
Language	17
Media delivery	11
Total	49
Results	81.6%

Table 4. Material expert validation result

Aspects	Validation score
Material suitability	16
Konten	12
Feedback	12
Language	6
Total	46
Results	72%

The results of the calculation on the questionnaire that has been validated by the validator of media and materials, media validation results get a score of 81.6% with the category "Valid" and can be tested with a little small revision. While the validation results of material experts get a score of 72% including the category "Valid", and suggestions and comments from experts terhadapat multimedia flash used as improvements.

Data on the results of practical field tests conducted by teachers and students. These results were obtained from the questionnaire respondents who were given after using this flash multimedia product, as follows Table 5.

Table 5. Product Practicality Level Results

Data Sources	Assessment Results	Assesment Criteria
Teacher Response	91.6	Very Practical
Student Response	95.8	Very Practical

Table 6. Pre-test and Post-test results experimental class

Student Initials	Score Pre-test	Score Post-test
AAP	70	80
AMR	70	80
ARA	90	70
AAM	80	80
ABS	60	50
EAP	70	80
GACPI	60	70
HA	70	70
HFA	100	90
KF	80	90
MWA	70	70
MAA	100	40
MF	80	90
MHYAH	50	80
MTI	60	100
NHJR	40	90
RPA	80	90
SM	90	70
TERK	80	90
VN	60	80
Total	1.270	1.400

Based on the data above, the level of practicality of the product consists of 2 criteria, namely practicality by teachers and practicality by students. Multimedia flash teacher practicality results obtained 91.6% with the criterion of "very practical". While the assessment of practicality by students obtained results of 95.8% was 85.01-100% with the assessment criteria of "very practical" Multimedia flash member can be used as a learning medium because it has a level of practicality as a learning medium.

Multimedia Flash effectiveness test results obtained from pre-test and post-test scores of students. Pre-test conducted before using multimedia flash member while post-test obtained from the score after using multimedia flash. Pre-test and post-test values have a very good difference, this can be seen from the Table 6, 7, and 8.

Table 7. Pre-test and Post-test results control class

Student Initials	Score Pre-test	Score Post-test
AZ	70	70
HB	100	50
NB	60	70
SY	70	80
TSB	60	40
VG	70	70
RR	100	100
DT	60	80
DN	90	100
BM	30	60
FRL	80	90
SFQ	30	90
DA	40	50
NFS	70	80
LN	50	70
AR	50	70
FRTL	40	70
DZK	70	40
AZL	70	30
DVN	60	90
Total	1.460	1.550

Table 8. Independent Sample Test

	Levene's test for equality of variance		t-test for equality of mean						95% Confidence interval of the difference	
	F	Sig.	t	df	sig. (2-tailed)	Mean difference	Std. err difference		Lower	Upper
Equal variances assumed	3.319	0.080	-2.155	78.000	0.034	-8.500	3.945		-16.353	-0.647
Equal variances not assumed			-2.155	71.885	0.035	-8.500	3.945		-16.364	-0.636

The test results of Independent Sample t-Test on multimedia flash produced a significance value of 0.034, which is smaller than the previously set significance level of 0.05. Thus, based on these results we can conclude that there is a significant average difference between the experimental class and the control class at a significance level of 5%. These results show that we have enough statistical evidence to reject the null hypothesis (Ho). The null hypothesis usually states that there are no significant differences between the two groups tested. In this case, rejecting the null hypothesis (Ho), which means having statistical confidence that there is a significant difference between the experimental group and the control group in the measured parameters.

In other words, the results of this test indicate that the intervention or treatment given to the experimental group using multimedia flash has produced a significant impact, in contrast to the control group that did not receive similar treatment. Multimedia flash calistung can be downloaded for free via goole drive link listed as follows: https://drive.google.com/drive/folders/1HknvQdjjw0kphZvZIaT4EnzofrX2Iijz?usp=share_link. After downloading the file contained in the link in the form of zip and can be opened using a laptop/ computer. The limitations of this study are on multimedia that can not be operated using android can only be used assisted by a laptop/ computer only. The follow-up plan for this media is expected in the future for readers and researchers, can develop this media that can be operated using android that can improve the ability of students in *calistung*.

Conclusion

Based on the results of preliminary studies, research results and discussions that have been described, it can be concluded that the development of multimedia flash member has conducted a validation test phase on media experts and materials that are declared eligible as learning media for Grade I elementary school students. While the results of practicality and media effectiveness are also included in the category of practical and effective used to improve the ability to read, write and count first grade students. Suggestions from researchers that this media can be used as a reference in developing multimedia further.

Conflicts of Interest
The data presented in this including data collection, analysis interpretation, manuscript writing and the decision to publish research results, does not involve a conflict of interest with any party.

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