

Developing media of school science learning based macromedia flash

by Cepi Safruddin

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Developing Media of Social Science Learning Based *Macromedia Flash* to Increase Interest, Motivation and Learning Outcomes of Fourth Grade Elementary School

Princess Dewi Nurhasana and Cepi Safruddin Abdul Jabar

Elementary Education Program, Magister Program, Yogyakarta State University

Abstract

Media of social science learning based *macromedia flash* can increase interest, motivation and learning outcomes of fourth graders of elementary school. This type of research is R & D research by adapting Borg & Gall development procedures. The subjects of this study are students and grade 4 students of State Elementary School of Sendangadi 1 and SD Negeri Sendangadi 2. Data collection is done by interview, questionnaire and test. Data analysis technique using MANOVA test with *Hotelling's Trace* formula 5% significance level of significance. This research produces media of social science learning in the form of media interactive learning based on *macromedia flash*. Media of social science learning based *macromedia flash* is very feasible to use based on validator assessment and test results in schools. Products developed effectively to increase interest, motivation and learning outcomes of fourth grade students of elementary school. The significant difference of the *Hotelling's Trace* test is $0.000 < 0.05$ for the experimental test and control group. Thus, IPS-based learning media based on *macromedia flash* is feasible and effective to increase student's interest, motivation and learning outcomes.

Keywords: IPS learning media; *Macromedia flash*; Interest; Motivation; Learning outcomes

Corresponding Author:
Princess Dewi Nurhasana
putridewinurhasana@gmail.com

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1. Introduction

The rapid development of technology is one of the factors supporting the emergence of various learning media. The learning process is the process of delivering information from the teacher to the students so that the media play an important role as a tool for conveying information in the learning process including learning social studies.

Learning media has a variety of forms. Media lessons, including tools used physically to convey the content of teaching materials consisting of books, software and hardware such as: TV, OHP, video, tape, slide, movie book, transparency and other modes [1].

From the above media such as books, software, hardware such as TV, OHP, video there are also various computer learning programs, one of which is learning based on *Macromedia Flash*.

A platon *Macromedia Flash* is an animation program that has been widely used by animators to provide professional animated animation [2]. Based on the understanding of *macromedia flash* application above that *macromedia flash* is one application that is easy to use to make learning become more interactive so that raises interest and motivation of student to learn especially in social science learning[3]. In addition to generate interest and motivation, by developing interactive media learning media can also improve student learning outcomes in IPS learning.

Based on interviews with teachers of class IVA and IVB states that teachers rarely use computers and LCDs in the classroom in the learning process. In addition, teachers also stated that in every learning requires a medium that attracts the attention of students so that the material is more easily understood by the students. Based on the results of field observation and analysis of the needs of teachers using only LKS media and images that make the material less interesting and teachers have never used media based on *macromedia flash*. In addition, based on observations during the learning process many students who do not pay attention to the teacher and busy playing pens, pencils and other stationery. Based on the statement of teachers of class IVA and IVB that students in the lessons IPS less yng not yet reached the value of mastery that is with an average of 6, 70. The average value shows a low result, because the success indicator reaches 75.

Based on the above problems it is known that teachers and students need an interactive learning media and dance and in the subjects of social studies students still have not reached the value of completeness and while in the learning process many students are busy with their respective activities without regard to teachers.

Based on the above background, then developed IPS media based learning *Macromedia Flash* is feasible to increase the interest, motivation and learning outcomes of fourth graders of elementary school and with the development of learning media IPS based on *macromedia flash* can increase interest, motivation and learning outcomes fourth graders.

2. Literature Review

The first relevant research from Fredy in 2013 about the development of multimedia learning mathematics on the material of integers class IV SD [4]. the results showed

that the media developed eligible with very good category and the results of the *N-gain* test showed that the improvement of students' learning outcomes of the experimental class is higher compared with the control class ($0.57 > 0.42$), so it can be concluded that learning using multimedia more effective compared with learning using *powerpoint* media in improving student learning outcomes of elementary school class IV. Based on the research, the information that can be used in this research is about the development of multimedia learning mathematics in the matter of integer can improve learning result

The second relevant research, from Canisius Supardi in 2010 on the use of visual media to encourage and increase learning outcomes elementary science class V students [5]. The results showed that visual media can increase students' interest and learning outcomes. The result of observation in cycle I is 6,8 with enough category, in cycle II was 9.8 with good category and cycle III average 11,7 with very good category. The result of questionnaire of interest in cycle I obtained an average of 2.25 is sufficiently categorized, in cycle II obtained average 3.32 with good category and cycle III 3.70 with good category. And the completeness of learning outcomes in the first cycle reached 28%, in cycle II completeness of learning achievement reached 68% and in cycle III mastery learning achievement reached 88%. Based on these findings obtained data that the use of visual media on science learning can increase student interest and learning outcomes.

3. Materials & Methods

This research uses research and development or *Research and Develoment* (R & D). Research and development is a study developed by Borg & Gall (1983: 772) [6]. The location of this research is in SD Negeri Sendangadi 1 and SD Negeri Sendangadi 2 with the subject of fourth grade students. Determination of classes used for limited trials, expanded trials and operational tests performed randomly with drawing techniques.

Development procedures according to Borg & Gall (1983: 775-776) there are 10 steps of research and development that are, (1) preliminary study, (2) planning, (3) product development, (4) limited trials, (5) (6) expanded trials, (7) expanded trial revisions, (8) operational tests, (9) final product refinement, (10) dissemination. Data collection techniques used to collect data during the process of developing learning media based on *IPS macromedia flash* is the method of interviews, observation, questionnaires and tests. A quasi-experimental study was performed with a *pre-test and post-test control group design*. The effectiveness of the product is determined by comparing the

students' ability before and after the use of the product in the experimental group and control group. The design of field trials can be seen in table 1 below.

TABLE 1: Design Pre test and Post test Control.

Group	Pre test	Treatment	Post test
Experiment	O ₁	X ₁	O ₂
	O ₃	X ₁	O ₄
Control	O ₅	X ₂	O ₆

(source: Sugiyono, 2008: 49)

Data obtained through interviews, product ratings sheets and interest and motivation questionnaires were analyzed statistically qualitatively and quantitatively. Analysis of learning outcomes on *Gain Standard* techniques. H_{acyl} analysis of differences of interest, motivation and learning outcomes of control and experiment class students through multivariate test analysis (MANOVA). Testing criteria was H₀ received at the level of significance of 5% if the probability value > 0.05.

4. Results and Discussion

4.1. Result

4.1.1. Preliminary studies

Needs *analysis is* done through three things: a) literature study, b) interview, c) document study. Analysis of literature studies conducted studies of literature related to the media, learning IPS and *macromedia flash*. From the results of the literature review produced the basics that are used for research to develop the planned IPS learning media products. The results of the literature study are written on CHAPTER II as the basis for study review. Library study results are used to strengthen the theory in developing products to be produced. The results of literature studies are related to IPS learning media which is a tool to facilitate the delivery of materials so that students more easily understand the material presented.

Interview with teachers aimed to examine and obtain findings relating to the use of instructional media. Based on the interview, it can be concluded that teachers need instructional media used for IPS learning. Designed media tailored to the characteristics expected in the school especially class IV. Document study analysis is done by analyzing learning media used by fourth grade teacher of SD Negeri Sendangadi. The media used is in the form of images related to the material being taught. In addition, the existing

media is still minimal in the learning process, so that students are less interaction and directly involved in the learning process. And the media in it less include the activities of students in daily life so that students lack the information to solve problems in the learning process.

4.2. Discussion

4.2.1. Product development results

Product validation results

Media validation test is intended to test the media developed feasible and can be tested in the field. Product validation test by media expert is reviewed from 2 aspects: (a) communication aspect and (b) design aspect. Data from both aspects are processed and analyzed to know the quality of learning media IPS based on *macromedia flash*. With suggestions of improvements, it is hoped that the media developed are feasible and ready for use in limited trials and field trials. Based on the assessment of media experts get a total score of 87 with very good category, from communication aspect score get 27 with very good category and design aspect get score 60 with good category.

Product validation test by material experts is reviewed from 2 aspects: (a) content aspect and (b) learning aspect. Based on media assessment by material expert of media validation result get score 54 total with good category, from aspect score of isis get score 22 with good category and learning aspect get score 32 with very good category.

Trial results are limited

In the test and revision phase of the product, the products that have previously been tested for feasibility and revision based on expert judgment and advice are tested in a limited manner. The results of the limited trial based on the results obtained by teacher response test and student response during the use media of social science learning based macromedia flash in the classroom.

1. Teacher Response

After implement learning media by using instructional media *Macromedia Flash-based* IPS is already good. This can be seen from the overall value obtained by teachers with a total score of 68 with good category.

2. Student responses

After learning implementation by using media of social science based *Macromedia Flash* good. This can be seen from the score of 3 students with a total score of 132 with an average of 44 with good category.

Test results expanded

Test results expanded is the testing phase media of social science learning based *macromedia flash*. At this stage the media of social science learning based *macromedia flash* that has been revised in accordance with the suggestions and inputs in the limited trials, is tested to different and larger subjects with the same stages as the limited trials.

1. Teacher Response

after implementing learning by using media based learning *macromedia flash* is very good. This is seen from the overall score obtained by the teacher with a total score of 70 and the category is very good.

2. Student response

in the trial expanded after the implementation of learning using *macromedia flash* media based learning is good, it can be seen from the total score of 322 with an average score of 46 and get good category.

Product effectiveness test results

The effectiveness of the products that have been developed through research and development is measured through questionnaire techniques with questionnaire instruments of interest and motivation questionnaires and test techniques with test instruments provided to measure students' cognitive learning outcomes.

Effective tests are conducted on products that have been developed to increase student interest, motivation and learning outcomes. The activities as follows.

1. Product Effectiveness Test Process

Operational test is the last field test stage in testing of IPS media based on *macromedia flash* that has been revised in accordance with the suggestion and input tested expanded. The subjects of the operational test are the fourth graders of the State

Elementary School of SD Negeri 1 and SD 2. Subjects are 60 students divided into two groups, one control group and one randomly assigned experimental group.

After operational test, subjects were given pretest. Pretest is done to know the interest, motivation and learning outcomes of students before being given treatment in the form of learning media based on IPS *macromedia flash*.

2. Effectiveness Test Results

(a) Normality test

Normality test conducted to know whether the obtained data is normal or not.

TABLE 2: *Pretest Data Normality Test Results.*

Group	Variables	Sig	Condition	Information
Pretest Experiment 1	Motivation	0.009	Sig <0.05	Normal
	Interest	.200	Sig <0.05	Normal
	Results Learn	0.016	Sig <0.05	Normal
Pretest Experiment 2	Motivation	.200	Sig <0.05	Normal
	Interest	.200	Sig <0.05	Normal
	Results learn	0.019	Sig <0.05	Normal
Pretest Controls	Motivation	.200	Sig <0.05	Normal
	Interest	0.126	Sig <0.05	Normal
	Results learn	0.030	Sig <0.05	Normal

Based on test result of normality of *pretest* data of motivation, interest and result of student learning in experiment group 1, experiment 2 and control have significance value bigger than specified *alpha* value that is 5% (0,05), meaning H_0 accepted and H_1 rejected. It can be concluded that the *pretest* data of motivation, interest and learning outcomes in the experimental and control groups are normally distributed.

Based on the result of normality test of *posttest* data of motivation, interest and result of student learning in experiment group 1, experiment 2 and control have significance value bigger than *alpha* value that is 5% (0,05), which means H_0 accepted and H_1 rejected. So it can be concluded that *posttest* data motivation, interest and learning outcomes in the experimental group and controls are normally distributed.

TABLE 3: Posttest Data Normality Test Result.

Group	Variables	Sig	Condition	Information
Posttest Experiment 1	Motivation	.200	Sig <0.05	Normal
	Interest	0.010	Sig <0.05	Normal
	Results Learn	0.149	Sig <0.05	Normal
Posttest Experiment 2	Motivation	.200	Sig <0.05	Normal
	Interest	0.105	Sig <0.05	Normal
	Results learn	0.029	Sig <0.05	Normal
Posttest Control	Motivation	0.094	Sig <0.05	Normal
	Interest	0.007	Sig <0.05	Normal
	Results learn	.200	Sig <0.05	Normal

(b) Homogeneity Test of Covariance Matrices

The homogeneity test of the covariance matrix used is Box's M. The following test results homogeneity of covariance matrix of *pretest* interest, motivation and learning outcomes.

TABLE 4: Homogeneity Test Results of Covariance Matrix of Pretest Data.

Box's M	F	df1	df2	Significance	Information
3.596	1.770	2	1.62114	0.170	Homogeneous

Based on table 4 it is known that *pretest* covariance matrix of *pretest* data of experimental class and control class has significance value > 0,05 so it can be said that variance-covariance matrix of motivation variable, interest and student learning result is homogeneous.

The result of data analysis of *posttest* of interest, motivation and learning result multivariate as follows.

TABLE 5: Homogeneity Test Results of Covariance Matrices Posttest Data.

Box's M	F	df1	df2	Significance	Information
11.531	5.680	2	1.62114	0.293	Homogeneous

Based on table 5 it is known that *posttest* covariance matrix of related variables for experimental class 1, experiment 2 and control class has significance value > 0,05, so it can be said that interest variable, motivation and learning result are homogeneous.

(c) Correlation Test

The correlation coefficient test is performed to find out the relationship between the three variables of interest, motivation and student learning outcomes.

TABLE 6: Multiple Correlation Test Results.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.753 ^a	.567	.535	6.33965	.567	17688	2	27	.000

Based on table 6, it is known that the relationship between motivation and interest simultaneously to the learning outcomes calculated by the correlation coefficient is 0.753, this shows a strong correlation. While the simultaneous contribution of learning motivation variables and learning interest towards learning outcomes is 56.7% while 43.3% is determined by other variables. Based on table 6, the probability value (sig. F change) = 0,000. Because the sig value. F change 0,000 <0,05, then the decision is H₀ rejected and H₁ accepted. This means that motivation and interest in learning are related simultaneously and significantly to the learning outcomes so that MANOVA can be tested.

(d) Manova Test

This test serves to determine whether the learning media based IPS *macromedia flash* that has been developed to increase interest, motivation and student learning outcomes significantly or not.

TABLE 7: MANOVA Test Results.

Multivariate Tests ^d						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1,000	1.112E4 ^a	2,000	9,000	.000
	Wilks' Lambda	.000	1.112E4 ^a	2,000	9,000	.000
	Hotelling's Trace	2.471E3	1.112E4 ^a	2,000	9,000	.000
	Roy's Largest Root	2.471E3	1.112E4 ^a	2,000	9,000	.000
Group	Pillai's Trace	1,400	1.229	4,000	20,000	.000
	Wilks' Lambda	.089	1.115 ^a	4,000	18,000	.000
	Hotelling's Trace	4747	.999	4,000	16,000	.000
	Roy's Largest Root	2.737	1,440 ^c	2,000	10,000	.000

Based on table 7 it can be seen that the significance value of *Hotelling's Trace* test is $0,000 < 0,05$, hence can be concluded H_0 rejected and H_1 accepted, meaning there is significant difference of interest, motivation and result of student learning between experiment group and control group. The experimental group 1 and the experimental group 2 had increased interest, motivation and higher learning outcomes than the control group.

4.2.2. Final product review

Product feasibility review

In this research and development IPS-based learning media based on *macromedia flash* with some improvement from the revision of the initial draft, limited trials, and expanded trials. IPS-based learning media products based on *macromedia flash* developed through several assessments. The result of IPS initial learning media that has been developed has been subsequently validated by media experts and material experts. Suggestions and inputs from both experts made improvements so that IPS learning media is said to be worthy of trial. Validation results from media experts and IPS learning media material experts who developed has shown very good score and feasible tested. The next stage is to conduct a limited trial and expanded trials to find out the resp on teachers and students on the developed medium. Based on the results of limited trials and expanded trial obtained learning media is said to be feasible for field test.

Study of product effectiveness on interest, motivation and learning outcomes

The effectiveness of learning media based on IPS *macromedia flash* in improving learning motivation, interest in learning and learning outcomes can also be seen from the results of difference test average. The mean postes value of learning motivation of experimental group 1 and 2 were 89.3 and 89.5 while the control group was 75.07. The average postes value of interest in experimental group learning 1 and 2 were 102,17 and 102,13 while control group was 95,46. And the mean of postes result of student learning result of experiment group 1 and 2 was 75,17 and 76,83 while control group 58,93.

By observing the average posttest score between the two groups, it shows that the motivation, interest and learning outcomes of the students using learning media of IPS based on *macromedia flash* is higher than the motivation, the interest and the learning

result of the students using the media commonly used by the teacher that is the picture media. Sudjana & Rivai (2002: 2-3) states that the benefits of learning media in the learning process for students that can lead to student motivation while learning [7]. So students can better understand the material being taught by the teacher and enable students to master the better learning objectives. By using the learning media IPS based on this *macromedia flash* students can more easily interact and communication in the learning process because of the interest of students to learn. Interest in learning is closely related to the sense of this is expressed by Byrnes (2008: 11) which states that " *interest is conceptualized as a quality of person object interaction that can show it self in the form of pronoloned, the effortless attention of the attention and feelings of pleasure and concentratio*[8].

5. Conclusion

From this research and development it is concluded that the developed product is feasible to be used. This is evidenced by the assessment of the product by a media expert who got a total score of 87 and received a very good predicate and product assessment by material experts who scored 54 with good category.

The products developed effectively increase students' interest, motivation and learning outcomes. It can be seen from multivariate test with *Hotelling's Trace* formula that is $0,000 < 0,05$. So it can be concluded there are significant differences of interest, motivation and student learning outcomes between the experimental group and the control group.

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