



**Development of Adobe Flash CS6 Multimedia-Based Learning Media on Science Subjects  
Animal Breeding Materials**

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**Abstrak**

Pengajaran dalam masa pandemik merupakan sebuah tantangan di dalam dunia pendidikan, namun juga kesempatan untuk menciptakan sebuah inovasi dalam pendidikan juga. Untuk penelitian ini bertujuan untuk melihat hasil pengembangan media pembelajaran pada materi perkembangbiakan hewan menggunakan *Adobe Flash Professional CS6* mengetahui kelayakan media pembelajaran pada materi perkembangbiakan hewan menggunakan *Adobe Flash Professional CS6* mengetahui responden peserta didik kelas V pada materi perkembangbiakan. Metode penelitian menggunakan metode penelitian dan pengembangan atau *Research and Development (R&D)*. Model yang digunakan peneliti dalam penelitian ini yaitu *borg and gall* yang memiliki 10 tahap yaitu: penelitian pendahuluan/prasurvei, perencanaan penelitian, pengembangan model/produk awal uji ahli dan pelaksanaan uji coba lapangan awal, revisi hasil uji lapangan awal/terbatas, pelaksanaan uji lapangan utama, revisi hasil uji lapangan utama, uji kelayakan/uji lapangan operasional, revisi final hasil uji kelayakan, diseminasi dan implementasi produk akhir. Uji produk dilakukan oleh ahli media dan ahli materi, serta guru dan peserta didik merupakan responden terhadap media yang dikembangkan. Media ini diuji cobakan kepada 10 siswa sebagai kelompok kecil dan 95 siswa dari 3 sekolah. Hasil penelitian menunjukkan ahli materi dengan skor 89%, ahli media 78%, responden guru 90%, dan peserta didik 93%. Sehingga hasil penelitian ini memberikan makna sebuah inovasi pembelajaran yang mendukung minat belajar siswa.

**Kata kunci:** media pembelajaran, AdobeFlash, multimedia, IPA

**Abstract**

*Learning during pandemic is a challenge in education; however, it is also an opportunity to create an innovation in education. This study aims to find result for developing learning media in animal breeding lesson using Adobe Flash Professional CS6, to find the feasibility of learning media on animal breeding lesson using Adobe Flash Professional CS6, to find student's respond in class V on animal breeding lesson. Research method uses Research and Development (R&D) model. Model used by the researchers in this study is borg and gall, which has 10 steps, they are: research introduction/pre-survey, planning, developing model/initial product, test by expert, and initial field test, revising initial/limited field test result, primary field test execution, revising primary field test, feasibility test/operational field test, final revision result of feasibility test, dissemination and implementation of final product. Product test is carried by media and material experts; teacher and students are also as respondents for media developed. This media is tested to 10 students as small group and 95 students from 3 different schools. Research result shows that material experts give 89% score, media expert gives 78% score, teachers give 90% score, and students give 93% score. So that, this research result means giving an innovation in education to support student learning interest.*

**Keywords:** learning media, adobeflash, multimedia, natural science

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## INTRODUCTION

Natural Science and Technology in worldwide has undergone several changes. This can be seen from the daily life in our neighborhood. Basically, Natural Science aims to prepare students in order ready to face the situations around them because by studying Natural Science, students can learn to comprehend natural phenomena occurred around them. (2006: 78) explains that by learning Natural Science can improve students' abilities to a better attitudes and useful abilities for their environment.

Because teacher's understanding on using technology-based media is low, it makes students interest to study animal breeding becomes low. Apart from it, method used by teacher in the classroom is only one media, and it causes problems, such as:

1. In learning animal breeding, teacher only uses picture media in explaining to student;
2. There is no student working sheet for the lesson;
3. Student only takes notes;
4. Student answers questions in the book.

The development of science and technology is increasingly encourages technology development in the form of multimedia in a visual way and students can receive the material carefully, with this, students need interactive media (Catur Saputro et al., 2015) Natural Science has some goals such as: (1) gaining comprehension of the world's beauty that has been created by the one and only God: (2) expanding Natural Science understanding which can be applied in daily life: (3) creating a sense of curiosity, increasing cognitive attitudes and awareness in relationship

between Natural Science, environmental conditions, and surrounding community as well as technology: (4) improving comprehension skill of the surrounding environment and the surrounding conditions: (5) creating sense of care and care for the environment: (6) creating sense of care to nature of God's creation (7) gaining Natural Science knowledge using media and teaching using Adobe Flash-based media because it provides pictures and description those are easily understood by students and wrapped with fun learning (Binanto, 2014). Students are active during learning time, observation result in the field tests found that students actively operate the media. Some students who do not understand can ask the teacher, and then the teacher comes to the group. Students' cooperative attitudes appear during learning, the results of observations on field tests found that there was cooperation during group discussion, in one group it was seen that they helped each other fill the Working Sheet that had been provided according to the material contained in the learning media (Lukman et al., 2019)

The learning material studied was Animal Breeding by using multimedia-based media, it was expected can develop students' learning outcomes. The purpose of a living creature in reproduction is to maintain the population in order to have offspring in the future. A method in animal reproduction is by giving birth, laying eggs-birth, germination, fragmentation or dividing.

(Surasmi, 2016:597) The benefit can be obtained is that the learning process in a classroom will be more unique and creative, more active, time efficient in learning, student's learning

process can be increased, and student can improve the quality of learning becomes more creative (JANNAH & JULIANTO, 2018).

Benefit using multimedia in learning process are :

- 1) Enlarging small item and unseen, so that, teacher can explain without bringing the real item.
- 2) Shrinking a big item, such as: mountain; presenting some items that have traits or nature
- 3) Presenting some items that have complex nature, such as: shifting in days and nights, animal growth, etc.
- 4) Presenting farthest items, such as: moon, star, snow, and so forth.

Improving students' attractiveness, utilizing media-based multimedia can be carried out by researchers in SDN AIR GEGAS because they have equipment such as: computers, projectors and other electronic devices. It will ease the researchers to carry out the study in SDN AIR GEGAS because they have very adequate space.

## METHOD

This study uses Research and Development (R&D) approach and the method in this study is the survey method. The R&D (Research and Development method) applies more innovative and new items in education or research. The research model developed in this study is borg and gall model which consists of 10 stages, they are: (1) initial research/pre-survey, (2) planning, (3) developing model/initial product (4) test by expert and implementation (5) initial field test (6) revising initial/limited field test (7) primary field

test (8) revising primary field test (9) feasibility test/operational field test (10) revising final feasibility test result (Cahyono & Hadikurniawati, 2019).

The subjects of this research were students in grade V SDN 14 Airgegas, SDN 02 Bencah, and SDN 04 Airgegas. The observation was carried out, namely: to find out the problems and the need of student and teacher in learning process. Dissemination and implementation of the final product sample in this study used 2 material experts, 2 media experts. 2 classroom teachers, and 95 students from 3 different schools using google form instrument validation with 1 up to 5 likert scale.

## RESULT AND DISCUSSION

**First**, requirement analysis stage, in learning media about animal breeding in class V requires media that is more creative and interesting in increasing students' learning responses.

**Second**, the planning stage. Researchers are looking for materials that will be used as learning media in the form of applications that will be used for class V students. Researchers still accommodate their basic competencies, and researchers make instruments validation for material experts, media experts, teacher's response and student's response.

**Third**, the product design development stage. The material developed in this study is animal breeding in the class V elementary school. The media developed is in the form of an Adobe flash application which has steps that must be made.

The stage taken is making a flowchart which will explain the whole process in making the media. The processes are: Start, main menu, about programs, instructions, exercise questions, learning objectives, practice questions 1, 2 and so on, results, exit.

The next stage is collecting the background, background images, pictures, and symbols that will be adjusted to the material developed. The symbols used in this media are as shown in the following image:

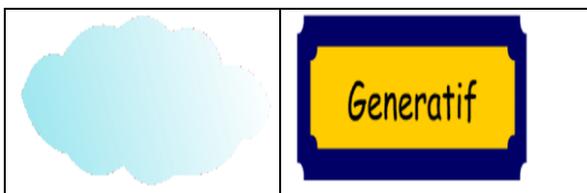


Figure 1. Symbols Used in The Home View

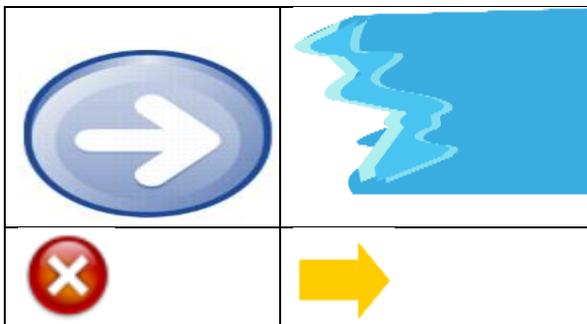


Figure 2. Mute Symbols and More

Entering the coding stage, in order the images, backgrounds, and sounds can be understood by application, codes must be given, so that, when operating the application, it reads well. By entering the code into each scene, the application can read every scene movement regularly. Creating image displays, designs that will be used as media for animal breeding material as shown in the following figure:



Figure 3. Login page section

The display on the start menu or start page is chosen according to the material and the background media because the material selected is animal reproduction, food, symbols are chosen in the form of animals. Entering stage in menu material as presented in the following figure:



Figure 4. Material menu

After some time, the students study material, the teacher prepares questions and gives it to the students, how far they understand the material on animal breeding.

**Fourth,** initial stage test. Researchers conducted an initial test by validating product of media to material experts, media experts, and seeing teacher's responses. Material experts will validate the material contained in the media, that is animal breeding, and media experts will validate the media that will be used in the learning process.

Table 1. Media Experts

| Aspect                  | Question Number             | Score Percentage |
|-------------------------|-----------------------------|------------------|
| Learning                | 1, 2, and 3                 | 96%              |
| Media Utilization       | 4, 5, 6, 7, 8, 9, 10 and 11 | 96%              |
| Letters and Language    | 12 and 13                   | 95%              |
| Learning Implementation | 14 and 15                   | 95%              |
|                         | AVERAGE                     | 95%              |

Based on the table 1, score derived and validated by media expert with average score as much as 78% with valid criteria.

Table 2. Material Experts

| Aspect               | Question Number              | Score Percentage | Criteria   |
|----------------------|------------------------------|------------------|------------|
| Content quality      | 1, 2, 3, 4, 5, 6, 7, 8 and 9 | 92%              | Very Valid |
| Language and Writing | 10, 11, 12 and 14            | 86%              | Very Valid |
| AVERAGE              |                              | 89%              | Very Valid |

Based on material expert validation, it was stated valid using input and suggestion from the experts. Data and feasibility test presented in table 2. Average total score derived is 89% score, with very valid criteria.

In addition to obtain product validation values, researchers received advice from experts, namely: material experts and media experts. Adding voice to the developed media, later on, adding a sound on / off menu to the media, next one is to present the material more clearly and concisely.

Table 3. Teacher Response

| Aspect             | Question Number     | Score Percentage | Criteria   |
|--------------------|---------------------|------------------|------------|
| Forms of the Media | 1, 2, 3, 4, 5 and 6 | 75%              | Valid      |
| Utilizing Picture  | 7, 8, and 9         | 80%              | Valid      |
| Utilizing video    | 10, 11, and 12      | 73%              | Valid      |
| Using text         | 13 and 14           | 85%              | Very Valid |
| Average            |                     | 78%              | Valid      |

The next one is responses to multimedia-based learning media by teachers. Based on the results of the teacher's assessment in table 3, it can be seen that overall average is 95% score with very good criteria. it shows that the use of multimedia-based learning media can be accepted by teachers in helping the learning process in elementary schools (Handayani & Rahayu, 2020)

**Fifth**, product revision. Media development for animal breeding material has been improved according to the advice of the material expert validator and media expert

**Sixth**, limited field test, in this stage, the media that has been assessed and revised by media experts with small group tests, is tested by researchers to see the results before using the media, revision from material experts and classroom teachers will be tested on class V students. At this stage, learning media using Adobe Flash has been improved by researchers who refer to suggestions and input from media experts, materials and classroom teachers

Media which has been improved will be tested in three different schools, which is: tested to grade V students. Data obtained in the form of qualitative data, namely: questionnaire result in

product test by student and it derived average score as presented in table 4:

Table 4. Test Small Group

| No      | Aspect                  | Question Number      | Percentage |
|---------|-------------------------|----------------------|------------|
| 1       | Material attraction     | 12, 1, and 2         | 94%        |
| 2       | Utilization             | 3, 4, 5, 6, 7, and 8 | 93%        |
| 3       | Learning Implementation | 9, 10, and 11        | 93%        |
| AVERAGE |                         |                      | 93%        |

**Seventh**, product revision. Researchers have improved and explained the material briefly and clearly, so that, it is easier for the students to understand and use it.

**Eighth**, larger group field test. Product test assessment to students was assessed using a questionnaire via google form which will be sent via online media such as WhatsApp. Then the questionnaire was analyzed using likert scale with susceptible score between 1 to 5. The results and criteria for evaluating product trials for students can be seen in the following table:

Table 5. Large Group Test

| No      | Aspect                  | Question Number      | Score Percentage |
|---------|-------------------------|----------------------|------------------|
| 1       | Material attraction     | 12, 1, and 2         | 96%              |
| 2       | Utilization             | 3, 4, 5, 6, 7, and 8 | 94%              |
| 3       | Learning Implementation | 9, 10, and 11        | 89%              |
| AVERAGE |                         |                      | 93%              |

During learning process, many students are excited in following the lesson. It means, utilizing Adobe Flash learning media can improve student's learning respond.

**Ninth**, product improvement, based on result obtained in larger group test, there is remark that media used is already fulfill feasibility requirement which can be used during learning process.

**Tenth**, implementation, media that has been improved and revised and then stated feasible to use, later on, the researchers use the media during learning process, because of it, students are very excited.

## CONCLUSION

Based on research result explained above, about multimedia-based learning media using Adobe Flash application, the media that has been developed by researchers has very good quality, especially after being revised. Teachers and students' respond on developed Adobe Flash product are very good, after it was developed. Therefore, contribution of this research is generating multimedia-based learning media on Adobe Flash for Natural Science subject on animal breeding lesson in grade V Elementary School, so that, it supports learning process and improve student's creativity.

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