

# The Development of Macromedia Flash-Based-Interactive Multimedia for Economics Students of Class X Senior High School

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## ABSTRACT

This research aimed to develop an interactive multimedia by using macromedia flash-based in economics subject matter on the topic of supply and demand for class X of senior high school. The type of this research is educational Research and Development. The research was conducted by using development model 4-D but then it was modified into 3-D model. The trial subjects of the research were students of class X at SMAN 1 Bangkinang. They were given a macromedia flash as the developed media in the economics subject. Two kinds of data were used in this research. They were primary and secondary data. The data collection instrument in this research consisted of validation and questionnaire sheets. The data analysis technique used validation analysis by material experts, media experts and technology experts, economics students and teachers in practical. The results of material expert data analysis were gotten from average score of 0.77 or categorized as moderate validity. Then based on the results of data analyzed by media experts were 0.74 or categorized as moderate validity, the results of the average score of validity of technology experts were 0.70 or categorized as moderate validity. Preliminary products for economics teachers and students showed good responses to use of macromedia flash-based learning media in learning among students. The aspects of assessing the teacher's response to learning media consisted of media, learning materials and the effects of learning strategies from the use of these media in the learning process. However, the total score was obtained 54 with a percentage score of 98%. Based on the research results, it is suggested that schools and teachers would take advantages of using interactive multimedia based on macromedia flash as student's learning media for independent learning which allow them to use anywhere and anytime.

**Keywords:** *developing multimedia learning, multimedia learning, macromedia flash-based learning.*

## 1. INTRODUCTION

Education plays an important role to help people to get knowledge in a society. It would be difficult to develop the people potential without education or leaning sphere. The purpose of education system is to develop and dig people potential. Indonesia used National education system in 2003 with the issuance of law on the national law no.20 years of 2003 in order to promote a high-quality human life for Indonesia people that can compete a challenge in certain condition.

Research conducted by Cambridge International for the Global Education Census research showed that most of Indonesian students who use technology while learning is quite high. Cambridge International has collaborated with more than 200 schools in Indonesia in conducting this research from Aceh to West Sumbawa with the aim of providing life preparation for the community, in order to create curiosity and enthusiasm in getting knowledge. The data explains us

that Indonesia is in the highest top ranking as an IT user with a percentage of 40% and the second position in the world in using computer devices 54% after the United States (Cambridge Research: Indonesian Students Highest Technology User in Education, 2018).

The Covid-19 disease has some impacts on Indonesian education system. This idea is explained by [1] regarding the continually rising number of Covid-19 in Indonesia, therefore, the Indonesian education system is automatically changed.

Science and technology are developing rapidly. However, the people should be able to take advantages to become intelligent people who are not left behind from other nations. For that reasons, Indonesian education need support by all parties.

According to [2], he argues that Human Resources (HR) can be improved with an improvement in the quality of education in Indonesia,

and this opinion is in line with the Regulation of the Minister of Education and Culture (PERMENDIKBUD) No. 59 of 2014. In order to prepare the community to develop their abilities to be productive, creative, innovative, and affective society so that they can assist the learning process to meet the objectives of the 2013 curriculum through interactive learning media.

Based on research conducted by [3] economics subject for the senior high school level which study about how to make a living and to develop natural resource management which concerns the lives of many people, to increase students' understanding that the economic system prevailing in Indonesia and can interpret the topics in economics subject.

In line with this research, research conducted by [4] explains that low learning outcomes made by students in economic subjects are influenced by several factors; one of them was learning difficulties. From 33 of 38 students (84.84%) stated that they never made a solution when they had learning difficulties in Senior High School. they never wrote down notes or had no voice recordings and other effort. The more difficult material that students have, so the teacher should provide learning media to help students to understand easily about the topic and explore the material given by the teacher more deeply.

Based on the results from observations and interviews conducted at SMA Bangkinang (Public senior high school) the following data were obtained: (1) student learning outcomes in economics, in the topic of Market in the Economy and Demand & Supply were classified as low category. The reason why they got low score is because of ineffective learning process. Therefore, the way to make it effective is to apply an interactive multimedia; (2) students still have difficulty in understanding the material; (3) the learning media used are still severely limited, such as using power point only; (4) the use of media in the learning process is still teacher-centered oriented; (5) multimedia learning is not yet available which is interactive in the topic of Market in the Economy and Demand & Supply material.

There are the slightly different materials between economics subject in a school and Market in the Economy and Supply & Demand subject. In this matter, students are not only memorizing something but also understanding curve analysis and calculations. Therefore, this material requires a constant media to assist them in understanding, analyzing, and calculating supply and demand curves. Based on the phenomenon above, it is necessary for researchers to conduct development research untitled "The Development of Macromedia Flash-Based-Interactive Multimedia for Economics Students of Class X Senior High School " in order to bring a contribution in developing a creative, effective and fun learning system.

### ***1.1 Interactive Multimedia***

According to (Ivers & Barron, 2002) in general, multimedia refers a media to present information in the form of text, graphics, animation, images, video, and sound. According to him, current technology can enable educators and students to integrate, combine and interact in a more developed manner. Multimedia can be defined as a different medium in its use in carrying or storing information in the form of text, graphics, animation, audio, video, and a combination of these components [5].

In line with that, [6] argues that learning using interactive multimedia can be a solution to the problems of students and teachers, such as things that are abstract can be explained in real terms with pictures or animations. And not only that, interactive multimedia provides views in the form of sound, animation, pictures and music.

Based on this discussion, it can be concluded that interactive multimedia helps students and teachers in learning independently or the learning process in the classroom which is attractive and simple.

### ***1.2 Interactive Multimedia based on Macromedia Flash***

Macromedia Flash is the latest version of Flash, since it was acquired by Adobe, which has rich and powerful features so that people can create various applications such as web animation, cartoons, and interactive multimedia [7].

### ***1.3 Relevant Research***

The results of the research [8] entitled "Interactive Multimedia Development Using Adobe Flash Program for Chemistry Learning of Salt Hydrolysis Material for Class XI" explains that learning media in the form of interactive multimedia on salt hydrolysis material for Senior High School and MA students in class XI can be developed. through research and development methods and learning multimedia developed generally have very good quality based on the judgment of the validator (team of experts and teachers) and also students.

## **2. METHOD**

The research is a Research and Development that aims to develop and produce a learning product to find solution related to education problems. In this research yield a product namely an interactive learning media based on Macromedia Flash which can be used for offline and anywhere in economics for supply and demand materials in class X Bangkinang kota 1 public senior high school. a 4-D model were also used in this research but after that it modified into 3D. The development stages are: Define, Design, and Develop. While the last stage of Disseminate (Spread) was not carried out due to time constraints. This development model was chosen because the researcher wanted to produce interactive multimedia products that were

tested for their feasibility to determine the extent to which these products could facilitate students to improve their learning outcomes.

The data collection instrument in this research used validation and questionnaire sheets. The data analysis technique used validation analysis by material experts, media experts and technology experts, economics students and teachers in practical. In testing media product for class X IPS Bangkinang 1 public senior high school, it was held on Tuesday, January 12, 2021. The purpose of the research is to find out the demand and supply material learning media which suit by students. Since the time is limited, the researcher chose 3 students to consult with their economics teacher.

The data analysis technique in this macromedia flash-based development research used the validity and practicality of the instrument. The validity used CVR and CVI or what is called the V Aiken coefficient which was proposed by Lawshe in 1975 by using 3 rating scales to prove each item of the instrument. Lawshe only uses three rating scales, namely (1) essential; (2) useful but not essential; and (3) unnecessary[9].

### **3. RESULTS AND DISCUSSION**

#### **3.1 Research result**

##### *3.1.1 Analysis*

The preliminary analysis was aimed to determine the main problems in the field such as condition, character and needs of students in economic learning. Based on the first field observations, researchers found that the teacher did not use learning media frequently. In some occasion, teachers often used the lecture method for teaching on supply and demand economics subjects with hand writing on the white board. This method has advantages and disadvantages, its advantage is in terms of efficiency of learning time, while the disadvantage in using this method could make student burnout. As the result, there was no interest in listening the whole topic. Some group discussions and question and answer session were alternative ways to attract student's attention, but the results were not satisfying.

##### *3.1.2 Design*

###### *3.1.2.1 Designing Product Design*

In this stage, researcher chose suitable learning media on the results of material analysis in order to make easier for students to understand the material and evaluation given. Therefore, it is expected to achieve core competencies and basic competencies. Thus,

macromedia flash-based material was selected as a proper multimedia learning.

##### *3.1.2.2 Device*

Macromedia Flash is the latest version of Flash, since it was acquired by Adobe, which has the ability and its features to be very powerful and complete so that it can be used to create various applications such as web animation, cartoons, and interactive multimedia [10]. According to [11] said that the macromedia flash program is widely used for making animation, games, presentations and multimedia learning.

##### *3.1.2.3 Validation*

###### *3.1.2.3.1 Material Expert Validation*

Macromedia flash based interactive learning media were firstly validated by material experts done by 3 material experts. The purpose of validation by material experts is to obtain information, criticism, and suggestions related to learning media that are developed into a learning product that is assessed in terms of material quality, content aspects and language aspects.

The validation data from all material aspects of the assessment obtained on moderate/average criteria. So that when validity criteria of the Aiken V index, this value is classified as "valid" category. This means that the three experts provide an assessment that tends to be consistent and in accordance with the indicators. Therefore, the material presented in the learning media has a "valid" category.

###### *3.1.2.3.2 Validation of Media Experts*

The interactive learning media product based on macromedia flash was done and validated by 3 media expert lecturers. This purpose of validation from the 3 experts is to obtain information, criticism, and suggestions so this media is assessed from the aspects of program use, media function and appearance of learning media. The comments and suggestions from media expert lecturer were also used for the process of refining the media before testing to teachers and students.

###### *3.1.2.3.3 Technologist validation*

The interactive learning media product based on macromedia flash was done and validated by 3 media expert lecturers. This purpose of validation from the 3 experts is for accessing of product design and the use of accuracy proper navigation buttons. results of the validity by technology experts categorized as moderate/average. Learning media based on macromedia flash, demand and supply material developed by researchers got "Valid" assessment.

#### 3.1.2.3.4 *Student Practicality*

In testing media products for class X IPS at Senior High School Negeri 1 Bangkinang was conducted on Tuesday, January 12, 2021. The purpose of the research is to find out the demand and supply material learning media which suit by students. Since the time is limited, the researcher chose 3 students to consult with their economics teacher

The aspect assessment consisted of the appearance presented in the learning media consisting of 7 items, 6 items for material presentation, and 7 items of benefit of using media, so the total items was 20. Practicality testing was done by providing learning media that already developed and validated by material experts, media experts, and technology experts in practicality test questionnaire. Based on the results of the analysis, it was obtained a percentage of 93% for the aspect of media display, 80% for the presentation of the material, and 90% for the benefits of using learning media with a total percentage value of 88% for practical criteria. It can be concluded that students give a positive response to media development

#### 3.1.3 *Implementation*

The implementation stage is only for class X IPS at Bangkinang public senior high school. The research was conducted by applying or sending learning media based on macromedia flash and online questionnaires at school to find out whether the learning media was practical and suitable to use independently. The questionnaire data shows a practical level of 88% with the answer "practical category". Therefore, it can be concluded that macromedia flash-based learning media is practical to use.

### 3.2 *Discussion*

The validity aspects of learning media based on macromedia flash can be seen in a content validity, construct validity and language. Learning media based on macromedia flash in terms of material to meet the validity of the content, if it meets the indicators of material quality aspects, content aspects, and language aspects. This means that learning media based on macromedia flash in terms of material has been successfully developed in accordance with the aspects of related theory of development which means this learning media can meet the content validity, whether it has successfully or not about the indicators from the aspects of application use, application functions, and application appearance. Then the macromedia flash-based learning media has been developed in accordance with the aspects related to the media. Learning media is said to meet the content validity in terms of technology if it has already developed from the aspects indicators of media cover design, media content design and media programming. This means

that learning media based on macromedia flash in the view of technology has been developed in accordance with the aspects related to technological developments.

## 4. CONCLUSION

To conclude, this research is research on the development of learning media products on macromedia flash material on economic demand and supply for social studies learning in class X Senior High School. Macromedia flash based learning media products were packaged in software programs and also can be installed and operated on a laptop or computer. A modified 4D development model were used in this research.

After validating by material experts, media experts, and technology experts, it can be concluded that the developed learning media has shown that the development of economics learning media based on macromedia flash is valid / suitable to use in class X Senior High School. It was also supported by evidence of validation from experts and product trials to economics teachers, from the student. The results of the material expert data analysis obtained an average assessment of 0.77 or moderate valid criteria, the results of data analysis from media experts were 0.74 or categorized as moderate valid criteria, and finally the results of the validation of technology experts were 0.70 or categorized as moderate valid criteria. Preliminary Product for economics teachers and students showed good responses to the use of macromedia flash-based learning media in learning for students.

The aspect of assessing the teacher's response to learning media consists of media, material and the effects of learning strategies from the use of these media in a learning process, so a total score of 54 is obtained with a percentage score of 98%. It can be concluded that the macromedia flash-based learning media on the demand and supply material developed by researchers got a positive response from the teacher. Meanwhile, the results of the student questionnaire sheet data analysis obtained a percentage of 93% on the media display aspects, 80% on the material presentation aspects, and 90% on the benefits of using learning media with a total percentage value of 88% of the practical criteria. It can be concluded that students give a positive response to media development.

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