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# Development Of Macromedia Flash 8 Based Learning Media In Mathematics Class X Nursing In Vocational School Samarinda

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**Abstract:** *Development of Macromedia Flash 8 Based Learning Media and testing the feasibility of Macromedia Flash 8 Based Learning Media in Mathematics Subjects in Class X Nursing Students in Vocational School Health Samarinda 2019/2020 . The research is a type of development research using the ADDIE development model. The data analysis technique used is quantitative analysis to analyze data collected from application testing such as questionnaires and qualitative descriptive analysis or data collection. Data collected by interview, observation, documentation and questionnaire. Referring to the results of the assessment it can be concluded that the development of learning media based on Macromedia Flash 8 is feasible as a learning medium.*

**Keyword:** *Learning media, Macromedia Flash 8*

## INTRODUCTION

The learning process as stipulated in Government Regulation Number 65 of 2013, in the education unit is held interactively, inspiring, fun, challenging, motivating students to take part actively, as well as providing enough space for the initiative, creativity, and independence by their talents, interests, and the physical and psychological development of students. One of the expected learning models of Vocational High Schools (SMK), as required in the 2013. The curriculum is an innovative and creative learning model (Tirta et al. 2014).

Educators are also required to have creativity in development learns designs and implementing them (Umamah, 2017). one of them is to use learning media. Media is a tool that can be used as a distributor of messages, to make learning objectives. The learning process has many factors educators, facilities or facilities and infrastructure, learning environment, curriculum used, and student learning outcomes.

Based on the results of a preliminary study obtained from Nursing A mathematics teacher in Samarinda Health Vocational High Schools (SMK) that the value of nursing assignments are an even semester with an average of 68.14. The average value of students does not reach the least completeness criteria (KKM). Based on the results of interviews with mathematics subject teachers, it is known that the KKM Vocational High Schools (SMK) of Health in Samarinda is 75, also, it was obtained that during teaching teachers still use conventional methods such as lecture methods, discussion, methods, and evaluation of learning using paper media.

The teacher explains the material with the presentation media using the PowerPoint application that is displayed through the LCD and projector so that students only see and hear the material explained by the teacher, at the end of the lesson The teacher gives evaluation questions through paper media that are collected manually. From the

information given by the teacher during the interview, students in the nursing department class X pay less attention during the learning process with the media used, namely PowerPoint media and teaching methods that teachers use during the learning process, namely lecture method, with the media and methods used these students don't pay close attention to the lesson. The use of instructional media is one way that teachers can use to increase student motivation because the media can represent what teachers will teach through certain words or sentences. According to Arsyad Azhar (2011: 21-23), the benefit of media is that it makes learning more interesting. Media can be associated with attracting attention, and make students stay awake and attentive. Learning media is a tool that serves to explain part of the learning program that is difficult to explain verbally. Learning material will be easier and clearer if in learning using learning media.

Moving on from the description above, it is necessary to develop learning media using Macromedia Flash 8 in mathematics in Vocational High Schools (SMK) Health Samarinda. The advantages of Macromedia Flash compared to other learning media: Users of Macromedia Flash program can easily and freely create animations with free movement in accordance with the flow of animated scenes that they desire, Macromedia Flash can produce files of small size. This is because Flash, using animation with a vector base, and also the size of this small Flash file can be used on Web pages without requiring a long loading time to open it, and Can interact with the media because it is interactive. The learning media use Macromedia Flash 8 as a means for students to more easily understand Matrix subject and linear programs and as an alternative medium for teachers to help deliver the subject. Develop Macromedia Flash 8 learning media aims to create interactive learning media in Samarinda Vocational Health.

It is expected that the development of learning media using Macromedia Flash 8 is able to arouse the desires and interests of student learning, arouse motivation and stimulation of learning activities to cut student boredom during learning activities take place. The aim to be achieved in this research is to develop learning media in mathematics based on Macromedia Flash 8 application for class X nursing students in Vocational High Schools (SMK) Health Samarinda

## **METHOD**

The research that used is research and development or commonly referred to as R & D. The development model used in this research is the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model, according to Sugiyono (2015) in the ADDIE found that the R&D cycle is organized into the following research steps: (1) Analysis, (2) Design, (3) Development, (4) Implementation, (5) Evaluation. Desain atau model pengembangan menggunakan model ADDIE dengan 5 tahapan yang diuraikan sebagai berikut:

1. Analysis Stage

The analysis phase is the data collection phase related to the problem. The development of learning media is based on needs analysis, student character analysis, and curriculum analysis.

2. Design

- a. To create a design of the study of online communication material using Macromedia Flash 8 software, then described in the form of interface design to facilitate the preparation of learning media.
- b. Determine the systematics of the material to be displayed in the learning medium.
- c. Determine the type of exercise as a form of competency test for students. The type of exercise problem used is a multiple choices problem.

- d. Create learning media assessment instruments, including media expert assessment instruments, material experts and students.
3. Development  
Development is the stage of media creation in accordance with the design before making the product, first collect the materials needed in the manufacturing process. Among them are the lesson materials to be delivered, images, audio, etc.
4. Implementation  
The product will be tested by a media expert, a specialist and a student using a questionnaire that has been provided. This test aims to assess the products that have been made and get suggestions or feedbacks that can be used as a reference in subsequent developments. After obtaining the validation results from media experts and material experts, the next step is to test by the respondent (students) in the form of a first-use trial (small-scale trial).
  - a. Expert trials  
At this stage the trials are conducted by two experts, namely media experts and material experts. Based on experts' input.
  - b. First use test (small scale)  
Data is extracted from class X at random Department of Nursing. The student is given the opportunity to try the revised product of media experts and material experts. The results of the poll were analyzed again to revise the products developed.
5. Evaluation  
This evaluation stage is often also called by a second-use trial (large-scale trial). The large-scale field trials will be conducted on 27 students taken from class X in a random department of nursing care at SMK Kesehatan Samarinda. Then the student asked to respond through a poll. Researchers analyzed the results of students' research to revise back the second revision product to reduce the level of weakness of the developed product.

This research was conducted in the odd semester of October-November 2019 at Samarinda Medical Vocational School, Because in the school acquired a description that during teaching teachers still use conventional methods such as lecture methods, discussion methods and evaluation of learning using paper media. The research subjects were grade X students of Samarinda Health Vocational School As the average value of students 68 below the Minimum tecton criteria value (KKM) and the object of research was the development of Learning Media based on Macromedia Flash 8 in Mathematics, The selection of the media program Macromedia Flash because it can be easily and freely in creating animations with free movement according to the flow of animated scenes that they desire, can interact with the media because it is interactive, Macromedia, Flashini can produce files with small size, and fast loading time. Primary data collection techniques, secondary data and Questionnaire. Data Analysis Techniques are processed and presented descriptively qualitative and quantitative.

## RESULTS AND DISCUSSION

The development of Macromedia Flash 8 based learning media uses the ADDIE development model. The ADDIE model is an abbreviation of *Analysis, Design, Development, Implementation, and Evaluation*. Which is described as follows:

### 1. *Analysis*

At this stage, a preliminary study is carried out the observation to get preliminary information. This is done to identify and explore the needs of learning media for students. The first time conducted by researchers to identify needs, namely by interviewing a class X mathematics teacher in Health Vocational School Samarinda. After that the researchers

collected information about the implementation of the 2013 curriculum, the use of syllabus and modules that used in learning activities in class X in nursing major of Health Vocational School Samarinda.

## 2. Design

The planning is to creating a learning media storyboard, systematic determination and evaluation tool design

### a. Design Learning Media

In the process of learning media need a design sketch that is used to describe media creation. The sketch is outlined in a storyboard.



**Figure 1 Learning Documentation**

### b. Systematic Determination

The material that used in this learning media is compiled based on the reference of mathematics subject modules that are in accordance with the competencies that must be achieved in Matrix and linear programs. Systematics of material in this learning media starts from the thread of Matrix material and linear programs.

### c. Making assessment instruments

The instrument of evaluation was in the form of a product feasibility questionnaire. This product feasibility questionnaire produces the data which sourced from material experts, media experts and students.

## 3. Development

Development is the stage of making media according to the design of the media at the design stage. In this research, the development stage is the stage of media production. At this stage the researchers begin to make learning media using Macromedia Flash 8. All components that have been prepared, then assembled into a single unit by using Macromedia Flash 8. Components are assembled into one media based on storyboard through a series of specific functions.

## 4. Implementation

At this stage of the field test, it is conducted on material experts and media experts as well as the first use trial (small-scale trial). The material expert in the process of developing this learning media a mathematics teacher in nursing major at Health Vocational School Samarinda. Media experts in the process of developing this learning media are Mr. Agustiyawan, S.Kom who is a computer teacher in TKJ major at Health Vocational School Samarinda, Mr. Galih Yudha Saputra, M.Kom who is a computer education lecturer at Mulawarman University and Mr. Awang Harsa K, M.Kom who is a lecturer in computer education at Mulawarman University. This initial field trial aims to make the products that are made in accordance with the initial development objectives. This field trial used a questionnaire evaluation sheet prepared by the researcher.

### a. Material Expert Validation

Validation is carried out by material experts by gathering suggestions or opinions from material experts to make revisions. The questionnaire uses a Likert scale with 5 alternative answers, namely Very Good, Good, Not Good, Poor and Very Poor. The questionnaire for material experts has 2 aspects of assessment which include aspects of material suitability and aspects of material quality. The recapitulation results of the average validation of material experts in table 1.1

**Table 1.1. Material Expert Validation Results**

No.	Aspec	Total Score	Average Score	Category
1	Conformity of Material	19	4,8	Very Decent
2	Quality of Material	26	4,3	Very Decent
<b>Total</b>		<b>45</b>	<b>4,5</b>	<b>Very Decent</b>

Based on table 1.1, it is obtained that in terms of the suitability aspect of the material, it is obtained the results of the assessment with an average value of 4.8 which is included in the very feasible category, while the quality aspect of the material obtained by the assessment results with an average value of 4.3 which is included in the very feasible category. The results of the assessment of the learning aspects and material aspects are included in the range of values  $X > 4.21$  so that the level of feasibility of the learning media is included in the Very Eligible category. Overall validation results by material experts viewed from the learning aspects and material aspects obtained a value of 4.5. Based on the results of the validation from the material experts there are no suggestions for improvement or revision.

b. Media Expert Validation

Media validation is carried out by media experts to assess and assess whether the media developed are worth to testing. Media validation is done by filling out a questionnaire that uses a Likert scale with 5 alternative answers, which are very good, good, good enough, not good, and not very good, Because it can give respondents more options and increase the differentiation of points (Azzara, 2010:100). The third reason, using a Likert scale of 7 points, the category selection in the questionnaire would be more spesphic (Mustafa, 2009:147). It will give the respondent a chance to choose their wishes Spesifik. The questionnaire for media experts has 2 aspects namely Software Engineering and Visual Communication aspects. The results of the average validation of media experts are as follows.

**Table 1.2. Media Expert Validation Results**

No.	Aspec	Total Score	Score Average	Category
1	Software engineering	97	4,6	Very Decent
2	Visual Communication	73	4,1	Very Decent
<b>Total</b>		<b>170</b>	<b>4,36</b>	<b>Very Decent</b>

Based on table 1.2, it is obtained that in terms of software engineering aspects an assessment result with an average value of 4.6 is included in the very feasible

category, while the visual communication aspect is obtained an assessment result with an average value of 4.1 which is included in the very category worthy. The results of the assessment of the aspects of software engineering and writing included in the range of values  $X > 4.21$  so that the level of feasibility of learning media included in the category Very Eligible. Overall validation results by material experts viewed from aspects of learning media display and use aspects obtained a value of 4.36. First use trial (small scale trial). A small-scale trial will be conducted on 7 students taken from nursing major grade X of Health Vocational School Samarinda. The questionnaire uses a Likert scale with 5 alternative answers, namely Very Good, Good, Fairly Good, Poorly Good and Very Poor. In the questionnaire students were also given the opportunity to comment on the lines provided. In the Questionnaire for students has 3 aspects which include aspects of appearance, aspects of convenience, and aspects of the benefits.

**Table 1.3. Results of Assessment of Students Using the First Trial )**

No.	Aspec	Total Score	Score Average	Category
1	appearance	127	4,5	Very Decent
2	Ease	158	4,51	Very Decent
3	Benefit	185	4,4	Very Decent
<b>Total</b>		<b>470</b>	<b>4,5</b>	<b>Very Decent</b>

Based on table 1.3, it is obtained that from the aspect of appearance, the results of the assessment are obtained with an average value of 4.5 which is included in the very feasible category, while the aspect of convenience is obtained from the assessment results with an average value of 4.51, which is included in the very feasible category, the aspect of benefits are obtained from the assessment results with an average value of 4.4 which is included in the very feasible category. The results of the assessment of aspects of appearance, aspects of convenience, and aspects of the benefits included in the range of values  $X > 4.21$  so that the feasibility level of learning media included in the category Very feasible. Overall student assessment results seen from the aspects of learning, aspects of the material, aspects of the appearance of learning media and aspects of use obtained value of 4.5. From the results of the first use trial (small-scale trials) there are suggestions for improvement or revision, namely "Fixing a little writing that comes out to make it more presentable".

**5. Evaluation**

This evaluation stage is often called the second usage test (large-scale trial). Large scale field trials will be conducted on 27 students taken from class X majoring in nursing at Health Vocational School Samarinda. After students use this learning media, students are asked to fill out the questionnaire provided. The questionnaire given is an assessment questionnaire of learning media. The questionnaire uses a Likert scale with 5 alternative answers namely Very Good, Good, Fairly Good, Poorly Good and Very Poor. In the questionnaire students were also given the opportunity to comment on the lines provided. In the Questionnaire for students has 3 aspects which include aspects of appearance, aspects of convenience, and aspects of the benefits.

**Table 1.4. The Results of The Assessment of Students Using the Second Trial**

No.	Aspec	Total Score	Score Average	Category
1	appearance	467	4,3	Decent
2	Ease	616	4,6	Very Decent
3	Benefit	721	4,5	Very Decent
<b>Total</b>		<b>1804</b>	<b>4,5</b>	<b>Very Decent</b>

Based on table 1.4, it is obtained that from the aspect of appearance, the results of the assessment are obtained with an average value of 4.3 which is included in the feasible category, while the convenience aspect is obtained from the assessment results with an average value of 4.6 which is included in the very feasible category, the aspect of benefits the assessment results obtained with an average value of 4.5 included in the very feasible category. The results of the assessment of the aspects of appearance, aspects of convenience, and aspects of the benefits included in the range of values  $X > 4.21$  so that the level of feasibility of learning media included in the category Very Eligible. Overall student assessment results obtained a value of 4.5. From the results of the second use trial (large-scale trial) there is no suggestion of improvement or revision Learning media based on Macromedia Flash 8 on mathematical subjects online communication using Analysis, Design, Development, Implementation, and Evaluation (ADDIE) models. Learning media based on Macromedia Flash 8 on mathematical subjects online communication materials are made in the form of html that can be both online and offline. This learning media can based on website that can be accessed online so that the teacher does not need to repeatedly install the learning media application on the school laboratory computer and students can access it anytime.

Learning media applications are accessed online because the computer laboratories that are used do not yet have access to a server computer. Therefore with learning media that can be accessed online it is not necessary to repeatedly install the application of learning media on school laboratory computers. But in school laboratories that already have server computers, learning media applications can be accessed offline. This development process starts from the research and information gathering stage to identify needs, namely by observation and interview.

The planning stage begins with designing storyboards and arrange the material that has been collected and collect of information in accordance with the material that has been compiled. Development stage researchers develop learning media in accordance with the planning stage. At this stage the researcher makes learning media using Macromedia Flash 8 in accordance with the design of the storyboard with the results of the learning media that provides a collection of material contained videos and images in accordance with the material and exercises that contain 10 multiple choice questions that can be done by students who at the end practice questions also display the value of the results of the exercise. The trial phase is the stage of the assessment process carried out by material experts and media experts to see the suitability of instructional media.

The evaluation phase was carried out after going through the field test results stage, in this field implementation test phase the learning media was tested on 27 students class X in nursing major. After students use this learning media, students fill out the questionnaire provided with the results of student assessments viewed from the aspects of appearance, aspects of convenience, and aspects of the benefits obtained by

4.5 with a very decent category. From the results of the second use trial (large-scale trial) there is no suggestion of improvement or revision. Learning media generated from this research can in the future be used by teachers as learning media in delivering online communication materials in the classroom or as independent learning media for students so that they can help the learning process at school.

## CONCLUSION

Based on the result of research and development that has been done, the writer conclude:

1. The development of learning media based on Macromedia Flash 8 has been updates from relevant research. In previous research, learning media of Macromedia Flash 8 based on desktop while in this research not only based on desktop but also based on websites that can be accessed online so teachers no need to repeatedly install and students can accessed it anytime and anywhere
2. Based on the average result of the development learning media based on Macromedia Flash found that:
  - a. The assessment of material expert obtained an average of 4.5 with a very feasible category
  - b. The assessment of media experts obtained an average of 4.36 in the very feasible category
  - c. The assessment of the first use trial (small scale) of 7 students obtained an average of 4.5 with a very feasible category.
  - d. The Step of evaluation or trial use on 27 students obtained an average grade of 4.5 in the very feasible category.

Based on the conclusions above, the following suggestions can be given:

For schools, it is expected that learning media based on Macromedia Flash 8 can also be used on other subjects, according to the needs of the teaching and learning process. And after that, it is expected can improve manage the media in order to be easier to use by adding narration, sound effects, back sounds and music that is more interesting as well as adding lots of new animations and then beautifying the display such as Layout design, typography (type and size of letters), and colors and adding the type of evaluation description learning media based on Macromedia Flash 8 based. For further research in hopes can develop on other lessons.

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