Development of Geography Learning Media on Earth Evolution History using Adobe Flash

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Abstract. This research aims at discover student's need for geography learning media especially about the history of the earth's surface and the properness of geography learning media implemented in the class activity. This study is a development of the Plomp model, consists of three phase, (1) preliminary research phase, (2) development or prototyping phase and, (3) assessment phase. The subject of this study was 10 students of X grade of senior high school. The technique that used for collecting sample is purposive sampling method. The technique that used for collecting data is interview and questionnaire. Data validity is tested by source triangulation techniques including students, teachers, material experts, and media experts. While the data analysis technique used is descriptive statistics. The results showed that the students' need for geography learning media such as experience using media with the criteria often, characteristic of student learning style is visual characteristic. Geography learning media with Adobe Flash Player suitable for geography learning in class X SMA / MA in Sragen.

1. Introduction

One of the purposes of education is to create a better human personality. The development of science and technology forces the effort of innovation and usage of technology in the process of learning. The development of science and technology including several aspects, from the model to the learning media framework [1], have been researched based on the educational design class. This study aimed to produce a learning chain that create educational theory with additional topic and decrement of integers.

This study resulted in learning of the addition theory and subtraction of integers that can be guided by teachers in other contexts. Validating the product means the product already exists and the researcher only tests the effectiveness of the product.

Developing a products can upgrade the existing products (make them more practical, effective, and efficient) or create a new products that never exist before. Development of teaching materials is very important for teachers to make learning process more effective, efficient, and not deviate from the competencies they want to achieve based on the curriculum [2].

The development of teaching materials also aims to improve motivation, understanding and student activities during the learning process so that it can be optimal. This type of research is where the development of interactive educational products provides a setting for scientific inquiry. In this kind of research, the development of educational products serves as a case study. The study is framed to inform

proximal or distal product development. From a proximal perspective, this study informs internal product-focused designs

Therefore, the consideration is required in learning materials preparation. Learning tools that developed by others often do not match the character of our students. The mismatches character, such as: social, geographic, or cultural environment. Beside the development stage of the students, early skills, interests and family backgrounds also need attention too. Therefore, self-learning tools can be adjusted to the target characteristics. Learning media can not only be used when encounter students and teachers.

During the interview, the researcher found the associated problem with the learning process in the class. Through interviews conducted by researchers, in schools where research is done there are tools to run computer-based media such as LCD and computer labs. But the use of this tool to run the media has not been maximal because the learning media used is very minimal. Teachers prefer to maximize the use of books. Teachers should be able to use different learning media, learning methods, and new and different learning approaches. Before the teacher uses the media, methods, and approaches to be used, the teacher must know the character of the students as well as the facilities and infrastructure that can be used.

Based on the problems and assumptions above, this study aims to determine the student's need on the geography media learning and to discover the propeerness of geography learning media that will be used in SMA N gondang. Researcher wants to design a geography learning media for grade X based on the Plomp Model. The learning tools will be developed in the form of adobe flash based learning media. Adobe flash based learning makes students impressed in learning because it is supported by visual, video, and audio aspects so that it becomes a major learning resource [3]. The selection of teaching materials is based on the results of teacher needs analysis, the student's need and teacher interviews. The advantages of this Plomp model is the systematically working method to solve the existing problems.

2. Methods

This research is a development research by using a Plomp model that oriented in product development or geography learning media. The research produce a learning media of geography based on Adobe Flash. The development model has three phases; Preliminary Research phase, Development or Prototyping phase, and Assessment phase [4]. In this research there is no Assessment phase. The population in this study was all students of class X SMA / MA in Sragen regency. The number of taken samples were 10 students of SMAN 01 Gondang. The Sampling technique that used was purposive sampling.

The technique that used for collecting data is interview and questionnaire. Data validity is tested by source triangulation techniques including students, teachers, material experts, and media experts. While the data analysis technique used is descriptive statistics with the form of product evaluation questionnaire data by material experts, media experts, students and teachers in small group trials and field trials of ordinal data captured by Linkert scale so that the conclusion using median or mode [5].

3. Results and Discussion

Plomp model has three phase, but only two phase of Plomp model that used in this research: Preliminary Research phase (early investigation), and Development or Prototyping phase (analyzing an interaction, design, development, formative evaluation, and revision), because through these two phase can already answer the characteristics of the student's needs and the properness of the media that will be used in geography learning in the class.

3.1. Preliminary Investigation Phase

In this phase there are some preliminary analysis to find out the students conditions and the geography learning development in the class, such as: problem identification, literature study, and problem solving plan. *Problem Identification*: In this step the researcher interviewing and observing activity in class X SMAN 01 Gondang to find out the problems in geography learning especially in historical and the development of the earth. After doing the interview, the researcher got some information such as: (1) the students of class X did not maximally absorb the material and has difficulty in visualize the material in real or daily life; (2) teachers have difficulty using learning media so that tools are rarely used; (3) The use of learning media that is still monotonous so that students are less enthusiastic in learning geography.

Study of literature: The focus on this literacy is not to evaluate an innovation, for example, hardware or software, but rather to produce and refine a previous design principles that can provide guidance for similar research studies or other development endeavors [6]. Needs Analysis, needs analysis data consists of 2 parts, the first one is questionnaire for learners/students needs, and the second is questionnaires for teacher's needs. In the questionnaire learners needs only given to a class of X grade. The needs analysis includes: Analysis of the learners experience in using computer-based media, to knowing the distribution and the number of learners who have the ability in terms of experience of operating a computer.

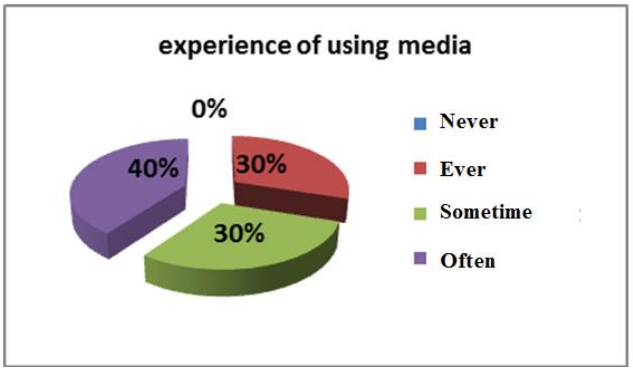


Figure 1. *Experience of Using Media*

Based on the Figure 1. it can be seen that learners who have never used IT-based media amounted to 0 people represented by 0%, students who have used IT-based media amounted to 3 represented 30%, students with "sometimes" categories amounted to 3 people represented 30 %, and the rest amounted to 4 people with a percentage of 40% is the category of learners that often using IT-based media. So, it can be concluded that most of the learners in that school already have experience with IT-based media for learning or other activities.

Learners characteristics in using learning media can be known by using a questionnaires of learning characteristics/learning styles of students made by Neil Fleming as a questionnaire created to know the profile/learning style of a person known as VARK [7]. VARK consists of 4 categories of learning style characteristics in learners that are Visual, Aural (Audio), Read (Text), Kinaesthetic. Data of students characteristic are presented at figure 2 as follows:

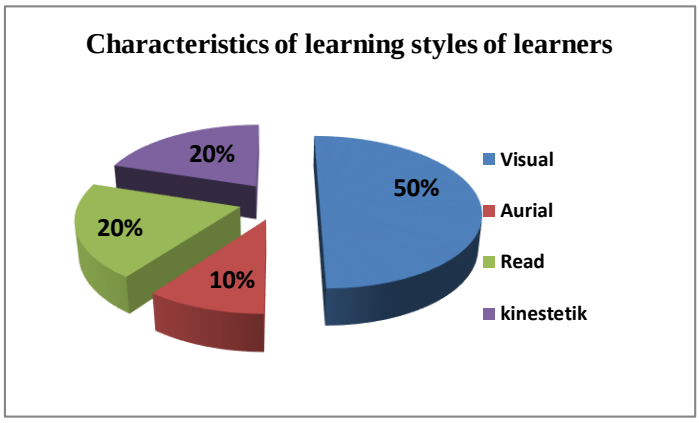


Figure 2. Characteristics of Learning Style of Learners

Based on Figure 2. it can be seen the percentage of learners learning styles. Learners/students with visual style category are just 5 people represented by 50%, students with aural learning style (audio) amounted to 1 represented 10%, learners with Read (Text) category amounted to 2 people represented 20%, and the rest amounted 2 people with 20% is category of kinaesthetic learning style. So, it can be concluded from the four categories the dominate one is the visual categories with the presentation of materials in the form of images, animation, graphics and video.

3.1.1. Analysis of Syllabus. At this stage the researcher analyzes the basic competencies and learning materials for the earth as a living space chapter that will be included in the media of geography learning. Here is an overview of the syllabus analysis:

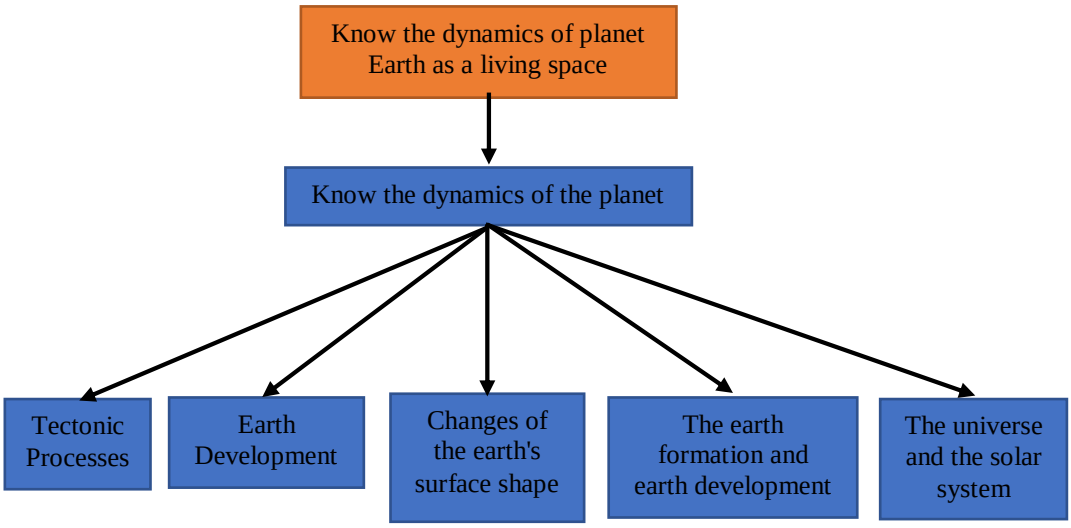
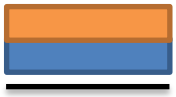


Figure 3. The Syllabus Analysis

The problem-solving design is as follows:



= Basic Competence
= Learning Media
= consist of

3.1.2. Problem Solving Plan

1) Using visual media to represent the learning material with an images, videos, and animations.
2) Developing media that can utilize a learning tools based on computer and LCD.
3) Create media that is not only used for once but several times with the addition of questions or quizzes or games.

3.2. Development or Prototyping Phase

The development study includes a activities that produce prototype and evaluating its quality [8]. Prototyping is the process of creating an early version of a product - the final Design Development model [9] and to design is the phase after a plan [10]. Design is to pull together something to satisfy a society needs. An elegant word for 'pulling together', is synthesis. The activities taken in the design phase is to design the strategies and research instruments that needed to determine the problem solving proposed in the early investigation (prototype 1 or initial draft).

3.2.1. Initial Plan. Things done in this stage is the making of a storyboard that made to explain the layout of the learning media display equipped with an explanation. Storyboard is made to ease the process of merging components of learning media. Instruments also used to evaluate products that have been made. The arranging of the instruments is based on aspects that are suited to the purpose of the questionnaire.

3.2.2. Evaluation / Validation. In this study, the validation process selects a validator that competent and understands the development of learning media, and is able to give input / suggestions to complete the products made. Suggestions from the validator will be used as materials to revise the first prototype.

3.2.3. Properness of Learning Media. The properness of learning media is measured using instruments such as questionnaire of media and material experts, teacher evaluation questionnaire, and questionnaire of learners response. Validation of learning media is done by a media expert. The results are presented at table 1 as follow.

Table 1. Result of the Questionnaire Validation of Media Expert

aspect	Score	criteria
The effectiveness of layout screen	4	good
The easiness of the operation	3	enough
The effectiveness of navigation	4	good
utilization	4	good

Source: Primary Data of 2017

Learning media developed in this study according to media expert validation has 23 items / indicators which is the effectiveness of layout screen has a good crriteria, the easiness of the operation has an enough criteria, meanwhile the effectiveness of navigation and utilization has a good criteria. A good criteria scored as 4,and an enough criteria scored 3. Validation of learning media is done by a expert. The results are presented at table 2 as follow:

Table 2. Result of the Questionnaire Validity of Expert

Aspect	Score	criteria
Material quality	4	good
Utilization of the material	4	good

Source: primary data of 2017

Learning media developed in this study from expert validation has 20 items / indicators on the questionnaire that represents 2 aspects of the quality of the material and the utilization of the material. It is found the score of each aspects is 4 with a good criteria. Therefore, the learning media is valid.

To know the practicality of a learning media, it is taken from the questionnaire response of learners and the validation of geography teacher. The following table 3 are the results of the questionnaire given to the learner.

Table 3. Result of Questionnaire Respond of the Learners

Aspect	Score	Criteria
Easiness of the product to be operated	4	good
Easiness of the content product to be studies	4	good
Attractiveness of the layout	3	enough

Source: primary data of 2017

Students respond questionnaire is given during small group trial consists of 10 students of SMA Gondang in Sragen. Through this table 4, it can be known that the score obtained is 4 which is a good criteria.

Table 4. Result of Teachers' Questionnaire

Aspect	Score
The advisability of content	3
Presentation	4
Graph	4
Compatibility of media to the material	5

Source: primary data of 2017

Questionnaire validation was given to a geography teacher of SMAN Gondang, Sragen. Through the table, it can be known that the score obtained is 4 which is a good criteria.

3.2.4. Revisions. Based on the validation results, there are some things that must be fixed. The following are the results of product revision based on suggestions from teacher, material experts and media experts. The revision are include: KI, KD, and objectives achieved have to be clearly stated, Need to add Apperception and Evaluation, Video duration is too long, Changes of buttons that have functions replaced with icons, and There is no game represent the quiz.

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4. Conclusion

Based on research result of geography learning media development, it can be concluded several things as follows: (1) Learners needs on the geography learning media include a) the support of the learners who have experience using the media (7 students with the criteria sometimes and often). The characteristic of students' learning style dominant in the visual category (five students); (2) Geography learning media with Adobe Flash is feasible to be used in learning geography in class X SMA / MA in Sragen. Based on the assessment of the material expert on all aspects of the eligibility criteria of the geography learning media got the score of 4 that included in good category, the assessment of media expert on all aspects of the eligibility criteria of the geography learning media got the score of 4 (good).

Assessment of learners on small group trials got a score of 4 (good). Score 4 on geography learning media proves that it is feasible for use in learning in school.

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