The Development of “Be a Scientist” Media Images in Learning Social Sciences Subject for Junior High School

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Review Article

THE DEVELOPMENT OF "BE A SCIENTIST" MEDIA IMAGES IN LEARNING SOCIAL SCIENCES SUBJECT FOR JUNIOR HIGH SCHOOL

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Abstract
This paper describes a research and development of media image called Be A Scientist for learning social sciences in junior high school. It employs a research and development procedures started by preliminary research, planning, initial product, design validation, design revision, product testing and design revision. The results show that appropriateness of developing these media images, on the material potential and distribution of natural resources in Indonesia, was declared decent to be used, as a medium of learning in the classroom and as a source of independent education for junior high students. The final product has been acclaimed as very good based on assessment from experts, teachers and students.

Keywords: junior high school, learning media, learning process, media images, multimedia teaching, research and development, social sciences

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INTRODUCTION

The social sciences learning, generally plays an important role in the process of improving the quality of a nation, which is a part of the school curriculum, consisting of the science needed to assess social problems. For Indonesia context, that the aim of social sciences therefore is to lead the students to become good citizens, equipped with the knowledge, skills and care, useful to their personality, society and the country (Sumaatmadja, 2008).

Based on the description, it can be stated that the essence of learning social sciences involves remembering and understanding concepts, including through observation and documentation (Gafur, 2013; Hurri, 2014). Observation is the collection of data, obtained from surveillance, in the form of activities, behavioral actions and overall possibilities, which are part of human experience, while documentation is the assemblage of information, relating to research problems. Furthermore, documentation involves studying books to obtain the theory, regarding the problem posed hence, the appropriate data can be obtained to solve them. Observation and documentation are study activities carried out by scientists, who should always be objective and honest, by putting feelings/emotions aside (Eberbach & Crowley, 2009; Timasheff, 1948). Previous works have identified the importance of observation in learning in schools (Assaraf & Orion, 2010; Vedder-Weiss, 2018) and homes (Yoon et al., 2017; Zimmerman, 2012).

Several steps always carried out by an analyst in quest for knowledge, is respectively initiated by observing, questioning, associating, experimenting and networking. Therefore, during the learning process social studies, the students conduct the stages, such as a scientist, with the hope that it becomes more meaningful however, some do discover the concept based on their own findings (Delucchi, 2014; Stodolsky et al., 1991). Furthermore, these steps are called the scientific approach in the 2013 curriculum.

The realization of the objectives of social science learning, which are in accordance with the 2013 curriculum, indicates the necessity to develop a scientific-based learning strategy as well as a the work step (Fakhmi & Atmaja, 2019; Pujatama, 2014; Setiana, 2014; Wijayati et al., 2016). Furthermore, this is accomplished through a media image "be a scientist", using the Adobe Flash CS3 program, which is a learning media that trains students, to improve their ability to think and adopt a concept.

There are however, three variations of media use in learning activities (Alothman et al., 2017; Turner et al., 2018; Zawacki-Richter et al., 2015), which include visual (including media images), audio and audio-visual. The presentation of figurative media with Adobe Flash CS3 program can further be complemented, by the influence of motion and sound, hence producing audio-visual learning media. The characteristic of this program does not only present materials that can be seen and read, however, they also prompt videos that can be seen and heard.

In social studies learning, the image media "be a scientist" with the Adobe Flash CS3 program directs students to identify a concept, based on steps, in accordance with what a scientist does (scientific steps). Furthermore, this aims for students to learn social studies through the process of completing concepts, prepared in conformity with the government regulations No. 65 of 2013, concerning Process Standards.

The difference between the media image "be a Scientist" using Adobe Flash CS3 program with other figures, lies in the steps of implementation, which are arranged in accordance with the concepts of scientific approach, developed in the 2013 curriculum, including, observing, questioning, associating, experimenting and networking. Therefore, the media image "be a scientist" with Adobe Flash CS3 program is a method, step, learning tool and a media for students to find a social science concept, based on logic.

The use of the media image as a learning medium is rarely carried out by teachers (Dwi P & Subagio, 2013; Swetnam, 1992), however, this possesses the advantage to help the process of thinking in a concrete manner and reducing uselesss response

(Tan & Koh, 2018). In addition, this media can also increase the frequency of learning because its utility is easy and fun hence, students can obtain knowledge more independently (Shaw & Nederhouser, 2005).

RESEARCH METHODS

Model Development

This study involves Research and Development (R & D) model, which attempts to establish an effective product, in the form of learning materials, media and training strategies for utility in schools. Furthermore, this is conducted not to test a theory, however, it is oriented to evolve and validate the educational products.

This research was designed from May 2013 to October 2014, wherein several steps were conducted, including, preliminary research, initial product planning, small group trial products and their revisions, field experiment, revisions on the main product test samples (finished products). The steps carried out in this study, are adaptations of the development model of Borg and Gall (2003) and Sugiyono (2013). Furthermore, a learning media was developed in the form of media images "Be a Scientist", with the Adobe Flash CS3 program for social studies learning in 8th grade Junior High School.

Development Procedure

There are 7 steps carried out in developing this media, as follows:

Preliminary Research

This objective of the preliminary research was to conduct a survey to the subject area, carried out in order to obtain the information concerning the image media used by the teacher, at a function of the teacher's opinion of the figure, used. The existence of this stage is expected to help the researchers obtain the relevant data related to the development of media images "Be a Scientist" with Adobe Flash CS3 program, for the social studies learning process, which was thus carried out, by analyzing the student character, literature study and field observations to uncover the related existing problems.

Planning

After analyzing the characteristics of students, literature review and field observations were conducted and the information collected was used as a reference in developing the "Be a Scientist" image media. Furthermore, the main material and competencies to be achieved were set with this program, e.g. "the potential and distribution of Indonesia's natural resources" was compiled and the content structure was as follows:

a. Describing the definition of natural resources.
b. Identifying these essential assets.
c. Establishing Indonesia's natural potential and reserves.
d. Communicating further, with these potential characteristic resources.

The material used in the preparation of "Be a Scientist" image media was the Adobe Flash CS3 program, for its great content within a short time. The purpose of this material learning in developing this figure was tailored to the core and basic competencies, which exist in the 2013 curriculum.

Initial Product

This stage consists of processes to produce the image media, which is then adapted to the scientist workings that it is realized with the Adobe Flash CS3 program.

Design Validation

This is the product evaluation stage, developed by verifying the product, conducted by material and media experts, who later declare that the programs decent be developed or not.

Design Revision

This stage emphasizes on identifying weaknesses, which was subsequently used as a basis to improve product design media in the form of pictures and videos.

Product Testing

If the media image "Be a Scientist" with the Adobe Flash CS3 program has been declared decent for testing, the researcher then analyses the product, utilizing trial phases, starting from one-on-one, small group and field trials.

Design Revision

The revision of media image design was carried out in order to obtain the end product, ready for use in the educational institutions.

RESULTS

The implementation of media images "Be a Scientist" development, using Adobe Flash CS3 program, for social studies learning in the seventh grade of junior high school, is initiated with the conduction of a pre-survey, held on 10 September 2014 through observations and interviews with the social studies subject teachers. Furthermore, this was also organized to obtain information on various issues related to the learning process at school. The results therefore became the basis for researchers to carry out the analysis needed in the learning activities. The goal of making "Be a Scientist" picture media was set, a review of the content standards, to establish the Core Competencies, Basic Competencies and Indicators were conducted, also, the references in the form of photos or drawings, writing materials and design of instructional media were also collected.

To attain good product quality, the educational media product developed, were first validated by material and media experts and the social studies subject teachers were further evaluated. The evaluation of social studies teachers was held on September 25 and 26, 2014 and the assessment of the image media "be a scientist" with the Adobe Flash CS3 program was in accordance with the competencies that must be achieved by students, which was worthy of being tested. Furthermore, a one- to-one evaluation was conducted on September 29, 2014, on 5 students of class VII A, with the use of distributed questionnaires, followed by a Small Group Evaluation, held on September 30, 2014, with 15 students of class VII B.

After conducting the steps as described above, the next phase involved analysis which was carried out to identify the responses to the learning media developed, as well as the revisions, according to the suggestions for improving the products developed. The field trial was held twice, with the first meeting conducted on October 2, 2014 and the second on October 9, 2014, in class VII E, with as many as 33 students. At the first session, the delivery of materials on understanding natural resources and its classification was discussed, while the second meeting conveyed the material on Indonesia's essential reserves, distributions and potentials, thereafter, the questionnaires were distributed and filled out by the students. Furthermore, the results of questionnaire validation of material and media experts, social studies teachers and field trials, were analyzed to determine the appropriateness of developing the media image "Be a Scientist", with Adobe Flash CS3 program for social studies learning in 7th grade of junior high school.

The Results of Product Trial

Validation Results by Material Experts

Average score obtained from the material expert's assessment is 3.67, which was then converted into a scale of 100, thus obtaining a value of 73.4. Furthermore, it was converted into the qualitative data in accordance with the evaluation criteria in table 2 hence it can be observed that according to the material experts, the picture media study in the 7th grade as a whole, was included in the good category.

Validation Results by Media Experts

Based on the media expert verification, the average score obtained was 3.9, which was further converted into a scale of 100 and a value of 78 was obtained. Subsequently, it was reformed into qualitative data, according to the review criteria in table 2. Therefore, it can be observed that the study with students of grade X was also in good categories.

Evaluation Results by Social Sciences Teachers

Based on teacher evaluation data, the average score obtained from their assessment of the material and media aspects were 4.03 and 4.6 respectively. This was further converted into a scale of 100 and a score of 80.6 and 92 was obtained on the material and media aspects respectively. Subsequently, these were converted into qualitative data, according to the assessment criteria in table 2. Therefore, it was observed that according to social science teachers, the image media "Be a Scientist" with Adobe Flash CS3 program, for social studies learning, in class VII junior high school, based on the overall material aspects, was included in good category while, that of the media was incorporated in the category of very good.

Test Results of Students

Based on data obtained from the one-to-one evaluation test, observed in table 7 and 8, the average score assessed by learners on the material and media aspects, were 4.08 and at 4.66, which was further converted into a scale of 100, where, 81.6 and 93.2 were recorded for material and media aspects respectively. The items were therefore converted into qualitative data, according to the evaluation criteria seen in table 2. Furthermore, it can be observed from the perspective of the students in class VII junior high school, that the picture media "Be a Scientist" with the Adobe Flash CS3 program for social studies, in the material and media aspects were overall, in good and very good categories respectively.

Based on the data obtained from the small group evaluation, as seen in tables 9 and 10, the average score assessed by the students, on the material and media aspects were 4.52 and 48.1 respectively. Furthermore, the average score was converted to a scale of 100, where 90.4 and 96.2 were observed in the material and media specifications respectively. Subsequently, it was converted into qualitative data, in accordance with the criteria of review. Therefore, it was observed that based on the students assessment, the media image "Be a Scientist" with Adobe Flash CS3 program for social studies learning in class VII junior high school, both on material aspects and media aspects were included in the very good category.

Based on field trial observed, the average score assessed by students were 4.15 and 4.39 in the material and media aspects respectively, which were then converted into a scale of 100, where scores 83 and 87.8 were the scores for the material and media aspects respectively. Furthermore, the samples were converted into qualitative data, in accordance with the review criteria of students, as seen in that the media image overall for material and media aspects were included in the good category and excellent categories respectively.

Product Revision

The validation was carried out by 1 material and 1 media expert, utilizing social studies teachers at Rasau Jaya 1 Public Middle School, Kubu Raya district and on March 22, 2014. Furthermore, these included a civil servant, who teaches students of class VII B-VII G and an honorary staff member who instructs students of class VII A.

The assessment of the "Be a Scientist" media image with the Adobe Flash CS3 program was in accordance with competencies, worthy of being tested. Some suggestions obtained from social science teachers were first, the music in the material must be changed, based on consideration that it must be capable of uplifting their spirit. Second, the white font should be changed to black. However, based on the results of the product trial test, there was no suggestion for revision.

Final Product Study

The product developed in this study was conducted according to the revised suggestion, therefore, the final advanced media image are as follows:

1. The core figure in the form of Adobe Flash CS3 was packaged on CD.
2. Image media used the "Be a Scientist" approach.
3. Broadly speaking, learning media consists of:

a. Preliminary
b. Core Competence
c. Basic Competencies and Indicators
d. Material
e. Evaluation
f. Profile
g. Presentation of images and materials, prepared in accordance with the concept of scientific approach, developed in the curriculum of 2013, which includes observing, questioning, associating, experimenting, and networking.

4. Image media however rests on the material potential and distribution of Indonesia's natural resources.
5. The basic competencies were adjusted to the 2013 curriculum
6. The basic competency and indicators include:

a. Understanding the spatial aspect and connectivity between the space and time, in the region, as well as the changes and its sustainability in human life (economic, social, cultural, educational and political). i) describe the understanding of natural resources; ii) identifying essential reserves; and iii) distinguishing Indonesia's natural tendencies and resources.
h. Presenting the results of the study of spatial aspects. Communicating Indonesia's potential and natural resources.

7. The media image "be a scientist", with the Adobe Flash CS3 program for social studies learning class VII junior high school was developed according to the material component, presentation, language and graphics required.

CONCLUSION

Based on the results of this development research and discussions, the following conclusions were made. Producing an image media "be a scientist", with the Adobe Flash CS3 program for social studies learning in 7th grade of junior high school, was conducted in accordance with the methods, adapted from systematic development. Furthermore, this includes the preliminary research, planning, initial process, design validation and revision, product testing and finished products.

The appropriateness of developing these media images, on the material potential and distribution of natural resources in Indonesia, was declared decent to be used, as a medium of learning in the classroom and as a source of independent education for students. The assessment by material experts was declared decent. The evaluation by media experts, declared it is good. Teacher's assessment declared this practice as noble, in the material aspect, which was in the good category, while in the media aspect 92 was recorded (very good category). The assessment of students was stated to be decent in the material and media aspects with good category and very good category respectively.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the research.

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