Development of Contextual Teaching Learning-Based Audio Visual Adobe Flash Media to Improve Critical Thinking Ability of Geography Learning at Senior High School

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Abstract. This study aims to identify: 1) the need of audio-visual media of geography learning in XI grade of senior high school, 2) the development procedures of CTL-based audio-visual adobe flash media, 3) the feasibility of CTL-based audio-visual adobe flash media, 4) the improvement of critical thinking ability of students after the use of CTL-based adobe flash audio-visual media. The study is a Research and Development. Development models using ADDIE models. The study concludes that: 1) the learning of geography requires CTL-based adobe flash audio-visual media which is delivered creatively and interestingly, 2) Adobe flash audio-visual media is developed by using adobe flash application 3) according to the validation result of the experts’ team and students’ responds, CTL-based audio-visual adobe flash media is feasible to be applied in the XI grade of highschool, and 4) CTL-based adobe flash audio-visual media could improve the critical thinking ability, attested by \(-t_{obtained} < -t_{table}\).

1. Introduction

Geography is known as the subject presenting spatial phenomenon which is abstract, so that it is necessary to find particular method in order to facilitate students’ comprehension [1]. Learning process is very essential factor to achieve success of the learning itself.

Recently, geography learning is focus more on the product, the success of learning process is measured by the students’ mastery on learning materials delivered by the teacher. However, the learning process is still dominated by the teacher, called as teacher-centered learning.

The latest curriculum in Indonesia being applied is Curriculum 2013. Curriculum 2013 promotes students-centred learning and challenges the students to think critically or to have high order thinking skill.

States that critical thinking can create students as the critical thinkers, in which they are able to ask essential questions about some phenomena, formulate the ideas clearly, collect and decide the relevant information, accommodate abstract ideas, be open-minded and communicate effectively with the surrounding [2].

Learning media is one of the contributing factors to the success of learning process in the school because it can facilitate the teachers to deliver information towards the students and vice versa. The use of creative and varied media is believed can increase the learning efficiency so that the learning goals can be achieved.
Learning media is defined as something which is used to deliver messages and stimulate students’ cognitive and affective aspects in order to foster students’ learning motivation [3]. Learning media is varied in forms, such as printed media, graphic, animation, audio and audio-visual [4].

Audio-visual media is considered as effective tool to improve students’ critical thinking ability and also motivate students to learn. Audio-visual media consists of two main aspects, audio aspect and visual aspect. Visual aspect supports the message transmission through visual sense. The students also can receive message in form of audio through auditory sense. According to Dike, audio-visual media refers to any tools which do not merely rely on reading activity in its process of message delivery [5].

Technology advancement in this global era provides great quantity of programs which can be used to develop learning media, one of them is adobe flash [6]. comments that adobe flash is a program, software that is usually used for navigation. It also has the further function to create animation such as cartoon and animated pictures which can be use in education setting. Adobe flash in education setting is seen as the software having various interactive elements.

The implementation of learning media is closely related to the learning approach. By the guidance and procedures of certain approach, the application of learning media will be more effective and optimal. Based on the current Curriculum in Indonesia, Curriculum 2013, Contextual Teaching Learning (CTL) or contextual approach is recommended to be applied. [7]. suggests that contextual learning is the concept of learning which relates learning material with the students’ real life. It helps the teachers in stimulating students to be the autonomous learners in their daily life.

Based on the description above, it can be summed up that media development is urgently needed. Especially, developing learning media for geography at senior high school is worth to do. The development of media is synchronized with the current curriculum in order to fulfil the challenge of the curriculum that is creating students’ high critical thinking ability. In this study, the adobe flash audio visual media is developed using the concept of contextual teaching learning (CTL). CTL is chosen because it can be implemented with and without teachers inside and outside the classroom. The major consideration is that the media being developed can give positive impact towards the students’ attitude in the learning process. The students will be stimulated to be autonomous learners. In addition, the classroom situation will not be monotonous so that it will positively foster the learning outcomes. The topic delivered in this media is about natural resources. Therefore, the development of adobe flash audio-visual media based CTL is expected to urge students’ environmental attitude and motivate them to be more active in the learning processes.

2. Research methodology
This study was undertaken at SMA Negeri 1 Sragen, Perintis Kemerdekaan Street, No. 16 Sragen Wetan, Sragen, Central Java. The research was conducted from March to April, 2017.
The study was undertaken under Research and Development method (R & D). This research is included to the educational development research aiming to create learning product which can be utilized properly. Research and development method is applied to produce particular product and then test the effectiveness of the product [8].

This research and development is based on the ADDIE model. ADDIE model consist of 5 stages, including: A: Analysis, D: Design, D: Development C: Implementation, E: evaluation [9]. The product of adobe flash audio-visual media in this research was validated by two experts in media, two experts in material and then it was experimented to the sample, that were 7 students of XI IPS at SMA Negeri 1 Sragen. The data of the research were obtained through some techniques, including applying questionnaire, documentation, and test. The instruments of the research were questionnaire of need analysis, material and media validation, response to learning media, and instrument for test.

3. Research findings

3.1. Need analysis of audio-visual media

Based on the result of questionnaire given to the teacher, it is known that there are problems of using model, approach and learning media that have not varied. Class XI SMA N 1 Sragen has a high learning motivation. The students are active enough which is shown from the score. It is above the average score 80 of the total value of KKM should be 75%. The learning process in schools has also been applied to active, creative and innovative learning. To overcome students' learning needs so far teachers have book literacy that is in accordance with the curriculum and materials that apply the curriculum 2013. The media used by teachers as guidance in teaching are the video and power point because both media can be an attraction in the process of delivering material. However, those media are still sourced from the text books and material books.
The result of questionnaire given to 32 students, shows that it is necessary to use media in Geography learning. Moreover, students also add that learning will be more innovative and effective by using media.

According to the result of questionnaire given to 65% students’ population, it is known that the students feel comfortable when they are using media for learning. Moreover, 53% of the students reveal that they are delighted to use text books, video, or subject related textbooks to learn geography. 70% of the students’ state that they have positive attitude towards the learning materials presented by using pictures and videos.

There are 55% students who use the other learning media outside the school (media that is not facilitated by the school stakeholders). 55% of the students’ state that they always use electronic media for learning activity. Then, 60 % students also use other media (audio, visual, or audio-visual). Another 55% of the students also unveil that they are happy when the learning is associated to the real life situation.

Based on the need analysis on the percentage of media need, it can be described that majority of the students need the audio-visual media to learn geography. Media needed by the students can be in form of images, interesting media and the material which is related to their real life situation, so the students can be responsive learners.

3.2. Development procedures

The process of media development for learning in form of adobe flash audio-visual media based Contextual Teaching Learning (CTL) is begun by the first stage, namely analysis stage. Analysis refers to initial identification to the classroom setting, including identifying the characteristic of students, process of learning, curriculum applied by the school, (the existing product or media) in the process of learning, reviewing the related literature and identifying the problems faced by both students and teachers in the process of learning, so that there is necessity develop the new product or media for facilitating the shortcomings.

Based on the questionnaire given to both students and teacher of SMA Negeri 1 Sragen, the learning process has not been fully optimal in utilizing innovative media. The existing media used by the teacher is power point because it can contain the core materials. On the other hand, the classroom situation is conducive. The students show their high curiosity to the teachers’ explanation. The students are willing to participate in active learning, covering analysing and hypothesizing the problem but it is not supported by the approach and media of learning. As a result, the students’ level of thinking has not been optimal yet.

The second stage is designing the media. At this stage, the initial design of the media is developed, namely the prototype of the media. Based on the need analysis of students and teacher, the stage of designing the prototype is done by design the audio-visual media using adobe flash software which is packaged under the contextual teaching learning approach. The topic being developed in this media is the wisdom in utilizing natural resources. Based on the analysis result, it is known that the students are fond of attractive images and videos. In this stage, various sources are used as the references to design the media containing the appropriate content. Those references are some textbooks, senior high school content-based books, journals, and other sources from the internet.

The final result of this product development is media of learning in form of audio-visual media based Contextual teaching and learning. The product is packed on compact disk (CD). The contents of the media are complied with the 2013 curriculum of core competencies, basic competencies, indicators and objectives. The content of the material is made more contextual. Some images of main display of adobe flash audio visual media based Contextual Teaching learning can be seen as below:
The image above is the main menu in the media being developed for geography learning. The menu consists of: Instruction, Core competence and Basic competence, Material, Video, Profile, Exercises, Quiz, and Exit Sign.

The picture above is a sub-division of materials material wisdom in the utilization of natural resources class XI IPS.

The third step is development. At this stage, the product is validated by some experts and then is experimented in the field. The validation team consists of media expert and material expert. The media expert is lecturers of Geography program and the material expert is Geography teachers. The experimental process is conducted in a small group of students consisting seven students.
The fourth step is implementation. At this stage, a large-scale trial with product was conducted after the product has been revised by the validator and from small group trials. Total of 33 students in grade XI SMA are involved.

The fifth stage is evaluation. At this stage, statistical calculations are used to determine the improvement of students’ critical thinking skills after using CTL-based audio visual adobe flash media.

3.3. The feasibility of audio-visual adobe flash media
The validation uses a questionnaire of BSNP standards covering several aspects, namely content feasibility, feasibility of presentation, graphic feasibility, and conformity with teaching materials. The result of assessment of adobe flash audio visual media product as follows:

| No. | Validator       | Score (%) | Criteria     |
|-----|----------------|-----------|--------------|
| 1.  | Material Expert 1 | 93.3      | Very Feasible|
| 2.  | Material Expert 2 | 91        | Very Feasible|
| 2.  | Media Expert 1   | 64.8      | Feasible     |
| 4.  | Media Expert 2   | 78.6      | Feasible     |
| Mean Score | 81.9 | Very Feasible |  |

Source: Primary Data of the Research, 2017.

Based on the data above, the mean score of validation measured by the experts is 81.9. It means that the Contextual teaching learning based audio-visual Adobe Flash media is feasible to be applied in the Geography learning, especially for the topic wisdom in utilizing the natural resources.

The further step is revision. CTL-based audio-visual adobe flash media is revised as direction and input from the validator, such as (1) changing the position of the instruction menu and (2) adding more actual material sampling and more interesting pictures.

After the revision is completed, it is followed by a small group trial conducted on 7 students of class XI SMA N Sragen to know the feasibility of CTL-based audio visual adobe flash media. After the adobe flash audio visual media is piloted, students are asked to fill out a response questionnaire to the CTL-based audio visual adobe flash media.

| No | Question | Score (%) | Criteria     |
|----|----------|-----------|--------------|
| 1  | 1        | 87        | Very Feasible|
| 2  | 2        | 97        | Very Feasible|
| 3  | 3        | 88.6      | Very Feasible|
| 4  | 4        | 85.7      | Very Feasible|
| 5  | 5        | 88.6      | Very Feasible|
| 6  | 6        | 74.2      | Feasible     |
| 7  | 7        | 82.8      | Very Feasible|
| 8  | 8        | 85.7      | Very Feasible|
| 9  | 9        | 94.2      | Very Feasible|
| 10 | 10       | 88.7      | Very Feasible|
| Mean Score | 87.14 % |  |  |

Source: Primary Data of the Research, 2017.

Based on the students’ response towards the questionnaire, there are 10 indicators with the mean score 87.14 %. It means that students give positive response about the media. Furthermore, it can be said that Contextual teaching learning based audio-visual Adobe Flash media is well-accepted by the students as the media of geography learning.
3.4. The improvement of student’ critical thinking skill
To identify the improvement of students’ critical thinking skill after the implementation of CLT-based audio-visual Adobe Flash media, the large group trial is conducted. Critical thinking skill is measured by using instrument in form of test items. Firstly, 30 test items which have been validated. Then, those are used to test the students. To know the improvement of students’ critical thinking, the pre-test score is compared to the post-test score of the experimental group. The experimental group is chosen using purposive random sampling technique. The chosen sample of this research is the students of XI IPS 1 as the sample of the advanced trial stage.

The main consideration in choosing the sample is that the conformity between the material and the curriculum, the students are taught by the same teacher, and the class have the same time allotment for learning geography.

Pre-test is conducted at the first meeting of the learning before the materials are delivered using audio-visual Adobe Flash media. Test items on the pre-test are in form of objective test. There are test items in form of multiple-choice test with five possible answers. The result of the pre-test then is being analysed in order to get the mean score. Based on the analysis, the result of pre-test on advanced trial group is 72.

The next is conducting geography lesson using CTL-based audio visual adobe flash media for the subject matter wisdom in utilizing natural resources. The learning activity is conducted in accordance with the schedule of geography class XI IPS 1 SMA Negeri 1 Sragen. At the last meeting, the researcher then conducted post-test when the geography learning is completed. The test used in the post-test is the same as that used in the pre-test. However, the questions are arranged randomly in order to outwit the students. The result of post-test is obtained with the students’ mean score 79.

![Figure 4. Mean Scores.](image)

Based on the results of pre-test and post-test in the advanced trial group showed that there is an increase in student learning outcomes. It is proved by the mean score of post-test is higher than the pre-test mean score. To prove the significance of differences in learning outcomes between learning outcomes before and after the use CTL-based audio visual adobe flash media, the statistical test with t-test was used. The result of t-test is obtained $t_{obtained} = 14.5$ and significance $0.000$ with degrees of freedom (df) $n-1 = 32-1 = 31$ at significance $0.05$: $2 = 0.025$ (2 side test), where $t_{table} = 2.039$. Because the value $t_{obtained} < t_{table}$, then it can be concluded that there is significant difference in mean score of student learning outcomes between before and after the use CTL-based audio visual adobe flash media.

4. Discussion
The development of Contextual teaching learning-based audio-visual Adobe Flash media on the material the wisdom in utilizing the natural resources is aimed to help and facilitate the students in comprehending the material. At the first stage, the need analysis was conducted to know the need of
students and teacher related to the geography learning. The result of need analysis shows that geography learning needs audio-visual media.

In this second stage, the media is developed using ADDIE model (analysis, design, development, implementation, evaluation). Development of media using adobe flash software is done by incorporating material about wisdom in utilization of natural resource, images and video. CTL-based audio-visual adobe flash media is equipped with instructions, core competencies, basic competencies, indicators and goals, profiles, exercises, quizzes, materials and videos. The final result of this product design activities is in form of learning media. The CTL-based audio-visual media is packed in the compact disk (CD).

The feasibility phase at this stage, the media is validated by two experts, including material experts and media experts. From the results, there are several points that must be improved and added. The mean score of the validation is 81.9 which categorized as feasible.

Based on the result of pretest and post-test, it can be identified the improvement of students’ critical thinking ability after using adobe flash visual audio based on CTL. The mean score of pre-test obtained by the students is 72, while the mean score of the post-test is 79. By using T-test, it is obtained the average difference of students' critical thinking ability.

5. Conclusion
Based on the result of research and development of CTL-based audio visual adobe flash media on the subject wisdom in utilization natural resources for class XI SMA, the following conclusions are obtained: (1) from the need analysis, the students want the more varied learning sources to make the lesson more interesting and not monotonous, (2) the development of CLT based adobe flash media is done with ADDIE model and it uses adobe flash software, (3) the feasibility was assessed by the expert team. The mean score was obtained at 81.9 % and it includes in the feasible criteria. Furthermore, the limited trial stage was 89.1% and included very feasible criteria, and (4) There is an improvement in critical thinking ability, proved by -t<sub>obtained</sub> <-t<sub>table</sub> or -14.5 <2.039. Then there is a difference in mean score of critical thinking ability between before and after the use of CTL based audio visual adobe flash media.

Suggestions that can be given for further research is the audio visual media adobe flash can be developed again with the addition of various animation, and cartoon animation. It would be better if the advanced media contains deeper material delivery and clearer and easier instruction so that it is easy to follow.

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