



The Development Of Contextual Teaching and Learning Based-Video on Reproductive System Concept for SMA

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Abstract

Learning video is proven to increase students learning experiences. The contextual approach relates learning materials with the situation around the students and encourages them to apply their knowledge. The reproductive system concept is closely related to the real life. This research would develop a valid, feasible and effective learning video based on Contextual Teaching and Learning. The research was conducted in SMA Negeri 2 Rembang. Subjects in this research were 83 students. The results showed validation scores by media experts and content experts are 83.33% and 91.67% with very valid criteria. The Results of teacher and student responses showed average scores of 93.75% and 86% respectively with very good criteria. The result of analysis on students cognitive learning of class XI SCIENCES 1 and XI SCIENCES 3 gives average N-gain of 0.63 with moderate criteria. Assessment of students' attitude of class XI SCIENCES 1 and XI SCIENCES 3 obtained an average score of 95,07% in very high criteria. It can be concluded that the learning video based on Contextual Teaching and Learning on the reproduction system concept developed has been valid, feasible and effectively applied to the learning of grade XI SMA Negeri 2 Rembang.

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INTRODUCTION

According to Law number 20 the year 2003 about National Education System, education is a conscious and planned effort to create situation and learning process so that learners are actively developing their potential. The development of science and technology profoundly affects the quality of learning system in school. The more advanced technology, the more creative the learning required, so students will enjoy the learning process and get the optimum learning outcome.

An exciting learning media will create a fun situation so that students will be totally involved in the learning process. The total involvement has an important role in delivering optimal outcomes (Norsalis et al., 2013). There are many kinds of learning media, including printed media, exhibition media, projected media, audio recording, video & VCD, and computers. Sukiman (2012) argues that video is a set of components or media that displays both audio and visual at the same time. Video used in the learning process has advantages, one of which is presenting the object of learning in concrete (Sanaky, 2013). Multimedia in learning can improve student center activities, provide a learning experience, so that learning will be more meaningful (Kulasekara & Jayatilleke, 2008). A particular learning approach also needs to be applied to motivate students. Contextual Teaching and Learning approach can be the right choice. Widarti et al. (2013) argue that the essence of Contextual Teaching Learning is to help students connect the material learned to their real-world situations and to encourage students to make connections between their knowledge and its application in daily life. This is also in line with the opinion of Lepiyanto & Pratiwi (2015) states that contextual learning helps students to find creative ideas in the learning process through discovery, reinforcement and connectedness in the real world that is directly experienced by students. Students will work hard to achieve learning objectives by using prior experience and knowledge to build new knowledge then students re-utilize their understanding and abilities in an outside learning context. Then, students will easily understand and remember what they learn.

Based on the results of interviews with biology teacher of grade XI in SMA Negeri 2 Rembang, it was found that learning, especially biology, already used learning some media such as powerpoint and images. The teachers rarely use learning videos that can relate the material to the student environment. In addition, the school has complete multimedia facilities and excellent human resources. Educators and students have a good skill in operating an existing multimedia service, it is very supportive to create an innovative, creative, and fun learning. However, the availability of facilities and human resources were not yet to be optimally utilized in biology learning.

Need assessments questionnaire for learning video based Contextual Teaching and Learning on reproductive system material given to class XII SCIENCES 1 with 40 students found that the media used by teachers on learning reproductive system, 35% of students feel that they still have difficulties because the media is too much Writing, 30% because the media is less practical or can not be taken anywhere. As many as 82.5% of students expect an exciting and fun learning media. 85% of students argue that the existence of audiovisual media in such as video based on Contextual Teaching and Learning can help them understand the concept of the reproductive system.

Biology is the study of living things and their environment. Biology learning should not only present information and facts to students, but also provide practical value with regards to daily life (Suhari et al., 2013). One of the biology learning materials for senior high school students is the human reproductive system. The concept of the human reproductive system is highly related to the real life. In this material there are points that often applied in contextual approaches such as menstrual cycle, abnormal or sexually infectious diseases and technology related to reproductive system. One of the examples of abnormalities or sexually infectious diseases in the reproductive

system is AIDS. AIDS is spread by free and unprotected sex. In addition, free sex can also ruin the moral of a good human being, so that is a need for the inculcation of attitude towards students after the learning using video based on Contextual Teaching and Learning on the material reproductive system. Therefore, at the end of the learning, in addition the expected to increase cognitive learning outcomes, it is also necessary to assess the inculcation of attitude toward students after using video based on Contextual Teaching and Learning.

To improve the quality and optimize the learning process, the teacher needs to take steps to overcome the problems faced. One of the measures is by developing a learning video based Contextual Teaching and Learning on reproductive system concept. The learning video based on Contextual Teaching and Learning presents material related to students' real-life. There are many studies on media development especially learning video, but the development of Contextual Teaching and Learning based - video is still poor.

Based on the description, this study would develop a valid, feasible and efficient learning video based on Contextual Teaching and learning in reproductive system concept for senior high school. The development of this learning video is expected to enable students to discover their own learning concepts, to link the learning materials they receive with the students' daily life, so as to create effective, innovative, exciting and fun lessons.

RESEARCH METHOD

This is a research development (R&D). The study was conducted at SMA Negeri 2 Rembang in the even semester of academic year 2016/2017. The subjects were class XI SCIENCES 1, XI SCIENCES 3, and XI SCIENCES 6 consisting of 83 students.

The data in this research include observation data on the potentials & problems obtained through teacher interviews which were analyzed descriptively qualitative and questionnaire needs of students analyzed descriptively quantitative, video validation data by media experts and material experts using questionnaires validation media and materials explained in Descriptive quantitative percentage, the data of video feasibility test obtained by response of three teachers and 15 students of class XI SCIENCES 6 by using questionnaire then analyzed descriptively quantitative, effectiveness data was collected through student cognitive learning outcomes and assessment of attitude toward students In class XI SCIENCES 1 and XI SCIENCES 3. The cognitive learning outcomes were from N-gain of pretest and posttest which analyzed quantitatively, attitude toward students was from the questionnaire of students' attitude and analyzed descriptive quantitative

RESULTS AND DISCUSSION

Validation of the learning video by experts

The development of learning video based on Contextual Teaching And Learning was validated by two experts; media expert and content expert. The video is valid if the assessment of both validators reaches > 62%.

The validation by the media expert gave a score of 83.33% in a very valid category. Media validation was done by biology lecturer of Universitas Negeri Semarang. Media was assessed based on three aspects, namely the aspects of software engineering, aspects of audiovisual communication, and aspects of learning design. Overall aspects of software engineering got the maximum score of 4. This learning video can be easily operated by teachers and students, also later the video can be reused to develop other learning media. In the aspect of audio-visual communication, all aspects got a score of 3. Media experts assume that the developed video was good, but the video layout design

was still a little guilt and need to be repaired. On the aspects of learning design, most aspects get a score of 3. Media experts argue that the material presented in accordance with the learning objectives and basic competencies. But, this learning video could only be used to support the learning process, not as the only learning source. Students could explore their knowledge through references to other learning resources.

A further step, after validation by media expert, is content validation which was also done by biology lecturer of Universitas Negeri Semarang. The content in the video was assessed based on aspects of content feasibility component and elements of the serving component. The validation by the content expert gave score of 91.67% in a very valid category. In the aspect of content feasibility component, all aspects got a maximum score that is 4. The presentation component which is comprised contextuality and actuality, easiness to be understood, and clarity of description, discussion, and sample, got a perfect score that is 4, while interactivity, completeness and quality of subject matter and systematic, coherent, logical flow clearly got a score of 3. Content experts argued that learning video could be implemented in the classroom, but on some impressions, it is still required teachers' explanation or lecturing.

The assessments of these experts conclude that the developed learning video was beneficial. By creating and presenting video, it gives the students opportunity to think creatively (Andone, 2016).

Feasibility of Contextual Teaching and Learning Based-Learning Video

Video feasibility was observed by questionnaire on students and teachers. The responses by three teachers showed a good response toward the development of the video, that are 100%, 100%, and 81.25% with an average percentage of 93.75% in the very good category. Teachers agree with the assertion that learning video based on Contextual Teaching and Learning on the reproductive system was suitable for classical learning. Teachers argued that the contextual learning was very appropriate to be applied in biology learning. This is relevant to the opinion by Ekowati et al. (2015) which states that the application of contextual approach can increase the motivation and enthusiasm of students in following the learning process, increase student activity illustrated with the cohesiveness of solving a particular problem in the group, and can improve their mastery of concepts. The concept of the reproductive system contained in this learning video is in line with the core competencies. The teacher also argued that the pictures and explanation in the Contextual Teaching and Learning based- video on the reproductive system helped students to comprehend the concept, so that the teacher was interested in using the learning video. This is in line with the opinion of Zhang et al. (2010), who argues that by presenting video in learning will help students to develop questioning skills, bring more curiosity, and make it easier for teachers to guide students to understand the learning concept. From the assessment of the teacher there is a suggestion that the addition of images of *Gonorrhoea* sufferers in a video. The teacher's opinion aims to revise the learning video before being implemented in the classroom.

After some revisions, the next step was the feasibility of the video by students' questionnaire from 15 students of grade XI SCIENCES 6. The questionnaire of students responses gave the average score percentage per an aspect of 86 % with very good criteria. Student response questionnaire data shows that learning video based Contextual Teaching and Learning on material reproductive system become more efficient to help the learning process. Students enjoyed the learning more, because it is not as usual who only listen to the teacher, students also look brightened up, interested, and motivated in this learning activities so that the students get higher attention and enthusiasm. Students argue that the images and descriptions in Contextual Teaching and Learning based-video on reproductive system materials were easy to understand, so making it is easier for

them to understand the concept. Students were happy and interested in following the learning of reproductive system using the learning video. This is because in previous learning the teacher had not given many varieties of learning media. From the questionnaire, students gave suggestion on the menstrual video which there was a long pause between frames with a dull black frame display, so it was finally removed or cut with no effect on the material presented.

The Effectiveness of Contextual Teaching and Learning Based – Learning Video

Depending on the results of effectiveness, the implementation of developed video on reproductive system concept at SMA Negeri 2 Rembang has a positive impact on the students' achievement of cognitive learning outcomes and attitude evaluation scores. The results of cognitive learning can be seen in Table 1.

Table 1 Results of cognitive learning of students

Data	Class XI SCIENCES 1		Class XI SCIENCES 3	
	Pretest	Posttest	Pretest	Posttest
High Score	62.5	95	77.5	92.5
Low Score	22.5	62.5	22.5	50
Average	47	81.8	51.5	81.6

Based on the data in Table 1 it is known that the cognitive learning outcomes of students of class XI SCIENCES 1 and XI SCIENCES 3 show the average posttest score which is higher than pretest. The normality of the gain (N-gain) from pretest and posttest is observed to find the significance of the learning outcomes improvement. The N-gain analysis in XI SCIENCES 1 and XI SCIENCES 3 can be seen in Table 2.

Table 2 Results of N-gain measurements

Category	Criteria	Class			
		XI SCIENCES 1		XI SCIENCES 3	
		Amount	%	Amount	%
$0,70 \leq g \leq 1,00$	High	11	32.35	10	29.41
$0,30 \leq g < 0,70$	Medium	23	67.65	23	67.65
$0,02 \leq g < 0,30$	Low	0	0	1	2.94
N-gain of Class		0.64		0.61	
Average N-gain		0.63			
Criteria		Medium			

Based on the data in Table 2 it is known that the N-gain of class XI SCIENCES 1 is 0.64 and XI SCIENCES 3 is 0.61. The average N-gain of both classes was 0.63 with medium criteria. This indicates that the developed video can improve students' cognitive learning outcomes with the N-gain score on medium criteria. The primary factor that influences student's cognitive learning outcomes is the audio and visual elements in the video which makes it attractive. In addition, video characteristics that involve contextual factors are very influential to the high cognitive learning outcomes of students. Contextual features developed in this research include a meaningful relationship that allows students to interpret any information received by linking the information to content contained in the video and daily life such as the influence of free sex

associated with the impact caused. Learning video developed is designed to be learned by students anytime and anywhere, so students can set their own learning time. In the learning video also developed some questions as a kind of apperception to practice students' analysis so they would not only memorize but also understand the concepts learned.

Another thing that affects the achievement of learning outcomes is the characteristic of video that allows students to receive messages delivered. This opinion is supported by Sanaky (2013) which states that the video can present concrete learning objects or realistically, so it is nice to add the learning experience. From the reasons seen that the relationship between the role of learning media in this form of learning video based on Contextual Teaching and Learning with student cognitive learning outcomes. But in this research there was one student of class XI SCIENCES 3 which had gained in low category. The low gain category has two possibilities. First, that is caused by students' high pretest score so posttest was not much improving. The second was because the treatment was not too effective on the students, so they got low N-gain from low scores of pretest and posttest. In this study, the low gain was due to the low pretest and posttest scores of the students. This is because the student, during the learning process, missed some learning activities to join students' organisation event, so as alleviated the intensity of learning and focus. Apart from these problems, the use of Contextual Teaching and Learning based - video can improve students' cognitive learning outcomes.

In addition to improve students' cognitive learning outcomes, the video also has a positive impact on the students' attitude after learning. This is in line with the opinion of Fuadi et al. (2013) who states that the application of contextual elements can improve student attitudes before and after learning, but it is also able to optimize the emergence of intellectual potential, creativity and emotional intelligence and students adversity. The score of attitude applying to students was measured using student attitude assessment questionnaire after learning with the indicators of tolerance toward free sex. Based on the questionnaire of students' attitude assessment, the average of percentage score per aspect is 95.07% in very high criteria. Students agreed with the statement that free sex would bring negative impacts such as damaging the future, even can cause sexually infectious diseases, so the development of learning video based on Contextual Teaching and Learning on reproductive system concept has a positive impact (high criteria) on the students' attitude toward free sex.

CONCLUSION

Based on this research, it can be concluded that, (1) learning video based on Contextual Teaching and Learning on reproductive system concept has fulfilled very valid criterion according to media and content expert. The results of validation by media experts obtained percentage score of 83.33%, and content experts score of 91.67%, (2) learning video based on Contextual Teaching and Learning on the reproductive system has been eligible to use as a learning media in senior high school. The video feasibility analysis was obtained from the results of the responses of biology teachers and students of SMA Negeri 2 Rembang, respectively earned an average score of 93.75% and 86% with very good category, (3) implementation of Contextual Teaching and Learning based-learning video on reproductive system concept is effective to be used as a learning media in SMA because there is an increase of students' cognitive learning outcomes with average score of N-gain of 0.63 on medium criterion, and gives positive impact to students' attitude of class XI SCIENCES 1 and XI SCIENCES 3 with an average score of 95.07% in very high criteria.

Based on the research, we suggest as follows: (1) the implementation of video based on Contextual Teaching and Learning requires proper time management so that the teacher must manage the time optimally, especially at the learning community stage, considering the limited time

to implement the learning activities, (2) the further research is still need to be conducted on the other schools, as the limitation of this study which was only implemented in a school.

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