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The Development of Learning Videos Using Wondershare Filmora Software on Human Reproductive System Material to Improve High School Students' Learning Outcomes

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Abstract

The Covid-19 pandemic has changed the way people live, including in the field of education. One of them is WFH (work from home), which causes the learning process to be carried out from home by online. Students found it difficult to understand the material during online learning which caused learning outcomes to decrease. On the other hand, the development of technology and information can be used so that it is beneficial for education. The advantages of learning video media greatly assist the teacher in conveying the material to be delivered and students better understand the material presented by the teacher. For this reason, it was necessary to develop video-based media for learning the Reproductive System material. The purpose of this study was to analyze the validity, feasibility, and influence of media effectiveness on student learning outcomes based on learning videos on the Reproductive System material. The research steps that were passed used the 4D development model, namely Define, Design, Development, and Disseminate. The research instruments used were student questionnaire sheets, interview sheets, validity sheets, teacher and student response questionnaire sheets, as well as pre-test/post-test sheets. The results of research on the Reproductive System learning video media have met the criteria of being very valid by media experts at 98% and valid by material experts with a score of 72%, the media feasibility score is 94% or very feasible by a questionnaire of teachers and students, and learning video media is effective in improving results student learning on the subject of the Human Reproductive System at SMA Negeri 1 Banjarnegara.

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INTRODUCTION

The Covid-19 pandemic has revolutionized various aspects of human life. Many aspects were affected, starting from the economic sector, health, tourism, to the scope of education. In this regard, the government urged to prohibit all activities that cause crowds, implement social distancing and maintain physical distance, and stay away from crowds to prevent the spread of the corona virus (Putri et al., 2020). Various policies have been issued by the Indonesian government to reduce the rate of spread of the corona virus, one of which is WFH (work from home). The existence of this appeal certainly has an impact on the learning process activities in schools. Teaching and learning activities that are usually carried out offline started to change to online learning from home (Rahmawati et al., 2020).

Based on the previous researcher's interview (Sindi & Lufri, 2021) during PLK practice at MAN 3 Kampar with a Biology teacher explained that the teaching and learning process during the Covid-19 pandemic was less effective, when compared to the normal teaching and learning process. Characterized by the lack of student involvement in the online learning process, many students were not interested in the learning process and did not do the assignments given by the teacher. This happened because students were less interested in learning during online learning which results in low UTS scores for biology subjects. Data on learning outcomes were obtained from the odd Mid Semester Examination (UTS) scores of XI IPA MAN 3 Kampar students in the 2020/2021 Academic Year for Class XI IPA 1, namely 63.56 and XI IPA 2, namely 54.37. This indicates that students experience learning difficulties in online learning.

Reproductive System material is quite complex material because there are a series of processes that occur in the reproductive organs, so we need a media that can make it easier for students to learn this material in a coherent manner. Learning media is one way to overcome these problems. Along with technological developments, learning media can assist teachers in teaching and facilitating the learning process. The use of media is one of the factors that can help the success of the learning process in schools, because it can help the process of conveying information from teachers to students or vice versa. Making media creatively and utilizing technology can increase learning efficiency and make it easier for students to understand subject matter (Kustandi & Sutjipto, 2016). One of the learning media that can be used for learning activities is Wondershare Filmora Software which is an audio-visual learning media. The advantages of Wondershare Filmora are that the application is light, the operation is easy, the editing process is fast, and the many effects available (Ristiyanto, 2017).

The development of Wondershare Filmora learning media is packaged in an attractive way, in which there are pictures, videos and brief explanations that are expected to help students understand the material and reduce misconceptions, so that this interesting learning media presentation can motivate students to learn about the reproductive system. If the material presented in the form of audio-visual learning media can be understood by students and reduces misconceptions, it will also have an impact on better student learning outcomes. Therefore, it is necessary to conduct research entitled "The Development of Learning Videos Using Wondershare Filmora Software on Human Reproductive System Material to Improve Learning Outcomes of High School Students".

RESEARCH METHODS

This type of research was research and development (R&D) by producing a product in the form of learning videos using Wondershare Filmora software on reproductive system material. The research steps were: (1) define, (2) design, (3) develop, (4) disseminate. The small-scale and large-scale tests were carried out at SMA Negeri 1 Banjarnegara. The small-scale test sample consisted of 36 students from class XI MIPA 3. The large-scale test sample consisted of 108 students consisting of 36 students from classes XI MIPA 4, XI MIPA 5, and XI MIPA 7 to answer test questions totaling 30 questions with a research design using One Group Pre test and Post test Design. The sampling technique in this study used purposive sampling. The research instruments used were interview sheets, validity sheets, teacher and student response questionnaire sheets, as well as multiple choice test questions totaling 30 questions. Data analysis in this study was

descriptive quantitative percentage. The 4D research steps are presented in Chart 1.

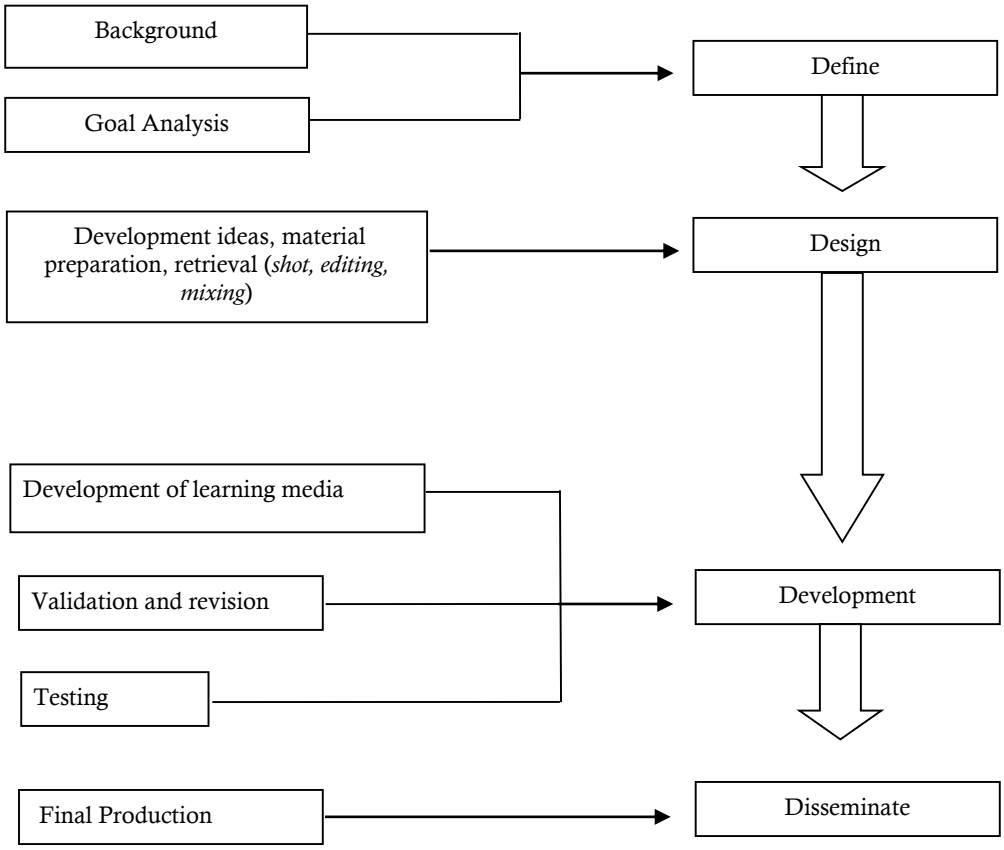


Chart 1. Langkah-langkah penelitian 4D

RESULT AND DISCUSSION

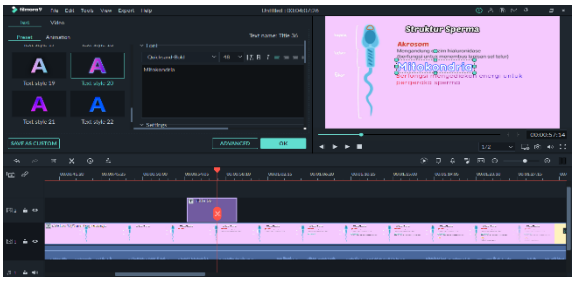
Description of the Research

1) Defining stage

Defining stage consists of background and objective analysis. Based on information from teacher interviews, audio-visual media such as learning videos are needed which make students more masterful of the material, especially learning videos in Indonesian. Based on the results of a questionnaire that has been distributed to students of SMA Negeri 1 Banjarnegara in Appendix 4, as many as 75% of students found it difficult to understand the material, especially during online learning, as many as 83.33% of students needed learning video media, in this case 86.11% of students agreed if learning was carried out with the help of learning videos. The application of learning videos can help teachers in terms of time efficiency in conducting teaching and learning activities and help students when understanding material to improve learning outcomes in reproductive system material.

2) Design Stage

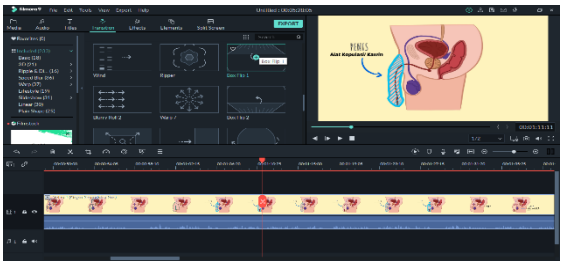
The second stage in the 4-D development model is design. This stage aims to decide how the video will be designed according to the main material which includes several steps, namely preparing the material, making a *shooting script*, and the *editing & mixing process.*



Picture 1.

Picture 2.

Picture 3.



Picture 4.

Picture 5.

Picture 6.

Picture 1. The process of *editing & mixing* gametogenesis sub material
Picture 2. The process of *editing & mixing* disorders, diseases, and reproductive technology sub material
Picture 3. The process of *editing & mixing* female reproductive organs sub material
Picture 4. The process of *editing & mixing* male reproductive organs sub material
Picture 5. The process of *editing & mixing* menstrual cycle sub material
Picture 6. The process of *editing & mixing* fertilization, gestation, childbirth sub material

3) Development Stage

The purpose of the development stage is to create learning videos that are suitable for use after carrying out revisions based on input from media experts, material experts, teachers and limited response trials by students.

Table 1 Student learning outcomes in small-scale tests with video media learning XI MIPA 3 SMA Negeri 1 Banjarnegara

Data	Class XI MIPA 3	
	Pre-test	*Post-test*
Highest Score	87	100
Lowest Score	27	70
Average	66,58	90,75

Table 2 The result of measuring normality gain on learning outcomes with video media learning Human Reproductive System in Class XI MIPA 3 SMA Negeri 1 Banjarnegara

Category	Criteria	Class	
		XI MIPA 3	
		Total	%
g > 0,7	High	20	55,56
0,3 ≤ g ≤ 0,7	Medium	15	41,66
g < 0,3	Low	1	2,78

4) Dissemination Stage

In this research stage, the researcher focused on disseminating the media in the school where he was researching, by providing *subcopy files* to biology subject teachers, and for students who wanted to have the learning videos, they could *copy the files.*

Media Feasibility

Validation of media and video material was carried out with the aim of assessing the feasibility level of the media created, namely learning videos on the human reproductive system. Arikunto (2014) explained that an instrument has marked validity if the results comply with predetermined criteria. The feasibility level was calculated using the *rating scale* in this study, where the raw data obtained in the form of a score was then interpreted in a qualitative sense.

1) Media Validity

It was found that learning videos on human reproductive system material were very feasible, sourced from the results of an analysis of the assessment of human reproductive system learning videos by media experts. The results of the evaluation of the learning video on human reproductive system material by media experts are shown in Table 3.

Table 3. Result of research on reproductive system learning videos by media experts.

Assessment aspect	Number of items	Score percentage (%)
Aspects of software engineering	4	100
Aspects of audio-visual communication	5	95
Aspects of educational design	4	100
Score average		**98**

In evaluating the validity of video media, there were 3 aspects, namely software aspects, audio-visual communication aspects, and educational design aspects. The aspect of audio-visual communication consists of 5 points, each aspect of software engineering and educational design consists of 4 points. Based on the three aspects of media validity assessment, an average percentage score of 98% was obtained which was in the very decent category. The learning video for reproduction system material was very perfect as shown by getting a score of 100% in the aspects of software engineering and aspects of educational design by the assessment of media experts. Achieved *maintenance*, *reusability, reusability*, and *compatibility* in the aspects of software engineering. Videos were operated very simply and could be managed very easily. Furthermore, video could be operated on a variety of electronic devices available in the form *of software*. Videos could be viewed at any time with a *cellphone,* laptop or computer repeatedly because formatted as mp4. Aspects of educational design where videos could help students learn independently, and videos were systematic, coherent, the logic flow was clear, video presentation was very interesting and easy to follow, and video narrative explanations were

clear. The aspect of audio-visual communication got a score of 95% from media experts. This aspect related to video drafts. Video drafts designed simply and captivating audio and visuals, communicative, creative in expressing ideas. The video already contained these elements that supported one another. Moving pictures were then arranged and added *sound effects*. In the audio assessment, a score of 3 was obtained which means that the sound was clear, the *backsound* and *sound effects* did not interfere with student understanding, the text/images displayed were in accordance with the narration.

It was found that the video still needed to be revised based on the results of research by media experts on learning videos on reproductive system material. The learning video on reproductive system material before and after the revision of the media expert's advice is shown in Table 4.

Table 4. Learning videos on Reproductive System material before and after revision from media expert suggestions.

No	Before Revision	After Revision
1.		
	No *subtitle*	Adding *subtitle*
2.		
	The sound is unclear (PPT design)	Clearer sound (animation design)

Based on Table 4 it was found that the suggestions submitted by the media expert on the learning video for the Human Reproductive System material were in the form of adding text/*subtitles* and adding volume so that the things explained in the video could be more listened to by students. After the revision, it was expected that the learning video on the Human Reproductive System material could be paid more attention to by students in teaching and learning activities. In terms of completeness of the media was neat. In 3 aspects this has been reviewed, namely: aspects of software engineering, aspects of educational design and aspects of audio-visual communication. There was a need to improve the sound so that the voice sounds clearer. This was in sync with the evaluation from media experts, the sound sounds less clear, as well as adding *subtitles* to make it easier for students to receive information.

2) Material Validity

Based on the results of video assessment analysis by material experts related to Human Reproductive System learning videos, it was found that learning videos on Human Reproductive System material were feasible. Shown in Table 5. The results of the assessment by video material experts on learning the material of the Human Reproductive System.

Table 5. The result of the evaluation of Reproductive System learning video by material experts.

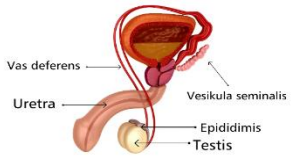
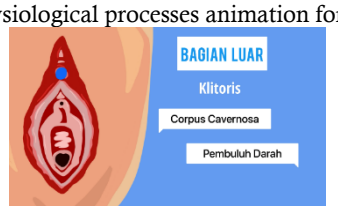
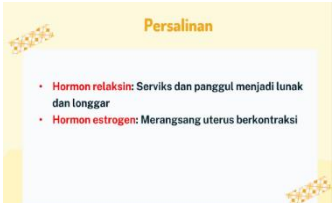
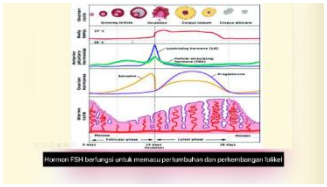
Assessment aspect	**Number of item**	**Score percentage (%)**
Content eligibility component	4	75
Presentation component	4	68
Average score		**71,8 ≈ 72**

Video learning material on the Human Reproductive System for class XI high school students was relevant to Basic Competence, with clear video learning objectives. The video presented the truth of the material concept of the Human Reproductive System in accordance with the Basic Competency where the delivery of the material is coherent, logical and systematic. The ability of learning videos to improve learning outcomes, as well as explanations of interpretations on videos were clear. This is reinforced by the

opinion (Daryanto, 2013) which stated that the message given will attract more attention which is very important in teaching and learning activities when using video media, because there is interest, there will be encouragement or motivation to study harder.

In terms of the completeness of the assessment aspects being in the appropriate category, the learning media created could be used in the next step, namely the feasibility test by teachers and students. Based on the evaluation submitted by the validators in each validated section, improvements were made in accordance with the evaluation submitted. It was found that the video still had to be revised based on the results of the material expert's assessment of the reproductive system material learning videos. The video learning material for the Reproductive System before and after the revision of the material expert's advice is shown in Table 6.

Table 6. Learning videos on reproductive system material before and after revision from material expert suggestions.

No	Before Revision	After Revision
1.	 Videos as if PPT format	 Animated videos
2.	 Physiological processes PPT format	 Physiological processes animation format
3.	 Display explanation of one whole slide	 Tiered explanation view
4.	 Explanation of the lack of reproductive hormones	 Additional reproductive hormones

Based on Table 6 the material expert gave suggestions on the video learning material for the Human Reproductive System in the form of video reproduced in animated format, physiological processes reproduced in animated format, display tiered explanations, and additions to explanations related to reproductive hormones. It was hoped that the video learning material on the Reproductive System was able to better convey an overview to students when learning the material on the Reproductive System after being revised.

Overall, in terms of the material, it was appropriate for class XI students according to the researcher's view. There were 2 aspects in material assessment, namely: presentation aspects and content feasibility. The learning objectives in the video were clear, the material content in the video was accurate and matched the selected material. Video learning material for the Human Reproductive System could be used as a learning

tool. Descriptions, interpretations on the video were clear, presentation of material was logical, systematic, so that it was easy for students to understand. In line with the experts, the material in the video animation format was reproduced, physiological processes were reproduced in an animation format, display a tiered explanation, and added explanations related to reproductive hormones.

3) Video Feasibility Assessment by Teachers and Students

Based on the results of the feasibility analysis of the video learning material for the Human Reproductive System material, teachers at SMA Negeri 1 Banjarnegara and 36 students in class XI MIPA 3 at SMAN 1 Banjarnegara, it was known that the video learning material for the Human Reproductive System was classified as very feasible. The results of the evaluation of the Reproductive System learning videos by teachers and students are presented in Table 7.

Table 7. The result of the assessment Human Reproductive System learning video by teachers and students.

Assesment aspect	Number of item	Percentage scores of teachers and students (%)
Software engineering	4	96
Audio visual communication	6	93
Educational design	3	94
Content eligibility	4	97
Presentation	3	94
Average score		**93,57 ≈ 94**

It was found that the feasibility assessments of videos by teachers and students varied based on table 4.7. Content feasibility and software engineering outperform feasibility assessments. To prove the product distributed is feasible for teaching and learning activities, a feasibility analysis is needed. The feasibility value is influenced by the advantages possessed by learning videos. The videos developed have advantages including systematic, logical, and coherent harmony with the material on the Human Reproductive System. Another highlight is the detailed depiction of physiological processes in animation format. These advantages really support students in carrying out teaching and learning activities.

Obtained an average feasibility score of 94% included in the very feasible criteria based on the results of the analysis of student and teacher responses. Overall very good responses were given by students and teachers regarding learning media in the form of learning videos on the Human Reproductive System material. This was evidenced by the aspects asked in the student response questionnaire sheet where the questionnaire obtained appropriate and very appropriate criteria.

Learning Outcomes

1) Data on Student Learning Outcomes

The learning outcomes in this study were obtained from giving a *pre-test* at the first meeting (beginning of learning) and *a post-test* at the last meeting (end of learning). A total of 30 multiple choice questions were used for *the pre-test* and *post-test* related to the Reproductive System material and were worked on for 30 minutes. Student learning outcomes are shown in Table 8.

Table 8. Student learning outcomes with video media learning the human reproductive system in Class XI MIPA 4, XI MIPA 5, dan XI MIPA 7 SMA Negeri 1 Banjarnegara

Data	Class XI MIPA 4		Class XI MIPA 5		Class XI MIPA 7	
	Pre-test	*Post-test*	*Pre-test*	*Post-test*	*Pre-test*	*Post-test*
Highest score	77	100	83	100	83	100
Lowest Score	37	70	37	70	16	77
Average	62	88,75	60,27	94,66	59	90,38

Table 8 shows that students in Class XI MIPA 4, XI MIPA 5, and XI MIPA 7 obtained increased learning outcomes in terms of the average *post-test* results being better than the average *pre-test* by a significant margin. The n-gain data for XI MIPA 4, XI MIPA 5, and XI MIPA 7 are shown in Table 9. To find out the significance of the increase in student learning outcomes, a normality gain (n-gain) calculation was carried out from the *pre-test* and *post-test*. The results of n-gain calculations in class XI MIPA 4, XI MIPA 5, and XI MIPA 7 are shown in Table 9.

Table 9. The result of measuring normality gain on learning outcomes with video media learning Human Reproductive System in Class XI MIPA 4, XI MIPA 5, dan XI MIPA 7 SMA Negeri 1 Banjarnegara

Category	Criteria	Class					
		XI MIPA 4		XI MIPA 5		XI MIPA 7	
		Total	%	Total	%	Total	%
$g > 0,7$	High	20	55,56	32	88,89	23	63,89
$0,3 \leq g \leq 0,7$	Medium	13	36,11	4	11,11	13	36,11
$g < 0,3$	Low	3	8,33	0	-	0	-

Based on Table 9 it is known that > 90% of students in Class XI MIPA 4, XI MIPA 5, and XI MIPA 7 obtained n-gain medium and high, namely class XI MIPA 4 as much as 91.67%, class XI MIPA 5 as much as 100%, and class XI MIPA 7 as much as 100%. This stated that in the three classes there was a significant increase in student learning outcomes which meant that learning outcomes had obtained optimal results. This is reinforced by research (Lubis, 2017) in this study which stated that the use of learning videos has a significant impact on student learning outcomes. In addition, research (Agustina & Sitompul, 2015) showed that students who are taught with animated video learning media have higher learning outcomes than conventional learning. It is also proven by the results of research by Azwar (2017) which explained that there is a significant comparison between the learning outcomes of students who use audio-visual media and learning without using media. In line with (Busyaeri *et al.*, 2016) assumed that the application of learning video media has a significant impact on student learning outcomes, because learning video media is more effective in the process of teaching and learning activities, supports students to be more serious, able to create a more attractive learning atmosphere, fun and the videos shown are able to focus students' attention. Thus making students more master of the material provided and get maximum learning outcomes..

2) Contribution of Information Processing Theory to Learning Outcomes

According to Gagne that in learning there is a process of receiving information, to then be processed so as to produce output in the form of learning outcomes. In information processing, there is an interaction between internal conditions and individual external conditions. Information processing theory provides a new perspective on learning processing which will produce effective learning outcomes (Ermis Suryana, 2022). This information processing model is based on cognitive learning theory (Piaget) and leads to students' competency in processing information which can improve their skills. Information processing refers to collecting/receiving stimuli from the environment, coordinating data, using verbal and visual symbols, solving problems, and discovering concepts. Information processing theory sees environmental aspects as an important role in learning (Rehalat, 2016). Learning as an effort to process, store, and store information through short-term memory (*short-term memory*) and long-term memory (*long-term memory*). In this case learning takes place within the student (Ummu Kalsum, 2019).

Information processing theory has the advantage of helping increase the effectiveness of students in processing information and thinking during learning. In this theory teachers and students have creativity when giving lessons to students. With this theory makes the learning atmosphere more interesting so that students will easily remember and understand the learning that is conveyed. This theory also has weaknesses, namely the delivery of learning through this theory even though it uses media so that images can attract students'

attention during learning so they don't feel bored and make it easier for students to remember, in this case students don't remember thoroughly, so they must be trained to remember and think optimally, and the level of students' ability to understand is different. (Ermis Suryana, 2022) One effort to facilitate this is to develop learning videos that adopt information processing theory. Information processing theory is oriented towards students' ability to process information starting from receiving, storing information, and re-disclosing information that has been stored. By referring to this theory, the learning videos developed will be easier for students to understand and easier to remember (Suartama, 2020).

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This finding is supported by other research which shows that media that creates multimedia elements such as text, video, animation, images, sound can foster a comfortable and interesting learning atmosphere (Nur Jannah, 2020). The results of other studies also showed that the use of images, colors, sounds can attract and delight students (Kuswanto *et al.*, 2017). Thus, the role of visuals in learning videos is very important and must be examined properly, considering that in learning video shows are more dominant in visuals in the form of images, text, and videos. Based on this theory, learning videos have used text and images arranged based on the level of urgency. Some still images are also accompanied by explanations in the form of audio or sound so that students better understand the meaning of the images presented. Some text content that is considered complex and abstract is also clarified with animated displays so that it becomes more concrete. Implementation of the principles of information processing theory is also intended so that students do not experience cognitive load because they have to listen to a lot of information on the screen. The material in the learning videos is only presented as core material or material points. This presentation can improve student learning outcomes (Riyanto & Gunarhadi, 2017). By paying attention to this theory so that visual media becomes more organized and makes it easier for students to understand and remember material.

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Conclusion

Based on the results of the research and the description of the discussion, it is concluded that the learning video on reproductive system material meets the criteria according to the average validation of media experts and material experts with a percentage of 85% or very feasible. The validity results were obtained by media experts with a score of 98% and material experts obtained a score of 72%. Video feasibility analysis got an average score of 94% with very feasible criteria according to teachers and students. Learning video media is effective in improving student learning outcomes in the subject of the Human Reproductive System at SMA Negeri 1 Banjarnegara.

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