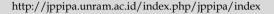


Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education





Development of Sparcol Videoscribe-Based Learning Videos for Students

Abdul Razak¹, Monhartini^{1*}, Irdawati¹, Dwi Hilda Putri¹

¹ Biology Education Masters Study Program, Faculty of Mathematics and Natural Sciences, Padang State University, Padang, Indonesia.

Received: February 7, 2023 Revised: April 18, 2023 Accepted: June 25, 2023 Published: June 30, 2023

Corresponding Author: Monhartini monhartini329@gmail.com

DOI: 10.29303/jppipa.v9i6.3123

© 2023 The Authors. This open access article is distributed under a (CC-BY License)

© **1**

Abstract: This research aims to produce learning videos on circulation system material and the digestive system in humans that are valid, practical, and effective. The type of research used is development research using the Plomp development model. The development stage of this model starts from the initial investigation stage, the development or prototyping stage, and the assessment stage. The instruments used in this development research were teacher interview guideline instrument sheets, student response questionnaire sheets, self-evaluation sheets, and learning video validation sheets by experts, as well as learning video practicality assessment sheets filled out by teachers and students. The results of developing learning videos obtained very valid products with a value of 88.71%. The practicality of teachers and students is very practical with scores of 93.3 and 89.75%. The effectiveness test of this learning video is effective because based on the T-test conducted, there is a significant difference between the experimental class and the control class, namely the significance of 0.026, which means that the use of learning videos has an effect on improving student learning outcomes.

Keywords: Learning Outcomes; Learning Videos; Sparkol Videoscribe

Introduction

Learning is a process that involves educators, students, and learning resources that are interconnected. In this learning process students will gain knowledge, knowledge, mastery of skills, character, and the formation attitudes and self-confidence (Djamaluddin, 2019). The development of science and technology demands application in the field of education. Teachers cannot be used as the only source of learning that is able to pour all knowledge and information for students. This means that teachers and students need a medium that can facilitate the continuity of the learning process. An important component that can improve student learning outcomes through learning is to use teaching materials that are adapted to the characteristics and needs of students (Sholichin et al., 2022).

Learning media is considered as a tool or means used to convey messages (learning materials), so that it can stimulate students' attention, interest, thoughts, and feelings in learning activities to achieve learning goals. With learning media, students will more easily

understand abstract material. In addition, the use of learning media must be adapted to the subjects and materials to be taught (Fransisca, 2021). This means that this learning media can be used as a vehicle for delivering information from educators to their students to help the learning process continue. The learning media used must be able to assist students in achieving the learning objectives that have been developed by the teacher (Fatimah and Bramastia, 2021).

The use of media changes the learning paradigm, in the sense of the status of students from objects to the main part of learning and this can increase students' selfconfidence so that the implications for learning are felt: activities participatory, collaborative, interactive. The media used can clarify information or learning messages, emphasize important parts, provide variety in teaching, clarify teaching structures, and motivate student learning (Wahyu et al., 2020). In today's educational world, students are required to play an active and energetic role in participating in learning and various established systems. The position of the teacher is not the only facilitator of accurate information, but currently technology is one of the facilitators. Teachers in the current era function to align and complement the results obtained by students from various learning sources (Wardana and Adlini, 2022).

Based on a preliminary study with biology subject teachers at MAN 1 Pasaman Barat school, it was found several problems where teachers experienced difficulties in making and selecting learning media, namely teachers tended to use teaching materials in the form of textbooks and learning media in the form of powerpoint slides that were shown through projectors, and pictures which is written directly on cardboard which is then pasted on the blackboard. The role of technology in education, especially in making learning media, is also very low. So that from this series of problems it has an impact on student learning outcomes. Learning media is very important to use to achieve learning objectives. Applying the right learning media can make the learning process more interesting, not boring, not monotonous, and learning becomes more interactive (Susanto, 2022).

Learning biology requires visualization media that can clarify an abstract concept. More than that, visualization media can help students understand a process mechanism that is not directly observed in everyday life (Maryanti, 2018). One of the visualization media that can be used in biology learning is by utilizing information and communication technology in learning media in the form of learning videos. Learning videos can explain students' abstract concepts, especially regarding mechanisms. With the media in the form of this video, students will be greatly assisted in understanding concepts and processes, for example in material on the circulatory system and digestive system. Based on a preliminary study with students, 63.3% of admitted that they understanding the concept of the digestive system.

There are two important components that can improve student learning outcomes through learning, namely by using teaching materials that are adapted to the characteristics and needs of students (Solichin, 2022). Learning media that can be used to get around the problems that have been described, one of which is by developing learning videos that can be used as effective learning resources. The selection of media in the form of learning videos was chosen because it is able to combine audio and visual technology together so as to produce a dynamic and interesting broadcast. With these two elements, students will be able to receive, understand, and remember the learning messages obtained (Yuanta, 2019). Learning video is a medium used to stimulate students' thoughts, feelings, and willingness to learn through audiovisual presentation of ideas, messages and information.

The application of learning media in the form of video was chosen because it has several advantages, namely: (1) it gives messages that can be received more evenly by students, (2) it is very good at explaining a process, (3) overcoming the limitations of space and time, (4) more realistic, can be repeated and stopped as needed, (5) gives a deep impression that can influence student attitudes (Wisada, 2019). This learning video it will be more interesting if it is packaged and varied by blending other applications in it, namely by using the sparkol videoscribe application.

Sparkol videoscribe is an animated video-based learning media consisting of a series of images arranged into a complete video. With unique characteristics, Sparkol Videoscribe is able to present learning content by combining attractive images, sounds and designs so that students are able to enjoy the learning process. The features provided by this application are very diverse so that they can become learning media that can be adapted to the desired subject. In addition to using the designs provided in the application, we can also create animated, graphic and image designs that suit our needs and then import them into the application. Besides that, the teacher can also do dubbing and enter sound as needed to make videos (Pamungkas, 2018). Sparkol videoscribe media can illustrate complex concepts in learning, so that it has a positive influence in improving student learning outcomes (Iska, 2020). With this learning video, it is hoped that it will have a positive influence on the learning process and student learning outcomes. The attractive display provided by Sparkol Videoscribe can be seen in Figure 1.



Figure 1. Video display using sparkol videoscribe

Learning videos have a positive influence on student learning outcomes, in line with the opinion of Mahadewi (2012) which explains that the use of media in the form of learning videos is able to present elements of color, sound, movement, and a process clearly, and can coordinate the use of various other media with such as films, photos, slides, and pictures, so that they can attract the attention of students so that they can foster learning motivation, clarify the meaning of teaching materials and lead to increased student learning

outcomes. Learning videos can be used online or offline and can be used on cellphones or laptops so they can be used anywhere and anytime. Interesting learning videos will help in the learning process, and the ease with which the story line can be articulated has problems with space and time limitations that occur can be overcome (Istyadji, 2022). Based on the problems that have been raised, research was carried out on the development of sparkol videoscribe-based learning videos that are valid, practical, and effective for class XI students of MAN 1 West Pasaman.

Method

Research design and method should be clearly defined. This type of research is research and development (research and development). This study aims to produce a product in the form of a sparkol videoscribe-based learning video that is valid, practical, and effective about the circulatory system and digestive system to improve student learning outcomes in class XI IPA MAN 1 West Pasaman. The development of learning videos will be carried out using the Plomp development model. The developer of this research model is Tjeerd Plomp whose research consists of three stages, namely the preliminary research stage, the development or prototyping stage, and the assessment stage (Plomp et al., 2013).

The initial investigation stage aims to get an overview of the characteristics of the product to be developed for use in learning. The activities carried out at this stage are: problem analysis, needs analysis, curriculum analysis, concept analysis, learning media analysis, and student analysis. Furthermore, at the development or prototyping stage which aims to design solutions to the problems identified at the initial investigation stage. Activities carried out in prototype development include designing and developing prototypes I, II, III, and IV. Furthermore, the assessment stage is the final stage of development research. At this stage practicality and effectiveness tests were carried out. The practicality of using learning videos was obtained from teacher and student assessments through practicality questionnaires. Furthermore, for assessment of effectiveness seen from the learning outcomes of students, namely from the cognitive, affective, and psychomotor domains.

The test subjects for the development of sparkol videoscribe-based learning videos on the circulatory system and digestive system material were carried out in class XI IPA 1 MAN 1 West Pasaman. The type of data collected in this study is primary data. Primary data types are data obtained directly through research instruments, namely qualitative and quantitative data.

Qualitative data, namely in the form of the validator's opinion from the validation data as well as the opinions of teachers and students about the practicality of the developed Sparkol Videoscribe-based learning videos. Meanwhile, quantitative data was collected through validation assessment sheets from experts, the practicality of teachers and students in applying sparkol videoscribe-based learning videos and student learning outcomes data.

The instruments used in this development research at the initial investigation stage were in the form of teacher interview guideline instrument sheets, student response questionnaire sheets. Furthermore, at the development or prototyping stage, namely selfevaluation sheets, and learning video validation sheets by experts or experts. Then in the assessment stage, namely the learning video practicality assessment sheet which is filled in by the teacher and which is tested on students in the small group and large group stages (field test). Furthermore, the evaluation of effectiveness, the cognitive domain is seen from the daily test scores given by the teacher at the end of learning, the affective domain is from observing the attitudes of students which include discipline, responsibility, curiosity and cooperation. The psychomotor domain is assessed from the portfolio assessment by assessing student reports which are assessed in terms of the completeness of the material, the suitability of the topic of discussion and the timeliness of the collection.

The data analysis technique used is descriptive statistical analysis in the form of presenting data with tables, calculating averages and percentages. The data were analyzed by calculating the average answer based on the score of each answer from the respondent who was given the questionnaire, then the answer for each respondent was changed to quantitative data.

Result and Discussion

Initial Investigation Stage

This stage aims to analyze the problems and needs of schools, teachers and students, and see an overview of the learning media products being developed. At this stage the researcher made observations, by giving questionnaires to teachers and students. the analyzes carried out were problem analysis, needs analysis, curriculum analysis, concept analysis, student analysis and learning media analysis. The following is a description of the results of the analysis.

Based on the results of problem analysis through interviews with biology teachers at MAN 1 West Pasaman and giving questionnaires to students, it is known that the learning media that teachers often apply are displaying pictures on cardboard and power point

slides. The teacher also added that learning media had never been applied in the form of learning videos. The monotony of this learning media is reinforced by the results of the analysis conducted on student questionnaires which show the results that students feel bored and less enthusiastic about learning which always comes from student worksheets and pictures posted by the teacher on the blackboard. In addition, students admit that they have difficulty understanding material related to body mechanisms because they cannot directly observe the process, so that the concept of understanding students becomes abstract. Strengthened by the results of interviews with students who stated that as many as 63.3% of students stated that the digestive system material was material that was difficult to understand and involved various organs in the process with different mechanisms in each part.

Based on the analysis of the needs of students, it is known that students need learning resources that can help and improve student learning outcomes. Students need new learning resources, namely learning media in the form of animation, stimulation, and evaluation questions that can improve student learning outcomes. The teacher added that there are several parts of learning media that need to be displayed such as an animation, illustration, simulation, and evaluation questions that support empowering and improving student learning outcomes, both in terms of cognitive, affective, and psychomotor.

The curriculum analysis carried out aims to serve as a guide in preparing learning videos. Curriculum analysis is focused on studying Core Competencies (KI), Competencies and (KD), Competency Achievement Indicators (GPA) for the 2013 Curriculum implemented in schools (Syafti, 2021). Competency Achievement Indicators and Learning Objectives are translated from Basic Competence and used as a reference in compiling learning videos according to the 2013 Curriculum. KD analyzed is KD 3.6 material circulation system in humans and KD 3.7 material digestive system in humans. KD 3.6 and 3.7 are considered difficult for students because there are many pictures and mechanisms that must be understood.

Concept analysis is carried out by formulating indicators that are used as a benchmark in the preparation of teaching materials which are discussed in learning videos. The results of the concept analysis are the description of learning indicators from basic competencies, and the concepts contained in the material on the digestive system in humans are obtained. The concepts identified in the material of the digestive system in humans are the types of substances and functions of food substances, the structure and function of the digestive organs, the differences in

mechanical and chemical digestion processes, digestive enzymes in humans and their roles, digestive processes in the human body, the digestive system of ruminants, abnormalities or disorders of the digestive system and efforts to overcome them, as well as technology related to the digestive system in humans.

Yuanta's research (2019) shows that the use of learning videos can increase the effectiveness of the learning process and the presence of media in the form of learning videos is very helpful for teachers in delivering material, because the role of learning media is as a bridge of communication between teachers and students.

Students analysis aims to analyze the character of students. The characteristics seen in this analysis are learning tendencies, difficulty factors on learning topics experienced by students in the learning process and what learning media are expected by students. Teaching materials that are in accordance with the characteristics of students lead to two-way interactions between teachers and students so that students can learn to maximize the results to be obtained (Ayu, 2018).

The teacher has a very important role in the learning process. As revealed by Joyce et al. (2009), that good and competent teachers always believe that they can make a difference and that the difference is made by adjusting learning strategies or devices (media) to the current conditions of students or preferences of learning media. owned by students.

The digestive system is also one of the materials that students find difficult. It is evident from Imawati's research (2021) which explains the development of learning videos on material on the human digestive system can increase students' understanding in learning. The development of this video is very relevant to current conditions, especially regarding learning outcomes.

Learning media that are interesting to students are learning media that contain complete, concise, concise and clear material. This can be seen from the characteristics of abstract, complex, and complicated biology subjects, thus requiring the role of the media so that students can understand the material easily (Safryadi, 2016).

Furthermore, students also want interesting learning media with reading material accompanied by pictures, colored in the background, using language that is easy to understand and the material delivered is complete and concise so that learning videos can support students' understanding of biology learning, especially in circulation system material and the digestive system in humans. Based on the analysis, the types of fonts that are expected by students are dominant Comic Sans MS and colors that contrast with the background.

Prototype Development Stage

Prototype development stages direct researchers to create valid and practical learning videos. The steps taken are that learning videos must be valid in terms of construct, content, graphics and language. Validation is the accuracy, meaningfulness, and usefulness of something made by researchers (Lufri, 2015). This stage consists of self-evaluation, expert review, one-to-one evaluation, small group evaluation, and field tests.

The first stage in the development of prototype I was carried out by designing a learning video by making a storyboard as a guide for researchers in making learning videos according to the criteria of students, as well as paying attention to the eligibility components of content, language, interactive multimedia graphics. The second stage in the development of prototype I is by using self-evaluation which is self-assessment by checking yourself about the feasibility of the content, language, and graphics of the learning videos. If the learning video is appropriate and correct, after it is deemed sufficient, proceed to the next evaluation stage. The researcher evaluates himself to see whether the components contained in the learning videos developed have been fulfilled or not through filling out the selfevaluation questionnaire. The results of the selfevaluation carried out by the researcher show that in the learning videos that were developed there were several errors, namely, some writing colors that did not contrast with the background so that they looked less clear, and found images on backgrounds that were not related to learning material, so that it was feared that it could disrupt students' concentration. when using learning videos.

The next stage is validation carried out by expert review. The learning videos are validated by three experts or experts. The validity of the developed learning videos was assessed by experts or experts based on 3 aspects, namely the content aspect, the language aspect and the media aspect. The validity of the learning videos carried out by the expert review shows that overall, it is very valid. The results of the expert or expert team validation (Expert review) can be seen in Table 1.

Table 1. Results of the expert or expert team validation

Assessment	Validity Value	Criteria
Component	(%)	
Construct Aspect	89.58	Very Valid
Content Aspect	91.67	Very Valid
Graphic Aspects	86.11	Very Valid
Language Aspect	87.50	Very Valid
Total	354.86	Very Valid
Average	88.71	

The validity of the learning videos from the construct aspect has very valid criteria by the validator with a value of 89.58%. Based on the criteria on the

construct aspect it is known that the learning videos developed are clearly structured, systematic, and already have compatibility between the material developed with basic competencies and GPA that has been created and support the learning process. The assessment of the content aspect has very valid criteria by the validator with a value of 91.67%. Based on the criteria on the content aspect, it means that the material explained in the learning videos is in accordance with the needs of students and the demands that exist in the curriculum. The graphical feasibility component has a value of 86.11% categorized into very valid criteria. The graphical aspects of this learning video can be seen from the design of the learning videos with attractive colors according to the character of the students, the images, animations, and videos that are displayed are in accordance with the contents of the learning videos. The size and type of writing used can be read clearly.

The next aspect is the language aspect which has very valid criteria by the validator with a value of 88.71%. The linguistic component relates to the use of sentences used in learning videos that are good, clear and do not cause confusion, so that learning material is easily understood by students (Dharmayanti, 2019). Based on the criteria for the language aspect, it can be stated that the learning videos developed have applied the rules of writing good and correct language and are in accordance with enhanced spelling. The language used is also communicative so that children feel not too stiff and according to their needs.

Overall, the learning videos developed have very valid criteria, so they can be tested for the next test stage. Data generated from a product that is valid according to Arikunto (2009), can be said that the product has provided an overview of development objectives correctly and in accordance with reality and actual conditions.

The final validation assessment is the one-to-one evaluation stage where 3 students who have different abilities fill out a questionnaire. Namely students with low, medium and high abilities. The results of the oneto-one evaluation obtained information that the learning videos on the material on the circulation system and digestive system in humans that were developed received a positive response from students. Students consider that learning videos are interesting, use language that is easy to understand, and learning videos contain clear visualization so that students' thoughts about learning material become more concrete. The advice given by the students is that it is better to choose a plain video background or if you are given a picture, it is enough to have a picture with a small size, there are also pictures that are not clear and the information is not

too small so that it is difficult for students to observe the picture.

The next stage that is carried out after the one-toone evaluation is the practicality stage of the learning video. The practicality test was carried out using two techniques, namely field trials and teacher assessment (Setiawan, 2017). The first practicality assessment is carried out in small groups or small groups. Learners are selected based on low, medium and high ability levels. Each level of ability consists of two students. The next assessment is an assessment in a large group or field test consisting of 30 students and an assessment by one biology teacher who teaches in the experimental class. The practicality of learning videos is seen from the aspects of ease of use, efficiency of learning time, and the benefits provided by these learning videos.

Small group evaluation (small group evaluation) which has very practical criteria with a value of 89.36%. The results of the small group evaluation analysis can be seen in Table 2.

Table 2. Results of small group evaluation analysis

Aspect	Value (%)	Criteria	
Ease of Use	88.54	Very Practical	
Time efficiency	89.58	Very Practical	
Benefit	89.98	Very Practical	
Amount	268.1	Vous Puo stisol	
Average	89.36	Very Practical	

The results of the practicality of the large group (field test) also have very practical criteria with a value of 89.75%. Furthermore, the results of the teacher's assessment have very practical criteria with a value of 93.3%.

Based on the analysis of the learning videos that have been developed in terms of ease of use the developed learning videos are classified as very practical and provide convenience in terms of use. Good at presenting material using language that is easy to understand and clear font size. This learning video is also supported by a variety of images and colors. The displayed image can help students focus on learning material so that it affects the level of understanding and attractiveness of students to learning material. Learning devices are said to be easy to use if they are appropriate in using language with simple sentences, consistent and easily understood by students (Faisal, 2015). Learning media also has a color that contrasts with the background, and images that match the characteristics of students.

In terms of usage efficiency, learning videos have very practical criteria. This shows the use of learning videos according to the time available. Yuanta (2019) states that learning videos can be repeated or stopped during playback, so that teachers can invite students to

communicate about the material and messages from the videos they watch. Teachers can also invite students to ask questions and answers about the learning videos watched by students, so that communication is not only one-way.

The usefulness aspect of learning videos has very practical criteria. This learning video can make it easier for students to understand learning material, make learning more interesting and fun and not monotonous. The images provided in this learning video can help students understand concepts so that they are more concrete.

Assessment Stage

The assessment stage aims to determine the quality of the developed learning videos. At the stage of the assessment carried out is an assessment of the learning videos which include practicality tests by students and practicality tests by teachers. At this stage the activity carried out is an assessment of the practicality of learning videos with a larger sample, in this case one class is used with a total of 30 students. The results of the practicality test analysis in the field test can be seen in Table 3.

Table 3. Results of field test analysis

Aspect	Value (%)	Criteria	
Ease of Use	89.68	Very Practical	
Time efficiency	91.25	Very Practical	
Benefit	88.33	Very Practical	
Amount	269.26	Vors Prostical	
Average	89.75	Very Practical	

Based on the table above it is known that the average practicality value by students of the learning videos filled in by 30 experimental class students is 89.75% included in the very practical category to use.

Apart from being assessed by students, practicality can also be assessed by the teacher. The teacher assesses practicality by looking at the use of learning videos in class. The teacher who assessed was the biology teacher who taught in the experimental class for the 2022/2023 Academic Year. The teacher assesses the practicality of the learning videos using a questionnaire. The results of the questionnaire filled out by the teacher are as follows in Table 4.

Table 4. Results of the Practicality Test of Learning Videos by Teachers

Aspect	Value (%)	Criteria	
Ease of Use	90.62	Very Practical	
Time efficiency	100	Very Practical	
Benefit	89.28	Very Practical	
Amount	279.9	Varra Dua ati aa 1	
Average	93.3	Very Practical	

The practicality results are in Table 4. Judging from the overall average value of the practicality of video learning by the teacher, it is 93.3 in the very practical category. Overall, the learning videos developed have very practical criteria, meaning that these learning videos can be easily used by students so that in the learning process students have no difficulties so that learning objectives can be achieved as expected. In line with Hafiz (2013), the practicality of a media is determined from the results of the user's or user's assessment. The level of practicality can be seen from the explanation whether the teacher or other parties think that the learning material is easy and can be used by students and teachers.

The effectiveness of the developed learning videos can be seen from the learning outcomes of students seen from three domains, namely the cognitive, affective, and psychomotor domains. The results of the effectiveness assessment show that the developed learning videos are effectively used as learning media in the learning process. Cognitive learning outcomes of students were assessed through daily repetition of material on the human digestive system. The instrument used was in the form of multiple-choice questions of 25 items.

Based on the prerequisite test, namely the normality test, all values in the experimental and control classes were normally distributed and all data was homogeneous. This means that the student's daily test scores have met the prerequisites and are continued with hypothesis testing. Increasing student learning outcomes with the results of the average daily test scores of students in the two sample classes.

Based on the results of hypothesis testing, the results obtained were that there were significant differences in learning outcomes between students in the experimental class and the control class. The learning outcomes in the experimental and control classes obtained p-value = $0.026 < \alpha$ ($\alpha = 0.05$). The results for learning outcomes in the experimental and control classes obtained the same value, namely p-value = $0.026 < \alpha$ ($\alpha = 0.05$). The hypothesis is accepted if the significant value is < 0.05 on the independent T-test (Setiawan, 2017). This shows that the application of learning videos, based on research results, can improve student learning outcomes.

Competency data of students in the realm of knowledge was obtained from written test results, namely daily tests with 25 multiple choice questions that were tested on 30 students in each class, namely the experimental class and control class on material KD 3.6 circulation system and KD 3.7 digestive system. Based on the results of the hypothesis test, namely the t test, it is known that the development of learning videos has an effect on the competence of the knowledge domain of

students. Students who take part in learning activities in the control class also get the opportunity to improve learning outcomes, but the difference in treatment is that the control class continues to use the usual learning media provided by the teacher. The learning strategy given by the teacher is the same in both classes, namely by applying the Discovery learning model and the discussion and question and answer learning method.

Data on learning outcomes were obtained through a learning achievement test conducted at the last meeting. The test is given in the form of multiple-choice questions. Data on the assessment of student learning outcomes is presented in the Table 5. Based on the table 5, it can be seen that the experimental class is a class that is given treatment in the form of learning using learning videos on the material of the digestive system in humans.

Table 5. Assessment of Student Learning Outcomes

Competency	Class	N	Average
Cognitive Realm	Experiment	30	85.46
	Control	30	83
Affective Realm	Experiment	30	87.08
	Control	30	84.58
Psychomotor	Experiment	30	85.41
Domain	Control	30	82.91

The competency data of students in the affective domain was obtained based on observations of the competence in the attitude domain, namely indicators of discipline, responsibility, curiosity and cooperation showing differences between students in the experimental class who were treated with media in the form of learning videos and the control class with ordinary media. given by the teacher. Based on the Mann Whitney hypothesis test, it is known that the development of learning videos has an effect on the attitude competence of students in class XI IPA MAN 1 West Pasaman.

The affective domain is intended as an aspect that includes the behavior of students in the learning process which consists of discipline, responsibility, curiosity and cooperation. Aspects of student discipline can be seen from the time discipline of students when entering class, and the timeliness in collecting assignments. Aspects of student responsibility can be seen in terms of the implementation of learning that students participate in, the child's responsibility in doing assignments, both group assignments and individual assignments, as well as children's participation in the learning process. The next aspect that needs to be considered by students during the learning process is curiosity. Curiosity is needed by students to encourage students to be interested in learning and extracting information in teaching and learning activities (Saridevita, 2020).

Based on observations by observers where each observer is responsible for 2 groups and observing how students learn in their respective groups, a score of 87.08 is obtained with very good criteria for the experimental class and 84.58 for the control class with the same criteria, namely Very good. This means that students have been able to apply a disciplined attitude when entering class, are punctual in submitting assignments, are responsible for learning and doing assignments, both individual and group assignments, have high curiosity and dig deeper into learning material as well as a good cooperative attitude. and evidenced in cohesiveness in the group during the learning process.

According to Sudjana (2009) the measurement of the psychomotor domain will usually be combined with the assessment of the cognitive domain. The portfolio assessment component includes student work results. The instrument that can be used to measure the psychomotor domain of students is by using observation sheets. This observation sheet contains aspects of the completeness and appropriateness of the time for submitting group reports.

Portfolio can be interpreted as a collection of learning outcomes or student work that shows effort, development, student learning achievement (Mahardika, 2018). As a whole, it can be seen that the development of media in the form of learning videos can be used as a solution to the problems faced by students and teachers. Portfolio assessment which can observe the development of students' understanding in learning comes from notes at each meeting and is collected at the end of the meeting. It is proven that students get very good criteria in this psychomotor assessment.

Conclusion

Based on the development research that has been done, it is concluded that the sparkol videoscribe-based learning videos that have been developed have validity in the very valid category based on the validator's assessment, have practicality in the very practical category based on teacher and student assessments, and have a positive influence on the effectiveness value of the cognitive domain, affective and psychomotor students of MAN 1 Pasaman Barat.

Acknowledgments

During the research the author received a lot of support, guidance, direction and input from various parties, for that on this occasion the author would like to thank the lecturers of the Postgraduate Program in Biology Education, Padang State University. Furthermore, to the principal and teachers at MAN 1 Pasaman Barat who have provided the opportunity and permission to carry out this research.

Author Contributions

Various parties contributed to the writing of this article, namely from the fields of conceptualization, methodology, data curation, and supervision by Abdul Razak, Monhartini, Irdawati, Dwi Hilda Putri, Elsa Yuniarti and Abdurrrahman. While the software aspect involves contributions from Abdul Razak, Darmansyah, and Monhartini; validation aspects by Dwi Hilda Putri, Irdawati, Elsa Yuniarti, Abdurrahman, and Darmansyah; investigas aspect by Monhatini, resource aspect: Teachers and students of MAN 1 Pasaman Barat.

Funding

This research did not receive external funding or was selffunded by the authors.

Conflict of Interest

There is no conflict of interest in writing this article. The author ensures that there are no circumstances or personal interests that affect the reporting of research results.

References

Arikunto, S. (2009). *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.

Ayu, D. M., Lufri & Ramadhan S. (2018). Pengembangan Modul Biologi yang Dilengkapi dengan LKS Berorientasi Problem Based Learning (PBL) pada Materi Pokok Pencemaran Lingkungan Untuk Kelas X. *Bioeducation Journal*, 2(1), 76-86. Retrieved from

https://core.ac.uk/download/pdf/227979278.pdf
Dharmayanti, P., Zulyusri, Z., Farma, S. A., & Ristiono,
R. (2019). The Development of Student Worksheet
Based on Contextual Approach about Protist for
Senior High School Grade X. ATRIUM
PENDIDIKAN BIOLOGI, 4(1), 189-199. Retrieved
from

https://ejournal.unp.ac.id/students/index.php/pbio/article/viewFile/5500/2944

Djamaluddin, Ahdar., Wardana. (2019). Belajar dan Pembelajaran 4 Pilar Peningkatan Kompetensi Pedagogis. Sulawesi Selatan: CV Kaaffah Learning Center.

Faisal. (2015). Pengembangan Perangkat Pembelajaran dalam Gamitan Efektivitas Membaca Berorientasi Strategi DRTA di kelas VI Sekolah Dasar. *Prosiding Seminar Nasional Jurusan PGSD FIP UNP*, 1(1). Retrieved from https://ejournal.unp.ac.id/index.php/prosidingpgsd/article/view/4852

Fatimah, H., & Bramastia, B. (2021). Literatur Review Pengembangan Media Pembelajaran Sains. *INKUIRI: Jurnal Pendidikan IPA*, 10(2), 124-130. https://dx.doi.org/10.20961/inkuiri.v10i2.57255

Fransisca, F., Sudirman, S., & Parera, L. A. (2021). Pengembangan Video Pembelajaran Berbasis

- Kinemaster pada Materi Larutan Elektrolit dan Non Elektrolit Terintegrasi Etnosains untuk Kelas X SMA/MA, *Jurnal \betaeta Kimia*, 1(2), 89-97. Retrieved from
- https://ejurnal.undana.ac.id/index.php/jbk/article/view/5585/3072
- Hafiz, M. (2013). Research and Development: Penelitian di Bidang Pendidikan yang Inovatif, Produktif dan Bermakna. *Ta'dib*, 16(1), 28-43. http://dx.doi.org/10.31958/jt.v16i1.235
- Imawati, Z.A. Imam S., & Utiya A. (2022).
 Pengembangan Video Pembelajaran pada Materi
 Sistem Organ Pencernaan Manusia untuk
 Meningkatkan Literasi Sains Siswa Sekolah Dasar.

 Jurnal Basicedu, 6(5), 8923-8935.
 https://doi.org/10.31004/basicedu.v6i5.3974
- Iska, S. (2020). E-commerce dalam Perspektif Fikih Ekonomi. *JURIS*, 9(2). Retrieved from: https://core.ac.uk/download/pdf/236391575.pdf
- Istyadji, Maya, Ratna Y., Dina A. & Fahmi. (2022). Validity and Practicality of Articulate Storyline Learning Media on Environmental Pollution Materials for Junior High School Students. *Jurnal Penelitian Pendidikan IPA*, 8(6), 2599-2604. https://doi.org/10.29303/jppipa.v8i6.1639
- Joyce, B., Weil, M., & Calhoun, E. (2009). *Models of Teaching (Model-model Pengajaran Edisi Kedelapan)*. Yogyakarta: Pustaka Belajar.
- Lufri. (2015). Metodologi Penelitian. Padang: UNP.
- Mahadewi, L. P. Putrini, I Dw. Kade Tastra, & I Km. Sudarma. (2019). *Media Multimedia Pembelajaran Berbasis Kearifan Lokal*. Singaraja: Universitas Pendidikan Ganesha.
- Mahardika, B. (2018). Penerapan Metode Penilaian Berbasis Portofolio dalam Meningkatkan Pembelajaran Bahasa Indonesia. *Elementary*, 4(1), 33-46. Retrieved from https://e-journal.metrouniv.ac.id/index.php/elementary/a rticle/view/1030/929
- Maryanti, Sri & Dede Trie Kurniawan. (2018).

 Pengembangan Media Pembelajaran Video
 Animasi Stop Motion untuk Pembelajaran Biologi
 dengan Aplikasi Picpac. *Jurnal Pendidikan Biologi*,
 8(1), 26-33.

 https://doi.org/10.15575/bioeduin.v8i1.2922
- Pamungkas, S. A., Ihsanudin, Novaliyusi, & Yandari, I. A. V. (2018). Video Pembelajaran Berbasis Sparkol Videoscribe: Inovasi pada Perkuliahan Sejarah Matematika. *Jurnal Pendidikan Matematika*, 2(2), 127–135. http://dx.doi.org/10.31000/prima.v2i2.705
- Plomp, T. (2013). *Educational Design Research*. USA: Netherlands institute for curriculum development.
- Safryadi. (2016). Pembelajaran Biologi Pokok Bahasan Sistem Pernapasan Pada Manusia Melalui Media Gambar di MTSN Jongar Kabupaten Aceh

- Tenggara. *BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan*, 4(2), 143-148. http://dx.doi.org/10.22373/biotik.v4i2.1082
- Saridevita, A., Destiyantari, S., Asshiddiq, A., & Suherdi, D. A. (2020). Mengidentifikasi Rasa Ingin Tahu Siswa Terhadap Pelajaran IPS. *Jurnal Pendidikan dan Ilmu Sosial*, 2(1), 75-82. Retrieved from https://ejournal.stitpn.ac.id/index.php/nusantar a
- Setiawan H, Cholis S. & Sa'dun Akbar. (2017).

 Pengembangan Instrumen Asesmen Autentik
 Kompetensi pada Ranah Keterampilan untuk
 Pembelajaran Tematik di Sekolah Dasar. *Jurnal Pendidikan*, 2(7). Retrieved from:
 http://journal.um.ac.id/index.php/jptpp/article/
 view/9602
- Sholichin, M., Razak, A., Lufri, L., & Irdawati, I. (2022).

 Validitas dan Praktikalitas E-Modul Berbasis
 Mobile Learning Berbantuan 3D Page Flip
 Professional Pada Materi Ekologi dan Perubahan
 Lingkungan di Kelas X SMA. *Jurnal Penelitian*Pendidikan IPA, 8(6), 3034-3043.
 https://doi.org/10.29303/jppipa.v8i6.2467
- Sudjana, N. (2010). *Dasar-dasar Proses Belajar*. Bandung: Sinar Baru.
- Susanto, L. H., Rostikawati, R. T., Novira, R., Sa'diyah, R., Istikomah, I., & Ichsan, I. Z. (2022). Development of Biology Learning Media Based on Android to Improve Students Understanding. *Jurnal Penelitian Pendidikan IPA*, 8(2), 541–547. https://doi.org/10.29303/jppipa.v8i2.1334
- Syafti, N. K. (2021). Development Of Interactive Multimedia Learning Of Human Digestive Systems And Additive Materials And Addictive Based Scientific Approach For Class VIII SMPN 1 Kec. Mungka. International Journal of Progressive Sciences and Technologies (IJPSAT), 24(2), 144-153. Retrieved from
 - https://ijpsat.org/index.php/ijpsat/article/view/2593
- Wahyu, Y., Edu, A. L., & Nardi, M.. (2020). Problematika Pemanfaatan Media Pembelajaran IPA di Sekolah Dasar, *Jurnal Penelitian Pendidikan IPA*, 6(1), 107-112. https://doi.org/10.29303/jppipa.v6i1.344
- Wardana, D. K., & Adlini, M. N. (2022). Development of Animation-Based Learning Videos for Respiratory System Materials. *Jurnal Penelitian Pendidikan IPA*, 8(3), 1301-1307. https://doi.org/10.29303/jppipa.v8i3.1641
- Wisada, P. D., & Sudarma, I. K. (2019). Pengembangan Media Video Pembelajaran Berorientasi Pendidikan Karakter. *Journal of Education Technology*, 3(3), 140-146. Retrieved from:

https://ejournal.undiksha.ac.id/index.php/JET/article/view/21735/13448

Yuanta, F. (2019). Pengembangan Media Video Pembelajaran Ilmu Pengetahuan Sosial pada Siswa Sekolah Dasar. *Trapsila: Jurnal Pendidikan Dasar,* 1(2), 91-100. http://dx.doi.org/10.30742/tpd.v1i02.816