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Development of infographic video media on biodiversity materials subchapter biodiversity for the ten-grade students

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ABSTRACT

The impact of the COVID-19 pandemic is very much felt in learning activities in schools so there is a need for appropriate learning media to make it easier for students to capture learning material. This study aims to determine the development of infographic video media in ten-grade IPA SMA Muhammadiyah I Pontianak. The research instrument used was a material expert validation questionnaire and a student response questionnaire. This type of research is Research and Development (R&D) model four D (Define, Design, Development, Dissemination). The results of the analysis show that the infographic video media developed is valid based on the validation results of media, material, and language experts. The percentage of validity of media, material, and language experts are 95.83%, 90.87%, and 97.50%, respectively, with very valid criteria, that can be used but need minor revisions. The percentage of the results of the questionnaire responses to the small-scale test and the large-scale test were 80.65% and 83.59%, respectively, with very strong criteria. This shows a positive response from students. Thus, the infographic video media that has been developed is appropriate to be used as a teaching medium for the material on biodiversity in ten-grade IPA SMA Muahmmadiyah I Pontianak.

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INTRODUCTION

Education is a conscious and planned effort to build a learning process so that students can actively develop aspects that can help them in society, nation, and state (KemDikBud, 2017). However, due to the impact of the COVID-19 pandemic, education was unable to run properly, so

UNESCO proposed a large-scale implementation of distance education with the support of applications and open learning platforms for schools and teachers to reach students. In addition, UNESCO also recommends using cheap mobile technology to reduce learning distractions. (UNESCO, 2020). These applications and platforms can be used either alone or in combination with others such as various kinds of learning media.

Based on the results of interviews with biology teachers at SMA Muhammadiyah 1 Pontianak, on October 4, 2020. It is known that teachers use a digital approach to carry out current learning. This is done with the consideration that students have been able to operate smartphones. However, when students interact with apps like Google Classroom, they seem awkward and unprepared. In addition, the expertise in using smartphones students is not followed by sufficient digital literacy regarding applications related to online learning. Meanwhile, based on the results of interviews with students on September 23, 2020, it is known that students have difficulty getting used to learning through distance applications, there is not enough internet quota, unstable signal, use of Latin names, and difficulty remembering terms. -important terms. According to Dinata (2021), the innovation of learning is very dependent on the creativity of educators. Some of the skills needed are the ability to use a computer/smartphone, use the internet, creativity in running online learning, collaboration skills, and the ability to select and utilize information. The capabilities that have been mentioned are called digital literacy skills. Thus, digital literacy skills play a very strategic role in determining the success of online learning.

The awkwardness of using this application can be mitigated by combining the use of online applications with other applications or other media that are easier for students to understand. Media in the perspective of education is a very strategic instrument in determining the success of the teaching and learning process (Arsyad, 2011). Video is one example of learning media. This is an alternative because video as a medium is very effective in learning both for mass, individual, and group learning (Daryanto, 2012).

Biodiversity is an important component of living systems. Biodiversity consists of flora (plants) and fauna (animals) scattered throughout the archipelago. The spread of flora and fauna has a different level of diversity from one area to another (Fauziah, 2019). This diversity will be easier for the audience to digest through illustrations that represent existing data and images. The presentation of data and images in the form of infographics is expected to make it easier for students to understand this diversity. Infographics are currently one of the trends in delivering information that are often encountered in everyday life (Dewi, 2021). Infographic display is able to attract attention and simplify complex information to be easier to understand (Arigia, 2017). An infographic is an image that can reflect information so that it can be more easily accepted by the audience, both individually and in groups (Smiciklas, 2012).

Based on research conducted by Susetyo (2015), infographics affect students' memory and reasoning abilities. Meanwhile, according to Sari (2018), the infographic media that was tested was interesting to see both in the small group test and the large group test. The results of this study are by that conveyed by Smiciklas (2012), that the reason it is easier for us to process images from words is because of how the brain manages information. The brain processes the image data all at once but processes the words one by one. So, that means, by using infographics to communicate, it makes it easier for the audience to connect to the information they want to share.

According to research conducted by Dewi (2021), infographic media can be easily integrated into social media and has a more attractive appearance than the material presented in printed books. According to research conducted by Mansur (2020), infographic media can be one way to increase students' learning motivation. According to Putra (2021) infographic media makes it easier for students to add a better understanding during the learning process. based on previous research, this infographic media has innovation space for online learning.

This infographic video media is presented in the form of a video uploaded to Google Drive so that it can be accessed for learning in the classroom and outside the classroom and can also be paired with online learning applications easily. This media is also equipped with a QR code to make it easier to access quizzes in videos. This video media can also easily display illustrations of the variations that make up the diversity of living things so that students can see more visualizations of these examples, both from abroad and those with local potential in the surrounding area. Developing infographic video media at SMA Muhammadiyah 1 Pontianak is the aim of this research. In addition, this research is expected to make it easier for students to understand the concept of biodiversity and provide alternative media options for teachers to teach.

RESEARCH METHODS

Research Design

The form of research conducted in this research is research & development. research and development methods are research used to produce certain products and test the effectiveness of these products (Sugiyono, 2014). The development model used in this study is the Four D Model. According to Mulyatiningsih, (2011) The four D model stands for Define, Design, Development and Dissemination developed by Thiagrajan (1974).

Population and Samples

The population in this study were all students of ten-grade IPA SMA Muhammadiyah 1 Pontianak with a total of 112. The sample used for the study consisted of 2 samples, namely samples for small-scale and large-scale tests. The small-scale test sample consists of 20% of the number of students. While the large-scale test sample consists of 50-60% of the number of students (Prayitno, 2017).

Instruments

The following tools were utilized to collect data: 1) teacher interview sheet; 2) student interview sheets; 3) media expert validation sheet; 4) material expert validation sheet; 5) language expert validation sheet; 6) questionnaire for small-scale test student responses; 7) questionnaire for large-scale test student responses. Small-scale and large-scale response questionnaires use a Likert scale with 4 criteria, namely, Strongly Agree (ST), Agree (S), Disagree (TS), and Strongly Disagree (STS) (Riduwan, 2010). The student response questionnaire sheet consists of negative statements and positive statements. Meanwhile, the media, material, and language validation sheet uses a Likert scale with 4 criteria, namely, Appropriate (4), Fairly appropriate (3), Not appropriate (2), and Inappropriate (1) (Arikunto, 2007).

Procedures

Research and development research was conducted through the 4D model developed by Thiagrajan (1974). The original procedure has four stages. However, this study was only carried out until the third stage.

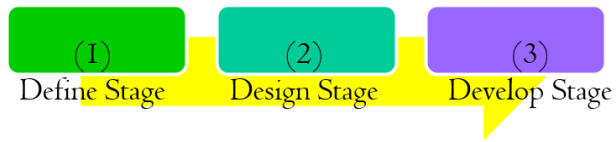

Figure 1. The Development Model by Thiagrajan

The activity in the first stage is Define. This stage is carried out to determine and define the development requirements. In other models, this stage is often called a needs analysis. The next

stage is Design. In this stage, the researcher's design already contains the initial product/prototype or product design. Before the product design proceeds to the next stage, the product design needs to be validated. The third stage is Develop. In the development stage there are two activities, namely Expert appraisal and Development testing. Expert appraisal is a technique to validate or assess the feasibility of a product design. Development testing is a product design trial activity on the actual target subject.

Data Analysis

In this study, what was analyzed was the level of validity and the percentage of student responses. To measure the level of product development validity, analysis is used (Akbar, 2013).

$$P = \frac{\sum_{i=1}^{4} x_i}{\sum_{j=1}^{4} x_j} \times 100\%$$

The category of the validity level assessment can be seen in Table 1. Meanwhile, to measure the percentage of student responses, analysis is used (Riduwan, 2010).

Table 1. Category validity

Value Scale (%)	Categories
85.01 – 100.00	Very valid, usable but need minor revision
70.01 – 85.00	Valid, usable but need minor revision
50.01 – 70.00	Less valid, usable but needs major revision
01.00 – 50.00	Invalid, cannot be used

$$\%\ NRS = \frac{\sum NRS}{NRS\ Maksimum} \times 100\%$$

After calculating the percentage value of student responses for each statement item, the next step is to determine the criteria for the percentage of student response scores per statement item. The percentage category of student response scores can be seen in Table 2.

Table 2. Criteria for the percentage of student response values

Percentage (%)	Student Response Score Criteria
80% ≤ NRS ≤ 100%	Very strong
60% ≤ NRS < 80%	Strong
40% ≤ NRS < 60%	Enough
20% ≤ NRS < 40%	Weak
0% ≤ NRS < 20%	Very weak

Positive response if the student's response is strong or very strong. Next, make categories for all statement items, namely 1) If 50% of all statement items are included in the very strong and strong category then the student's response is said to be positive; 2) If <50% of all statement items are included in the very weak and weak category, the student's response is said to be negative.

RESULT

This study aims to determine the development of infographic video media at SMA Muhammadiyah 1 Pontianak. Infographic video media on biodiversity sub-chapter on biodiversity

was validated by three media expert validators, three material expert validators, and three linguist validators. The recapitulation data on the validation of media, material, and language experts are presented in Tables 3, 4, and 5.

Table 3. Media expert validation recapitulation

No.	Indicator	Expert Assessment			%	C
		I	2	3		
1.	Systematic consistency of presentation in teaching and learning activities	4	4	4	100 %	Very valid
2.	Concept suitability	4	4	4	100 %	Very valid
3.	Compatibility of illustration with material	3	4	4	91.67 %	Very valid
4.	Displaying illustrations that are relevant to the real-life of students	3	4	4	91.67 %	Very valid
5.	The appearance of the layout elements of notation, symbols, and images is not excessive	4	4	4	100 %	Very valid
6.	The content illustration depicts media material	3	4	4	91.67 %	Very valid
7.	Provide space between text and illustrations to improve text readability	4	4	4	100 %	Very valid
8.	Conformity of the concept with the previous section	4	4	4	100 %	Very valid
9.	Consistency in using the layout of titles and subtitles	4	4	4	100 %	Very valid
10.	The suitability of the size with the material/content of teaching materials	4	4	4	100 %	Very valid
11.	The appearance of the layout elements on the cover has unity and consistency	3	4	4	91.67 %	Very valid
12.	Clear font appearance	4	4	4	100 %	Very valid
13.	Layout consistency	3	4	4	91.67 %	Very valid
14.	Show the center of the view	3	4	4	91.67 %	Very valid
15.	Harmonious layout elements	3	4	4	91.67 %	Very valid
16.	Element colors clarify the function	4	4	4	100 %	Very valid
17.	The letters used are attractive and easy to read	3	4	4	91.67 %	Very valid
18.	Placement of text with appropriate illustrations	4	4	4	100 %	Very valid
19.	Placement of titles, subtitles, illustrations appropriate	3	4	4	91.67 %	Very valid
20.	The use of letter variations (bold, italic, underline) is not too excessive, the title is appropriate, the illustrations are appropriate	3	4	4	91.67 %	Very valid
21.	The content illustration can reveal the meaning of the object	3	4	4	91.67 %	Very valid
22.	Don't use too many typeface combinations	4	4	4	100 %	Very valid

Table 4. Material expert validation recapitulation

No.	Indicator	Expert Assessment			%	C
		I	2	3		
1.	Completeness of materials for biodiversity	4	4	4	100%	Very valid
2.	The breadth of concepts and definitions	3	4	3	83.33%	Valid
3.	Extensive examples and cases	4	4	4	100%	Very valid
4.	Compatibility of pictures and illustrations	4	4	4	100 %	Very valid
5.	Reference accuracy Library	4	4	2	83.33%	Valid
6.	The suitability of the material with science	4	4	4	100%	Very valid
7.	The suitability of the material with examples in everyday life	4	3	4	91.67%	Very valid
8.	Library Update	3	3	3	75.00%	Valid
9.	Creating the ability to ask questions	4	4	4	100%	Very valid
10.	The accuracy of the definition of biodiversity	4	4	3	91.67%	Very valid
11.	Accuracy of the definition of biodiversity level	4	4	3	91.67%	Very valid
12.	Biodiversity sample and illustration accuracy	3	4	4	91.67%	Very valid
13.	Accuracy of terms	4	4	4	100%	Very valid
14.	Accuracy, images, symbols, and notations	3	4	4	91.67%	Very valid
15.	The relationship between the material presented and the students' real-world situations	4	4	4	100%	Very valid
16.	The ability to encourage students to make connections between the knowledge possessed by students and its application in students' daily lives	3	3	3	75.00%	Valid
17.	The material stimulates students to find their knowledge	4	3	3	83.33%	Valid
18.	Some tests can be used as a basis for assessing learning outcomes	3	4	4	91.67%	Very valid
19.	Compatibility of illustration with material	4	4	4	100%	Very valid
20.	Links between learning activities/sub-learning activities	3	4	3	83.33%	Valid
21.	Ability to stimulate students to discuss with their friends	4	3	3	83.33%	Valid

Table 5. Language expert validation recapitulation

No.	Indicator	Expert Assessment			%	C
		I	2	3		
1.	Correct sentence structure	4	4	4	100%	Very valid
2.	Sentence effectiveness	4	4	4	100%	Very valid
3.	Term standard	4	4	4	100%	Very valid
4.	Understanding of messages or information	3	4	4	91.67%	Very valid
5.	Ability to motivate students	3	4	4	91.67%	Very valid
6.	Conformity with the intellectual development of students	4	4	4	100%	Very valid
7.	Grammatical accuracy	4	4	4	100%	Very valid
8.	Spelling accuracy	4	3	4	91.67%	Very valid
9.	Consistency of use of terms	4	4	4	100 %	Very valid
10.	Consistency in using symbols/icons	4	4	4	100 %	Very valid

Note:
% = Choice percentage
C = Category

The results of the validation of media experts, material experts, and language experts showed an average percentage of 95.83% with a very valid category, can be used with a small revision, 90.87% with a very valid category, can be used with a small revision, and 97.50 % with a very valid category can be used with small revisions. The student response questionnaire consists of 16 statements. Student responses were carried out in 2 stages, namely, small-scale tests and large-scale tests. A small-scale test was conducted on 22 students. Meanwhile, a large-scale test was conducted on 54 students. Small-scale test recapitulation data and large-scale tests are presented in Table 6 and Table 7.

Table 6. Small-Scale Test Student Response Recapitulation

No.	Indicator	Score	%	C
1.	Using infographic video learning media makes it easier for me to understand the explanation of biodiversity material	73	82.95%	Very strong
2.	I have difficulty understanding the meaning of the images/illustrations used in this infographic video media	65	73.86%	Strong
3.	Infographic video media makes me more interested in learning about biodiversity	72	81.81%	Very strong
4.	Infographic video media uses an unattractive appearance and color	59	67.05%	Strong
5.	The writing in the infographic video media is clear and easy for me to understand	75	85.23%	Very strong
6.	Infographic video media uses a combination of illustrations and text that makes me confused	67	76.14%	Strong
7.	The pictures/illustrations used in this infographic video are clear and help my understanding of the material	81	92.05%	Very strong
8.	I have difficulty understanding explanations assisted by infographic video media	66	75.00%	Strong
9.	Infographic video-assisted explanations make it easier for me to understand the material	71	80.68%	Very strong
10.	I'm not interested in studying biodiversity material using this infographic media	70	79.55%	Strong
11.	Infographic media uses language that is easy for me to understand	72	81.81%	Very strong
12.	I have difficulty reading text in infographic video media	71	80.68%	Very strong
13.	The display and colors used in the infographic video media look attractive	71	80.68%	Very strong
14.	I have difficulty understanding biodiversity material using this infographic video media	68	77.27%	Strong
15.	The combination of illustrations and text makes it easier for me to understand the material on biodiversity	75	85.23%	Very strong
16.	I don't like the language used in infographics	76	86.36%	Very strong

Table 7. Large-scale test student response recapitulation

No.	Indicator	Score	%	C
1.	Using infographic video learning media makes it easier for me to understand the explanation of biodiversity material	174	80.56%	Very strong
2.	I have difficulty understanding the meaning of the images/illustrations used in this infographic video media	181	83.80%	Very strong
3.	Infographic video media makes me more interested in learning about biodiversity	171	79.17%	Strong
4.	Infographic video media uses an unattractive appearance and color	182	84.26%	Very strong
5.	The writing in the infographic video media is clear and easy for me to understand	180	83.33%	Very strong
6.	Infographic video media uses a combination of illustrations and text that makes me confused	179	82.87%	Very strong
7.	The pictures/ illustrations used in this infographic video are clear and help my understanding of the material	181	83.80%	Very strong
8.	I have difficulty understanding explanations assisted by infographic video media	179	82.87%	Very strong
9.	Infographic video-assisted explanations make it easier for me to understand the material	179	82.87%	Very strong
10.	I'm not interested in studying biodiversity material using this infographic media	185	85.65%	Very strong
11.	Infographic media uses language that is easy for me to understand	180	83.33%	Very strong
12.	I have difficulty reading text in infographic video media	184	85.19%	Very strong
13.	The display and colors used in the infographic video media look attractive	180	83.33%	Very strong
14.	I have difficulty understanding biodiversity material using this infographic video media	181	83.80%	Very strong
15.	The combination of illustrations and text makes it easier for me to understand the material on biodiversity	173	80.09%	Very strong
16.	I don't like the language used in infographics	197	91.20%	Very strong

Note:
% = Choice percentage
C = Category

The results of the small-scale test and large-scale test showed an average percentage of responses of 80.39% in the very strong category and 83.51% in the very strong category. This means that the student's response to the developed infographic video media gave a positive response.

DISCUSSION

Research on the development of infographic video media was carried out based on the four D model. According to Mulyatiningsih, (2011) the four D model stands for Define, Design, Development, and Dissemination which was developed by Thiagrajan (1974). It's just that in this study the researchers only used 3 stages, namely define, design, and development.

The defined stage is the first stage in development research with the four D model. This stage aims to determine and define the development requirements. There are five activities carried out in the define stage, namely, front-end analysis, learner analysis, concept analysis, and specifying instructional objectives.

The first activity is front-end analysis. Based on the results of interviews with teachers in the field of biology studies and class X students of SMA Muhammadiyah 1 Pontianak, it was found that learning was conducted online during the COVID-19 pandemic. The duration is not as long as offline learning. In addition, there is no use of infographic-based media in learning. This requires the right media to help to learn. According to Hadibin (2012), learning media is a tool used to help deliver learning programs that are difficult to explain verbally. Students need graphics in the form of illustrations or symbols that can be suitable examples to accompany the material to make it easier for students to understand the material. These symbols need to be understood correctly so that the message delivery process can be successful. In addition to these general functions, particular, graphics also function to attract attention, clarify the presentation of ideas, and illustrate or decorate facts that will be quickly forgotten or ignored if they are not described (Arif, 2005).

The next activity is carried out through learner analysis (student analysis). This activity is carried out through an analysis of the results of interviews with students. Based on the results of the interviews, it was found that the greatest interest of students was in reading pictures or illustrations that were representative of the material being studied. According to Taufik (2012) Communication by using images makes it easy for someone to understand the information that the maker wants to convey. Images in graphic design have the power to capture the attention of the right audience so that they arouse the imagination, clarify complex problems, give understanding, and represent what we think, see and imagine. One of the ways to communicate with images is through infographics. Therefore, the researcher chose infographic video media. This media is expected to help the online learning process.

The third activity carried out by researchers is concept analysis (concept analysis). At this stage, the researcher analyzes the concepts to be taught, and arranges the steps that will be carried out rationally. In this case, the material starts from the presentation of biodiversity. Explain that biodiversity is a variation or difference in the forms of living things, including differences in plants, animals, microorganisms, genetic material they contain, as well as the forms of the ecosystem in which a living thing lives. Furthermore, it provides an explanation of biodiversity at the level of genes, species, and ecosystems, explaining the differences. Followed by explaining some examples of biodiversity.

The last activity carried out was specifying instructional objectives (formulation of learning objectives). This activity is adjusted to the results of the concept analysis. The learning objectives that have been prepared are: Students are expected to be able to carry out learning activities while at the same time being able to describe the concept of biodiversity (biodiversity); Learners can distinguish between gene, species, and ecosystem levels; and Students can classify examples of hearts. According to Arsyad (2009), the criteria in selecting media are that the first learning media is following the objectives to be achieved, the second is appropriate to support the content of lessons that are facts, concepts, principles, or generalizations, the third is practical, flexible, and durable, the four teachers are skilled at using them. , the fifth is the target grouping, and the sixth is technical quality.

The second stage aims to design learning media which will be developed in order to obtain a media prototype learning. This stage is adjusted to the results of the previous steps. Media is made from cover frames to quiz frames. The frame cover and quiz views are presented in Figure 2 and Figure 3.

Figure 2. Cover Frame

Figure 3. Quiz Frame

In the learning objectives frame, there are 3 learning objectives arranged vertically. The concept of infographics is adapted to the learning objectives to be achieved. According to Pane (2017), success in the learning and learning process can be seen through the level of success in achieving educational goals. With the achievement of learning objectives, it can be said that the teacher has succeeded in teaching. The display of the learning objective frame is presented in Figure 4.

Figure 4. Learning Goal Frame

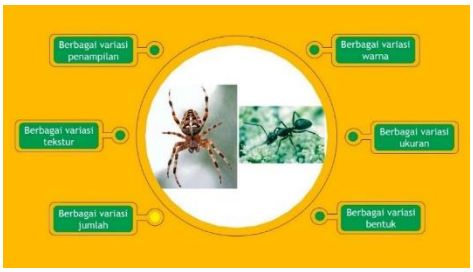

Figure 5. Biodiversity Variation Frame

In the learning material frame, there are several image formations and shapes to help make it easier for students to understand the definition of biodiversity, variations in biodiversity, characteristics of levels of biodiversity, and definitions of levels of biodiversity and examples. Images that match the material are arranged in such a way with several special shapes that support the combination of images and text. Infographics simply try to visualize a complex set of data and information by utilizing visual elements such as pictures, graphs, maps, and diagrams so that messages will be presented in a way that is quick and easy to understand (Sari, 2018). The display of the learning material frames is presented in Figures 5, 6, and 7.

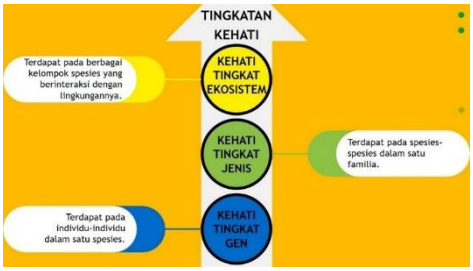

Figure 6. Biodiversity Level Feature Frames

Figure 7. Definition and Example Frame

The development stage is the third stage in the research. The development stage aims to produce valid infographic video media based on the results of revised criticisms and suggestions from experts/validators as well as practical questions based on student responses to learning media

in both small-scale and large-scale tests. Validity is a measure that shows the level of validity of a product that has been developed concerning several aspects of the assessment. The product validation process is carried out by validators in this case lecturers or experts who have experience in assessing a new product. The results of the analysis are used as a guideline for revising/correcting product deficiencies after going through the validation process (Jusniar, 2014). The validators selected were 9 people, consisting of 3 media expert lecturers, 2 lecturers and 1 material expert teacher, and 1 lecturer and 2 language expert teachers. Meanwhile, in student responses, the small-scale test was carried out on 22 students and the large-scale test on 44 students. According to Plomp (2013), a material is said to be good if it meets the quality aspects, including (1) Validity, (2) Practicality, and (3) Effectiveness.

Media is a tool used by teachers with tailored designs to improve the quality of learning (Musfiqon, 2012). The validation of learning media by media experts aims to find out the opinions of media experts regarding the validity of products as learning media and as a basis for improving and improving the quality of learning media.

Based on the data table 3 explains that the percentage of validity obtained through the media expert validation process is 95.83%. These results mean that the learning media developed is included in the valid category, with minor revisions. According to Akbar (2013), if the validation value is between 85.01% to 100%, it is classified as very valid, it can be used but needs minor revisions. According to Churri (2013), learning materials are knowledge, skills, and attitudes that must be mastered by students to meet the specified competency standards. In addition to competency standards, the material must also refer to the curriculum used in this case the COVID-19 emergency curriculum. According to Magdalena (2020), teaching materials can also be interpreted as all forms of materials that are systematically arranged that allow students to learn independently and are designed following the applicable curriculum. learning media as well as a basis for improving and improving the quality of learning media from the material aspect.

Based on the data table 4 explains that the results of the percentage of validity obtained through the material expert validation process are 90.87%. These results mean that the learning media developed is included in the valid category, with minor revisions. According to Akbar (2013), if the validation value is between 85.01% to 100%, it is classified as very valid, it can be used but needs minor revisions.

The language aspect received the most criticism and suggestions from the three aspects. According to Putra, et al (2017), that language is a necessary aspect of understanding information. Information will not arrive if the language used is not understood by the recipient of the information. According to Hamalik (2009), the readiness of students in learning will affect the process of delivering learning information. The validation of learning media by linguists aims to find out the opinion of linguists regarding the validity of the product as a learning medium and as a basis for improving and improving the quality of learning media.

Based on the data table 5 explains that the results of the percentage of validity obtained through the expert validation process are 97.50%. These results mean that the learning media developed is included in the valid category, with minor revisions. According to Akbar (2013), if the validation value is between 85.01% to 100%, it is classified as very valid, it can be used but needs minor revisions.

After validation and getting the results that the learning media is very valid, then the infographic video media meets the criteria to enter the next step, which is to get student response data. According to Maharani & Widhiasih (2016), student responses are social reactions that students do in response to influences or stimuli in themselves from situations of repetition by others. Nugraha (2013) states that students' positive responses can be used as a benchmark that

students feel more comfortable with the learning media used in the learning process. Student response data were obtained through 2 stages, namely small-scale trials and large-scale trials.

The small-scale trial aims to determine whether the infographic video media developed is suitable for use in learning. The trial was conducted on 22 students of class X IPA SMA Muhammadiyah 1 Pontianak. Based on the data table 6 explains that the results of the percentage of student responses through small-scale trials are 80.39%. According to Riduwan (2010) if the student's response value is between 80% to 100%, it is very strong. This means that the student's response to the infographic video media that was developed gave a positive response.

The large-scale trial aims to determine whether the infographic video media developed is suitable for use in learning or not and to what extent the media can be used in learning. Large-scale trials are carried out after small-scale trials are carried out. The trial was conducted on 54 students of class X IPA SMA Muhammadiyah 1 Pontianak. Based on the data table 7 explains that the results of the percentage of student responses through large-scale trials are 83.51%. According to Riduwan (2010), if the student's response value is between 80% to 100%, it is very strong. This means that the student's response to the infographic video media that was developed gave a positive response.

CONCLUSION

Based on the results of the research that has been done, it can be concluded that the validity of the media aspect is 95.83% (very valid, can be used with small revisions), the material aspect is 90.87% (very valid, can be used with small revisions), and language aspects of 97.50% (very valid, can be used with minor revisions). Meanwhile, the student's response to the small-scale test was 80.39% (very strong) and on the large-scale test 83.51% (very strong) gave a positive response. Infographic video media on biodiversity sub-chapter on biodiversity in class X IPA SMA Muhammadiyah 1 Pontianak is appropriate to use. The researcher hopes that the results of this research can be an alternative to both online and offline learning. In addition, this research can be of assistance for further research on infographics on biodiversity material.

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