The feasibility of e-encyclopedia on plants structure and function as teaching material for junior high school students in Pontianak

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ABSTRACT

This study aims to determine the feasibility and responses of students to the E-Encyclopedia on the structure and function of plants material for the 8th grade of junior high school students. This is a Research and Development (R&D) which consists of 7 stages namely potential and problems, data collection, product design, product design validation, design revision, product testing, and product revision. The instrument used was the validation sheet of the E-Encyclopedia of Plant Structure and Function and a student response questionnaire filled out by 15 respondents. The average result of the validation analysis of Aiken's V E-Encyclopedia of Plant Structure and Function obtained 0,90 is in the valid category, while the reliability value of 0,775 is in the sufficient reliability category. The results of the questionnaire response analysis obtained an average of 77,6%, namely in the strong category. From the results obtained, it can be concluded that the e-encyclopedia is appropriate to be used as teaching material on the Structure and Function of Plants for 8th grades of junior high school.

Keywords: e-encyclopedia, feasibility, student response, structure and function of plant.

INTRODUCTION

Education is one of the most important human needs. Education comes from the Greek word "Pedagogy" which means knowledge that can guide students. The Greeks believed that education or "Educare" had a role to guide children and realize the potential they had been born into the world. Education always experiences development and change in every era. The education that is lived will change the way of thinking, self-improvement, forming ideals, adding new insights, and controlling emotions. The magnitude of the impact of change and the quality of education undertaken by each individual depends on the supporting components of the education itself, which includes the implementation of education, curriculum tools, facilities, and infrastructure which includes innovative learning methods and strategies to improve the quality of education (Diansyah et al., 2021)

Along with the development of technology and science, educators are required to be more innovative in developing supporting learning facilities and infrastructure. Bajuri & Baiti (2019) revealed that the term "development" refers to the process of increasing existing educational resources by making them better, more useful, efficient, and efficient than before.

The learning process required the development of the potential of students. For example, the development of teaching material media is defined by (Dick et al., 2011) namely a set of materials or content that is coherent and orderly so that it can be understood more easily by students during learning. Teaching material has functions and benefits in the learning process. Based on the interests of students, teaching materials must be able to present and provide information and knowledge in a systematic and programmed manner, able to develop competencies, evaluate and strengthen so that learning is of higher quality. In contrast to the interests of teachers or educators, teaching materials can deliver material in a systematic and programmed manner following the demands of

the curriculum (Kosasih, 2020).

In the current digital era, educators have an indirect obligation to innovate in the course of a lesson, one of which is interactively so that students can increase learning motivation and the minimum criteria of success scores can be achieved properly. This is in line with the opinion of Yulaika et al., (2020) which reveals that interactive and innovative digital teaching materials can achieve one of the learning objectives, namely increased learning motivation. Teaching materials do not have to be limited to printed media, but can also be developed in digital/electronic form. As expressed by (Kosasih, 2020) that the terms "digital" or "electronic" teaching materials refer to teaching materials that utilize electronic media such as laptops, smartphones, computers, and so on. In this case, the content of the media is not much different from the previous traditional media.

Based on the results of an interview conducted with one of the science teachers at SMP Negeri 18 Pontianak, it was found that the teaching materials in the form of textbooks used by the school could not function optimally due to limited material and supporting images regarding the structure and function of the plants in it. Here is a picture of the textbook documentation used before:

Figure 1. Teaching materials in the form of textbook.

Based on the picture of the results of the documentation above, the learning outcomes of students are considered to be less than optimal due to the teaching materials used in learning. This was proven through the process of interviews, observations, as well as on the learning outcomes of students who concluded that teaching materials were still conventional they needed effective, efficient, and innovative development so that students better understood the substance of a lesson. As said by Ismail et al. (2022), the teaching materials used by teachers are still very limited and not yet varied. One teaching material that has never been used in schools and can be one of the latest innovations in teaching materials and can overcome these problems is the electronic encyclopedia or E-Encyclopedia.

Electronic encyclopedia or E-Encyclopedia is a tool that has a function to increase the ease of the process of learning activities. In simple terms, E-encyclopedia is a reference that provides concise and complete coverage of various topics and disciplines.

Arranged alphabetically, it contains a summary of topics regarding facts or events, ideas, or even biographies (Hernawati, 2018).

The selection of Encyclopedias as teaching materials is because Encyclopedias can contain concrete and illustrative facts (Kundariati et al., 2021). Encyclopedias can provide learning experiences through the presentation of pictures so that learning is more meaningful (Rosnawati & Kaharudin, 2020). According to Nurafifah et al., (2017), there are five parts to the scientific approach to the development of the Encyclopedia namely observing, questioning, associating, and communicating. According to previous research conducted by (Mulyani & Armiati, 2021), it is said that the Encyclopedia can improve students' ability to process information and diverse insights from reading the available information. This was also stated by Mulyani & Armiati (2021) that the Encyclopedia can motivate students in learning.

The e-Encyclopedia developed in this study contains material on the Structure and Function of plants for the eight grade students because there is inefficient learning, especially in science textbooks. This was revealed by the related learning teacher during the interview session. This is also related to the lack of information or material and pictures presented in this material so students are quite difficult to understand and distinguish the structure and function of plant parts.

The E-Encyclopedia was developed as a form of innovation for new digital-based teaching materials. The development of E-Encyclopedia teaching materials was due to previous research (Supriatin, 2018). It is stated that the electronic encyclopedia is equipped with pictures to foster children's cognitive development and insight so that it becomes fun teaching material. As said by (Leksono et al., 2015) which reveals that the electronic encyclopedia has the characteristics of being equipped with illustrations or pictures so that it is more interactive.

E-Encyclopedia is a digital or electronic-based teaching material. The development of the E-Encyclopedia was carried out because electronic teaching materials were considered more effective and efficient in their use. Previous research conducted by (Ampa, 2015) supports this statement because the features presented can improve the learning process by enabling teachers to get feedback from students in the form of direct discussions and question-and-answer sessions. E-Encyclopedia is also easy to access without space and time limitations by students (Retawidyaningrum & Triatmanto, 2022).

Therefore, the researchers are motivated to develop teaching materials in the form of E-Encyclopedias on the structure and function of plants. The E-Encyclopedia was chosen by considering the advantages of the E-Encyclopedia, namely that it can contain concrete factual material, and can attract students' interest and learning motivation so that they can increase their understanding of the materials. The developed E-Encyclopedia will make it easier for students to learn because it has been arranged alphabetically and is equipped with supporting pictures. The material contained in the structure and function of plants for the eight grade students is considered less effective and does not provide a complete explanation of the structure and function of plants. There is data from interviews and observations state that students have an average score of 57.3 in the material on the structure and function of plants at the first meeting; the second meeting is 68.8; and the third meeting is 43.2. The overall average value of students using learning textbooks is 56.4. This means that the average overall score has not yet reached the minimum criteria of successful, which is 75. E-Encyclopedia teaching materials were also stated to have never been used as teaching materials in schools so the researchers decided to develop these teaching materials in the hope of increasing learning motivation so that the learning outcomes obtained could also be maximized and achieve minimum criteria of successful.

The population in this study were the eight grade students of SMP Negeri 18 Pontianak and

the sample used was 15 eight grade students in class VIII A at SMP Negeri 18 Pontianak. The purpose of this development research is to conclude the form of responses from students from an E-Encyclopedia teaching material as teaching material on the material structure and function of plants for the eight grade students to see whether it is feasible or not.

METHOD

This research was conducted at SMP Negeri 18 Pontianak. The subjects of this study were students in class VIII A who were selected using the purposive sampling technique with the Intact Group method (1 class) which was based on the recommendation of the science subject teacher with consideration of the class according to the time of day with the data collection. This research was conducted to develop teaching materials in the form of an E-Encyclopedia of Plant Structure and Function to see the feasibility and response of the eight grade students.

Development research generally has ten stages according to the Borg and Gall development model disclosed by Sugiyono (2015). In this study, development research was carried out only up to seven stages which are described as follows.
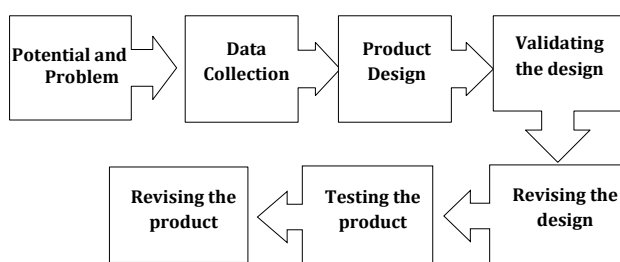

Figure 2. Development stages (Sugiyono, 2015).

Potential and problem

Sugiyono (2015) states that a problem and potential in a study can be identified through interviews and field observations. Potentials and problems were determined by conducting interviews with science teachers at SMP Negeri 18 Pontianak and carrying out field observations. In this interview and observation process, data was obtained in the form of documentation of the use of teaching materials that had been used in the form of books along with student scores obtained from the book.

Data collection

Data collection is carried out at the potential and problem stages which are shown to be actual and up-to-date completed. The data obtained will be used for product planning to overcome the problems obtained in the previous stage (Sugiyono, 2015). This study used direct observation and in-depth interviews with science teachers as the data collection stage. To better understand the problems faced by schools and students, researchers conducted in-depth interviews and direct observations. The data obtained is in the form of documentation of teaching materials that are considered not optimal and the value of learning outcomes when using textbooks. In this study, the use of validation sheets serves as an instrument for collecting the feasibility of data. Meanwhile, the use of a questionnaire serves to see the responses of students.

Product design

At this stage, the product design is made in the form of a picture or chart (Sugiyono, 2015). E-Encyclopedia of Plant Structure and Functions for the eight grade students is made by covering the front cover which contains the title of the E-Encyclopedia, the preface section, the editorial section which contains information on the drafting team, table of contents, instructions for use, KI (Core Competence), KD (Basic competence), Achievement Indicators, learning objectives to be achieved, concept maps of material structure and function of plants, descriptions of material arranged according to encyclopedia provisions, namely alphabetically, word index, bibliography, and back cover. The material contained in the E-Encyclopedia is systematically arranged in alphabetical order. In addition, the parts of the plant shown in the image can be clicked directly to display a more complete explanation of the part clicked. This design is intended to be further validated by the validator.

At this stage, the teaching materials in the form of an E-Encyclopedia of Structure and Function of Plants for the eight grade students are developed following the material that has been determined as a whole and coherently (Qurrotaini et al., 2022) to achieve the expected learning objectives.

Validating the design

In line with Sugiyono (2015) a validator performs design validation as one of the stages in development research. There were 5 validators in this study, two of whom were lecturers in biology education at FKIP Untan, while three of them were science teachers at SMP Negeri 18 Pontianak where 5 of these validators were expert validators for the feasibility of E-Encyclopedia of Plant Structure and Function as teaching material and the feasibility of response questionnaire that will be used at the product testing stage. The validation process carried out in this study used a validation sheet instrument to see the feasibility of the E-Encyclopedia. The aspects validated at this stage are content feasibility, language, presentation, and graphics. In addition, the product testing phase includes a validation stage in which a student response questionnaire is used to evaluate various aspects of language teaching and the extent to which they are covered by the response questionnaire component. Aiken's V formula (Azwar, 2014) can be used to see the validity calculation on the validation sheet which is described as follows.

$$V = \frac{\sum S}{n\,(c-1)}$$

Notes:
V = Validation score
S = r - lo
lo = The lowest validation score (in this case = 1)
c = The highest validation score (in this case = 5)
r   = The score is given by the validator

In addition to validity analysis, reliability analysis was also carried out using the Interclass Correlation Coefficient (ICC) using the Statistical SPSS 25 developed by Pearson (1901) (Koo & Li, 2016) to analyze the interrater reliability. ICC reliability value analysis uses the two-way mixed model with the multiple raters type and the

definition used is Absolute Agreement. Based on the models, types, and definitions that have been determined, the Interrater Reliability formula obtained using ICC is as follows:

$$ICC = \frac{MS_R - MS_E}{MS_R + \dfrac{MS_C - MS_E}{n}}$$

Notes:
MS_R = *Mean Square for Rows*
MS_E = *Mean Square for Error*
MS_C = *Mean Square of Columns*
n   = *Number of Subjects*

After being analyzed using the ICC formula, the next step is determining the Interrater Reliability ICC assessment category with 95% confidence intervals as follows:

ICC < 0,5	= Bad reliability
0,5 ≤ ICC ≤ 0,75	= Enough reliability
0,75 < ICC < 0,9	= Good reliability
ICC > 0,9	= Very good reliability

(Koo & Li, 2016).

Revising the design

After the validation stage was carried out, the next stage is revising the design. After the design was validated by 5 validators, improvements were made to increase the level of effectiveness of the E-Encyclopedia of Plant Structure and Function that had been developed. After the design has been revised or improved and declared valid, it can proceed to the next stage, namely the product testing stage.

Testing the product

The product testing phase is carried out after revisions are made and the design is declared valid or feasible. The product testing was carried out on a small scale, namely with 15 respondents who were the eight grade students of junior high school who were determined through the Purposive Sampling technique using the Intact Group method (1 class) which was based on the recommendation of the science subject teacher with consideration of the class according to the time with the data collection. The testing was carried out by giving and filling out student response questionnaires, then analyzing them. The stages of the response questionnaire analysis

begin with the score calculation. The scoring on the student response questionnaire follows a Likert scale with 4 scoring scales, namely a score of 4 representing very clear/ very appropriate/strongly agree on answers; a score of 3 represents a clear/ appropriate/ agree answer; a score of 2 represents an unclear/ inappropriate/ disagree answer; and a score of 1 represents very unclear/ very inappropriate/ strongly disagree answers.

Then the results of the student response questionnaire are recapitulated and the percentage value is sought. Then it is matched with the criteria according to (Riduwan, 2012) as follows:
Score of 0% - 20,99%   = Very weak
A score of 21% - 40,99% = Weak
A score of 41% - 60,99% = Enough
A score of 61% - 80,99% = Strong
A score of 81% - 100%   = Very strong

RESULTS AND DISCUSSION

The learning process that takes place can be influenced by the teaching materials used by students in the hope of making students more motivated to learn. This requires teachers or educators to be able to create the latest innovations in teaching materials. One form of teaching material innovation that has been carried out is non-printed teaching materials in the form of E-Encyclopedias. According to previous research conducted by (Ismail et al, 2022) in his research on the development of the Motion System E-Encyclopedia stated that the teaching materials used by teachers did not vary and one of the development efforts that were able to overcome this was the development of teaching materials in the form of an E-Encyclopedia on the material structure and function of plants. The research conducted also states that the E-Encyclopedia is practical and allows students to learn more independently. In addition, the use of the E-Encyclopedia as teaching material is also able to increase student understanding so that it is also able to increase the value of learning outcomes.

This E-Encyclopedia of Plant Structure and Function contains material arranged alphabetically. The description of the material is accompanied by pictures supporting the structure and function of plants, namely the structure and function of roots, stems, leaves, flowers, fruits, seeds, tissues, and technology inspired by the structure and functions of plants. The images presented are accompanied by a description of each part, where the description of the section can be clicked and it will automatically display a more complete explanation page about the part clicked earlier. This is intended to make it easier for students to understand the material and increase their interest in learning. This study contains various stages of development which are described as follows.

Potential and problem

Based on interviews and observations that have been conducted with science teachers at SMP Negeri 18 Pontianak, the potential in this research is the benefits and advantages of the E-Encyclopedia of Plant Structure and Functions for the eighth grade students. The problems in this study are the lack of material and images that support learning textbooks in schools, the grades obtained by students that are less than the KKM, and teaching materials that do not yet have digital innovation. During direct observation and interviews with subject teachers, the average score of students on the structure and function of plants in the first meeting was 57.3, 68.8 in the second meeting, and 43.2 in the third meeting. The overall average value of students using learning textbooks is 56.4. This shows that the average score at each meeting or the average overall score has not reached the minimum completeness criteria, which is 75.

Data collection

In this study, data collection was carried out by accumulating validation sheets of the E-Encyclopedia of Plant Structure and Function, validation sheets of student response questionnaire instruments, and student response questionnaires as research instruments following the results of previous observations and interviews.

Product design

Figure 3. The design of E-encyclopedia.

At this stage, the product design is made completely and cohesively in the form of E-Encyclopedia teaching materials on the Structure and Function of Plants for the eight grade students which can be seen in figure 2 as follows (bit.ly/3NvzspR).

Validating the design

Five validators validated the E-Encyclopedia of Plant Structure and Function for the eighth-grade students, two of whom were lecturers in biology education at FKIP Untan, while three of them were science teachers at SMP Negeri 18 Pontianak. Then, it was followed by an analysis of the validation sheet using Aiken's V formula. The minimum value of Table V used is 0.87. This is adjusted to the criteria of Aiken's V (1985) in (Wulandari & Oktaviani, 2021) which states that based on Aiken's V table the minimum number of raters is 2 while the maximum number is 25 with the V Table value for 5 validators namely 0.87. The results of the validation analysis can be seen in Table 2 below.

Table 1. Results of e-encyclopedia validation analysis.

Aspects	Criteria	Aiken's Score V	Mean
Content feasibility	Following the SK and KD	0,93	0,90 (Valid)
	Suitability to the needs of students	0,93	
	Compatibility with the needs of teaching materials	0,93	
	Content clarity	0,87	
	Benefits of adding insight knowledge	0,87	
	Conformity with values, morality, and social	0,87	
Language	Readability	0,87	0,92 (Valid)
	Information clarity	0,87	
	Following the Indonesian grammatical structure	1,00	
	Effective and Efficient use of language	0,93	
Presentation	The clarity of aims	0,87	0,87 (Valid)
	The order of presentation	0,87	
	Motivation	0,87	
	Interactive content	0,87	
	Complete information	0,87	
Graphics	Use of fonts (types and size of fonts)	0,93	0,93 (Valid)
	Lay out	1,00	
	Illustrations, graphics, figures, and photos	0,87	
	The presentation design	0,93	
	Overall		0,90 (Valid)

Based on the results of the validity analysis in Table 1, the average result for all aspects is 0.90. Thus, it can be concluded that the value of V Count ≥ V Table is 0.90 ≥ of 0.87 which means the E-Encyclopedia of Plant Structure and Function is in the category of valid and feasible to use.

In the feasibility of this E-Encyclopedia, 4 aspects are assessed, namely aspects of content feasibility, graphical aspects, presentation aspects, and linguistic aspects. Based on the validation results in Table 1, the average result for the content feasibility aspect is 0.90 and is in the valid category. In the content feasibility aspect, there are 6 criteria related to the delivery of material. In this aspect, the feasibility of teaching materials can be seen from the advantages and disadvantages (Kinanti & Sudirman, 2017).

The linguistic aspect has an average of 0.92 and is in the valid category. Analysis of the linguistic aspect is necessary because it is a determining factor in whether teaching materials can be conveyed and understood properly by students (Hendrawanto & Mulyani, 2017). The serving aspect gets the result of 0.87 and is included in the valid category. The last aspect, namely the graphical aspect, obtains a result of 0.93 and is included in the valid category. Thus, it can be concluded that the teaching material developed in this study in the form of an E-Encyclopedia of Structure and Function of plants for the eighth-grade students is suitable for use.

This is in line with Trianto's opinion (2007) (Suniasih, 2019) which states that one of the characteristics of good teaching materials is that they meet the validity criteria.

After the validity analysis, the reliability test was then carried out using the Interclass Correlation Coefficient (ICC) with the Two-Way Mixed Models model, the Multiple Raters type, and the definition of Absolute Agreement (Koo & Li, 2016) with SPSS Statistics 25. Reliability tests were carried out to produce data that has reliable measurement results. In addition, it is also to see the consistency of the answers given by each validator (Tomoliyus & Sunardianta, 2020).

The reliability test results obtained are as follows:

Table 2. ICC e-encyclopedia reliability test results

Interclass correlation	
Average score	.745

Based on the results of the reliability test in Table 2, the result obtained from the average score is 0.745 and are included in the moderate reliability category.

Validity and reliability tests were not only carried out on the feasibility test of the E-Encyclopedia as teaching material but also carried out to see the feasibility of the student response questionnaire used in the product testing stage. The results of the validity test of the student response questionnaire can be seen in Table 3.

Table 3. Results of response questionnaire validation analysis

Aspects	Criteria	Aiken' score V	Mean
Instructions	The instructions for using the student response questionnaire are clear	1,00	0,93
	The criteria observed in the student response questionnaire are clear	0,87	
Language	Sentences on student response questionnaires are following PUEBI (General Guidelines for Indonesian Spelling).	0,93	0,87
	Sentences contained in student response questionnaires use sentence questions/statements that are easy to understand	0,80	
	Student response questionnaire sheets use language that is easy to understand and communicative.	0,87	
Response questionnaire component scope	The aspects that were responded to by students were contained in full	0,93	0,93
	Indicators about students' responses to the e-encyclopedia on the structure and function of plants are stated clearly	0,93	
Overall			**0,91**

Based on Table 3 it can be seen that the validation results of the student response questionnaire were obtained 0.91. This shows that V Count ≥ V Table is 0.91 ≥ 0.87 and is included in the valid category. The results of the analysis of the validity test of the student response questionnaire consist of 3 aspects, namely the instructional aspect, the language aspect, and the response questionnaire component coverage aspect.

In the first aspect, namely the guidance aspect, 2 criteria are assessed, namely the instructions for use and the accuracy of the criteria observed in the response questionnaire. The average validation value on the guiding aspect is 0.93 and is included in the valid category. In the second aspect, namely the aspect of language, 3 criteria are assessed by the validator, including conformity with language rules or PUEBI, easy to understand, and communicative. In the language aspect, the average value is 0.87 and it is included in the valid category. The last aspect, namely the coverage aspect of the response questionnaire component consists of 2 criteria assessed by the validator which consists of the aspects contained in full, and the indicators on the questionnaire are clearly stated. In this aspect, the average validation value is 0.93 and is included in the valid category. From the results of the analysis that has been carried out, it can be concluded that the student response questionnaire is valid and feasible to use at the product testing stage.

In addition to validity testing, a reliability test was also carried out using ICC. The results of the student response questionnaire reliability test can be seen in Table 4.

Table 4. The Response of questionnaire ICC reliability test results

Interclass correlation	
Average score	.667

Based on the results of the reliability test in Table 4, it was found that the reliability of the student response questionnaire was 0.667 and was included in the sufficient reliability category.

Revising the product
At the product revision stage, only improvements were made to the inaccurate word typing.

Product testing
After the e-encyclopedia and the student response questionnaire were declared valid and feasible, further action was carried out. the product testing phase to 15 respondents who are the eighth students of junior high school. Students were directed to fill out student response questionnaire sheets. The purpose of filling out student response questionnaires is to see whether teaching materials in the form of E-Encyclopedias can attract interest and generate motivation to learn in students. The results of the student response questionnaire analysis that has been carried out are presented in Table 5.

Table 5. Response of questionnaire analysis results.

Aspects	The number of questions	Indicator	The score of questions	Percentage (%)	The average score of indicators	Interpretation	The average score of each indicator	Interpretation
Cognitive	1	Understanding the contents of the E-Encyclopedia on the material structure and function of plants for the eighth-grade students of junior high school.	46	76,7				
	2		48	80,0	77,8	Strong	80,4	Strong
	3		46	76,7				
	4	Clarity of study instructions	48	80,0	80,0	Strong		
	5		50	83,3	82,5			

	6	Appropriateness of the appearance of the E-Encyclopedia of Structure and Function of plants for the eighth-grade students of junior high school	50	83,3		Very strong			
	7		52	86,7					
	8		46	76,7					
Affective	9	Motivation	50	83,3	83,3	Very strong			
	10	Attractiveness	37	61,7	72,8	Strong	76,7	Strong	
	11		50	83,3					
	12		44	73,3					
	13	Curiosity	49	81,7	81,7	Very strong			
Cognitive	14	Tendency to use E-Encyclopedia	41	68,3	68,3	Strong	68,3	Strong	
	15		41	68,3					

Based on the results of the student response questionnaire analysis in Table 5, it was found that the average result of the cognitive aspect was 80.4% and was included in the strong category. Components of learning must have clear learning instructions so that it makes it easier for students to understand the material in them (Dolong, 2016). In the aspect of affection, the average is 76.7% including in the strong category. A learning tool, one of which is teaching material, should make it easier for students to learn so that their enthusiasm for learning increases (Sanjaya, 2014) and generate learning motivation and more interaction between students and the environment (Arsyad, 2017). In the cognitive aspect, an average of 68.3% is obtained and is in a strong category. This conative aspect describes students' motivation towards teaching materials. To increase student motivation, good and supportive teaching materials are needed in the learning process, and all three are included in the strong category in line with the criteria predetermined in Table 2. The results of the analysis on the average of all aspects of the student response questionnaire obtained 77.6 % and fall into the strong category (Riduwan, 2012). Therefore, it can be concluded that the E-Encyclopedia of Structure and Function of Plants received a positive response as teaching material.

Revising the product

This revision stage is the last in the development process. At this stage, it is only necessary to correct words that are still not quite right in their writing in the E-Encyclopedia of Plant Structure and Functions for the eight grade students of junior high school.

After all stages of development have been carried out, it was found that the development of the E-Encyclopedia of Plant Structure and Functions for the eight grade students of junior high school is suitable for use as teaching material with a validity value of 0.90 in the valid category and a reliability value of 0.745 in the sufficient reliability category. This is in line with an opinion (Wulandari & Oktaviani, 2021) which states that based on Aiken's V table the minimum number of raters is 2 while the maximum number is 25 with the V Table value for 5 validators namely 0.87. The reliability value is based on (Koo & Li, 2016) which states that the reliability value of 0.745 is included in the sufficient reliability category. Then the results of the analysis of student responses were also obtained, namely 77.6%, and included in the strong category (Riduwan, 2012). The results of the analysis of student responses indicate that the use of E-Encyclopedia of Plant Structure and Functions by students as teaching materials obtain good and positive responses and can increase learning motivation. This is in line with the opinion of previous research conducted by Sanjaya (2014) who argues that good learning tools can increase the enthusiasm for learning in students.

CONCLUSION

This study aims to develop teaching materials in the form of an E-Encyclopedia on the structure and function of plants for the eight grade students of junior high school. Based on the results of product development and testings, it was concluded that the E-Encyclopedia of Structure and Function of Plants was suitable for use as teaching material. Besides, the student responses obtained during product testings showed that the E-Encyclopedia could attract interest and generate motivation learning on students. Suggestions for further research are to add to the results of the effectiveness test of the use of the E-Encyclopedia of Plant Structure and Functions for the eight grade students of junior high school as teaching materials.

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