The scrapbook media quality and effectiveness: Motivation of biology students senior high school

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Article Info	ABSTRACT
	Motivation has an important role in improving learning quality. Scrapbook media can be an alternative learning media because it can be equipped with stimulus images that can attract interest and stimulate learning motivation. This research was a research development by adapting the ADDIE model. Scrapbook validity is measured from the results of expert and empirical validation. Expert validation includes media experts and material experts, while empirical validation by teacher and student. Product quality is the result of the implementation and the responses by students and teachers. Scrapbook effectiveness is seen from the increase in students' learning motivation when learning to use scrapbook. The instruments used were: teacher and student interview guidelines, material and media expert validation, field validation for teachers and students, and student motivation. Data were analyzed descriptively. The results showed that the quality of the scrapbook media was stated to be very valid with an average rating was 3.725 expert validators and the empirical validator was 3.45 with a valid category. The results of the implementation of the scrapbook media on total student learning motivation also increased by 24.80%, and the highest increase was in the aspect of initiative in learning which amounted to 33.40%.

INTRODUCTION

The success of the teaching and learning process can be influenced by factors from outside and within students. One of the external factors is the presence of learning media, while the factor

from within one is student motivation. These two factors interact with each other in increasing meaningfulness in learning activities. Motivation is a series of internal efforts to provide certain conditions that can be stimulated by external factors. According to Levpuscek & Zupancic (2008) motivation is an internal process which is one of the main factors that determine the level of student learning success. Intrinsic motivation shows the extent to which students perceive themselves to participate in assignments (Garcia & Pintrich, 1995; Schunk, Pintrich, & Meece, 2008), as well as perseverance in the performance of educational tasks (Froiland & Oros, 2015). While extrinsic motivation by Legault (2016) is the motivation that arises from reasons created externally to take an action. Djamarah (2008) added that the level of motivation possessed by students is determined by the level of meaningfulness in learning activities.

According to Kompri (2016), learning motivation is a psychological aspect that is affected by intrinsic and extrinsic conditions. Intrinsic conditions can be in the form of the ability of students accompanied by abilities and abilities in their achievement, while extrinsic in this case is the environment of learners can be in the form of a natural environment, a living environment, and a learning environment. According to Brown (2006), the characteristics of students who have high learning motivation include: being interested in the subjects being taught, having high enthusiasm, and controlling their attention, especially to teachers, wanting to always join class groups, always remembering lessons, and re-learning them. Sardiman (2011) also added that students who are motivated have characteristics such as being diligent in facing tasks or being able to work continuously for a long time; resilient in facing difficulties and not easily discouraged, not easily satisfied with the achievements obtained, shows great demand for various learning problems, likes to find and solve problems. Riswanto & Aryani (2017) reported that teaching competence, student interest, and learning environment have a close relationship in maximizing student motivation. Ames (1992), Bergsmann, Lüftenegger, Jöstl, Schober, & Spiel (2013), and Urdan (2004) added too that classroom management helps increase motivation. The amount of specific intrinsic and extrinsic motivation contributions have been reported by Yusnaeni & Sudirman (2019).

Fostering motivation in students can be done by creating a learning environment that can stimulate students to act towards clearer goals. One effort to create a learning environment is through the use of learning media. Learning media can provide a positive stimulus for students to foster interest and motivation to learn if designed creatively. One alternative media for students that need to be developed is a scrapbook (Scrapbook). Sari (2017) revealed that scrapbook is the art of sticking to paper media. The scrapbook can be used as a transmitter of information in learning. Astuti (2013) namely the use of scrapbook helps learning become more interesting and enjoyable.

The results of investigations at several high schools in Kupang related to students' learning motivation in learning, especially biology learning are in a low category, with an average value of 65%. Learning biology is still considered boring and difficult to understand. This condition makes students bored and does not focus on the learning process. Short interviews have also been conducted with teachers in the field of biology studies related to the material in biology that is considered difficult for students. The interview results obtained information that one of the material that is considered difficult for students is the material about cells. Students have difficulty when studying cell material, especially in the discussion of cell organelles and their functions, because students assume that cell material is too broad and there are a lot of organelles. In addition to the difficulty of the material, another factor that also plays a role in the low motivation to learn is the use of media and learning resources that can stimulate interest in learning. Therefore, it is deemed necessary to develop a learning media that can facilitate these difficulties so that they are easily understood by students.

Media scrapbook is one solution because the scrapbook can be equipped with stimulus images that can attract interest and stimulate students' motivation to learn more actively. In addition to arousing students' motivation and interest, scrapbook media can also increase student understanding because it can be presented by compressing information, the data presented are interesting and reliable, and making it easy to interpret. The scrapbook can be a student's skill, scrapbook media is appropriate to be used as learning media (Ariyani, 2013), scrapbook media has a significant relationship with learning outcomes (Nurdiana & Murjainah, 2017), can improve science learning outcomes (Sari, 2018; Wardhani, 2018). The results of this study indicate that the development of scrapbook learning media in the subject matter of biology is considered necessary to be done to solve learning problems and foster motivation to learn in students. This research is different in terms of the material being studied, including differences in terms of the variables to be measured.

RESEARCH METHODS
Research Design

This type of research is a development study adapting the development model of Lee & Owens (2004) consisting of the analysis, design, development, implementation, evaluation (ADDIE) stages. The needs analysis phase was carried out on February 16, 2019, to find out the need to develop the scrapbook as a learning medium. At this stage, several aspects of a needs analysis are carried out, namely curriculum analysis, media analysis, the material analysis which all aim to get an appropriate picture related to the development needs of the developed media. The design phase is the design phase of the scrapbook framework which is developed based on the results of the needs analysis. The product framework compiled is used as a guide for the development and implementation stages. The development phase is carried out by developing a framework of the initial Scrapbook product with expert validation. Validation is carried out by validators of media experts and material experts. The final product is obtained after going through a series of revisions based on input from the validator. The Implementation Phase is carried out on the 10th grade Science high school students on November 12, 2019. The results of the implementation are then evaluated. At the evaluation stage, the product is revised again based on the response of the teacher and students. After going through this stage, the product is re-implemented to see students' motivation to develop the product.

Population and Samples

The population in this study were all class 10th grade student consists of 2 classes with a total of 70 students and 6 science teachers in senior high school X Kupang city. The class samples were one class consist of 35 students and four persons biology teachers. The sampling technique was random sampling. Random sampling was used because the population is not too large and homogeneous so that it has the same opportunity to be sampled or to represent the population.

Instrument

The instruments used in this study were: 1) interview guidelines for teachers and students at the needs analysis stage. Interviews were conducted on aspects related to the learning media that have been used, students' motivation for the media used, it was necessary to develop other media, and what kind of media they wanted to develop. Interviews use an open interview guide in the sense that the questions to be asked already exist, but the respondent's answers are not bound, 2) expert validation instruments and empirical validation, 3) student motivation learning instruments consisting of 20 items divided into 8 items measuring aspects of activeness in learning, 7 items

aspects of enthusiasm in learning, and 5 items aspects of the initiative in learning. The validator instrument uses a Likert scale presented in Table 1 and Table 2.

Table 1. Material validation instruments

Aspect	Indicator	Value			
		1	2	3	4
Content Feasibility	Conformity with basic competencies				
	Conformity with learning objectives				
	Suitability of material with students				
	Completeness of the material				
	Material breadth				
	Concept accuracy				
	Image accuracy				
Presentation	Serving wrinkles				
	Image diversity				
Linguistic	The accuracy of sentence structure				
	The effectiveness of sentences				
	The accuracy of using the language				
	Motivating ability				

Table 2. Media validation instruments

Aspect	Indicator	Value			
		1	2	3	4
Changeable	Cover and content attract attention				
	Interesting image display				
	Uncomplicated image display				
	Display background color and font color				
Artistic and aesthetic	Attractive image color				
	Image captions are clear and proportionate				
	Font types and sizes vary				
	The use of font colors varies				
Feasibility of images and animation	Interesting image display				
	Easy to read typeface				
	Image usage varies				
Overall function	Media is easy to use				
	Media is easy to carry				
	The material is easy to understand				
	The material is presented systematically				

Procedures

The analysis phase begins with an analysis of the needs of students related to the learning media used. The design and development stage is carried out by designing and developing the prototype of scrapbook media accompanied by a validation process by an expert validator. Product development results are implemented (tested=limited trial) samples of 10th-grade students and biology teachers. The test results are then re-evaluated based on student and teacher input. After that, the product was implemented in grade 10 science students to see the effectiveness of the

media on student learning motivation. This development research procedure follows the steps of the ADDIE development model which can be seen in Figure 1.
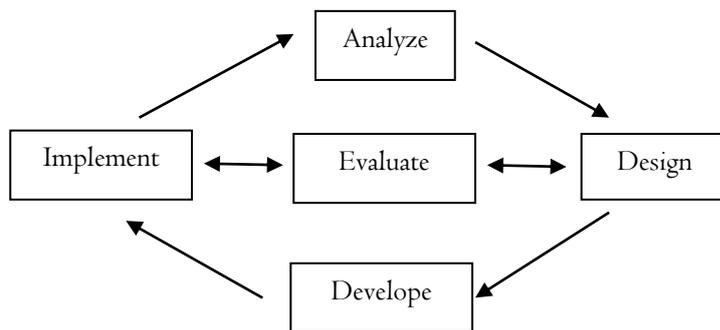

Figure 1. ADDIE model development flowchart

Data Analysis

Data analysis techniques in this study used descriptive analysis. Described data include 1) Data on product development processes, in the form of inputs, strategies, and suggestions for improvements contained in the questionnaire and descriptive interviews, 2) Product feasibility data, in the form of validator evaluations and teacher and student responses made in the form of scores. Data from the validator response was analyzed by referring to Arikunto (2006) where the quality standards of media products developed were: $1 < x < 1.5$ (invalid), $1.5 \leq x < 2.5$ (less valid), $2, 5 \leq x < 3,5$ (valid), $3,5 \leq x < 4$ (very valid). While the evaluation of learning motivation refers to Bloom, Madaus, & Hastings (1981), namely: $90\% < K =$ very high, $80\% < K < 90\% =$ high, $70\% < K < 80\% =$ moderate, $60\% < K < 70\% =$ low, where K is the average student motivation. The percentage value (K) is obtained from the acquisition score / total score of X 100%.
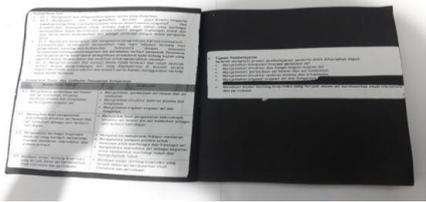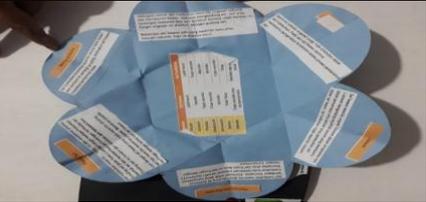
RESULTS

The scrapbook media developed based on the ADDIE development model through the needs analysis stage. From this stage, information is obtained that students need the appearance of other learning media more interesting than just the chart they normally use.

Table 3. The result of expert validation and empirical validation in media scrapbook cell material

No.	Validator	Aspect	Average	Category
1.	Material expert	Content feasibility	3.60	Very valid
		Presentation	3.75	Very valid
		Linguistic	3.89	Very valid
2.	Media expert	Changeable	3.82	Very valid
		Artistic and aesthetic	3.63	Very valid
		Feasibility of images and animations	3.65	Very valid
		Overall function	3.72	Very valid
3.	Teachers	Display	3.43	Valid
		Presentation	3.61	Very valid
		Learning activity	3.49	Valid
		Practicality	3.42	Valid
4.	Students	Display	3.41	Valid
		Presentation	3.21	Valid
		Learning activity	3.45	Valid
		Practicality	3.58	Very valid

The results of interviews at the time of the initial needs analysis obtained confirmation that the learning media used so far are only in the form of chapters, textbooks, and student worksheets, where the media was not attractive and monotonous so that other types of learning media were needed that were more varied and easy to use and use.

Table 4. The Products of Media Scrapbook in Cell-Material Before and After Revision Based on Suggestions from Validator

Part	Before Revision	After Revisi
Cover		
	Monotonous	It's more varied
Basic Competency and Learning Objectives		
	Formulation of basic competencies and learning objectives need to be improved with a more attractive appearance	The formulation of basic competencies and learning objectives has been improved with a more attractive appearance
Material		
	Display material needs to be equipped with images that are more interesting and more varied shapes	Display material is equipped with a more interesting image with a more varied form

The next stage is the design and development, in this stage, various suggestions and input from the validator are accommodated so that it becomes a product that is representative for use as a learning medium. Then enter the implementation phase to see the feasibility of the product as well as see students' learning motivation when using scrapbook media. Various suggestions and input in the implementation phase are used as evaluation material to improve the media that have been developed. The results of the validator assessment, teacher, and student responses to the Scrapbook media products can be seen in Table 1. While the appearance of the Scrapbook media on cell material developed using the ADDIE development model before and after revision based on validator input can be seen in Table 3.

Based on Table 3 shows that the average assessment of material experts and media experts was 3.75 and 3.70, respectively, with a very valid category, while the average results of empirical assessments by teachers and students are 3.49 and 3.41 respectively with a valid category. Furthermore, some revised suggestions for scrapbook media and revision results are presented in Table 4.

The results of the analysis of the implementation of the Scrapbook media in learning related to student motivation can be seen in Figure 2. Based on Figure 2 shows that overall there was an increase in student motivation after using the Scrapbook learning media by 24.8%. When viewed from the aspect of motivation, the highest increase was in the aspect of initiative in learning which amounted to 33.4%.
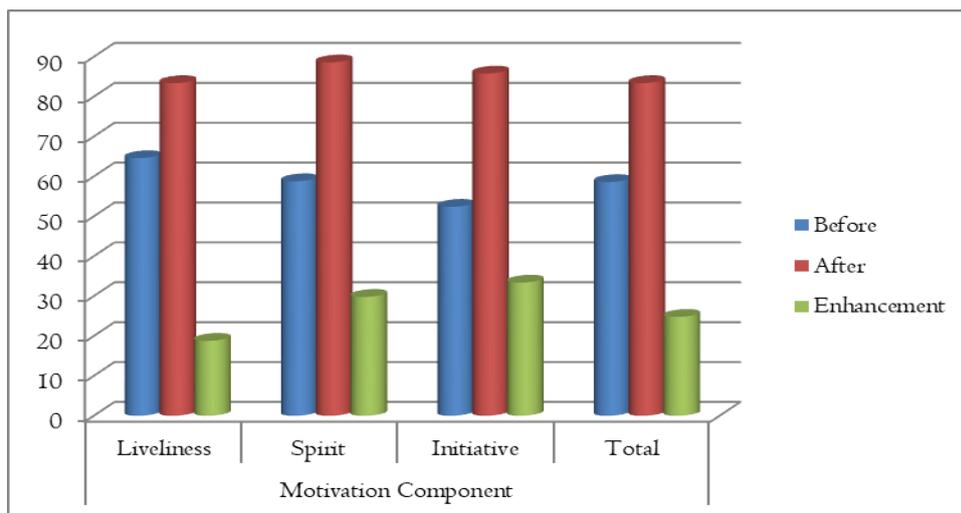

Figure 2. Graph of average aspects of motivation and improvement before and after the use of scrapbook media

DISCUSSION

The results of the validator's assessment of the media developed obtained by the value of the material expert and media expert were 3.75 and 3.70 respectively with the very valid category, while the average results of the empirical assessment by teachers and students were 3.49 and respectively. 3.41 with a valid category. This result indicates that the scrapbook media developed has met the media criteria that are already suitable for use by the scrapbook media criteria, which are shaped like books with themes by the material to be taught. On the other hand scrapbook criteria as a learning medium have also been met, where the scrapbook has a colorful display and attractive images. This appropriateness assessment is based on aspects that are owned accordingly, as revealed by Damayanti (2017) that the characteristics of the scrapbook that can be used as a learning

medium, namely, in the form of books, themes must be by learning objectives, the data entered in the scrapbook must focus on the subject or material being taught, not too much decoration.

The appropriateness of the developed media is used as a learning medium, of course not only based on physical appearance but also based on the evaluation of the validators as shown in Table 2. The results of the validator assessment show that the scrapbook media developed is based on the results of the validation of material and media experts already feasible to use. Likewise, the results of the assessment of the responses of teachers and students during media trials in the field. The feasibility is based on several components that have been outlined in Table 2. Based on the validator's assessment, it indicates that the scrapbook media developed is very feasible to use. The results of the validator's assessment are in line with Nurseto (2011) regarding the principles that must be considered to develop learning media, namely visible, interesting, simple, useful, responsible, legitimate, structured. Besides, based on the standard of the feasibility of teaching materials according to BSNP (2007), the feasibility of teaching materials (including instructional media) is divided into several components, which include the appropriateness of the content, the appropriateness of presentation, and the appropriateness of language.

When this learning media is implemented to students to see their learning motivation, the results are obtained that the use of scrapbook media increases student learning motivation as a whole and the highest increase in the aspect of initiative in learning (as shown in the graphic Figure 2). Increased motivation of learners indicates that the scrapbook can be used as a learning medium that can stimulate students to become more excited and stimulated to learn because the scrapbook has an attractive design, display images, and writing visible and can be read clearly, easy to carry anywhere. This result is supported by research Nurdiana & Murjainah (2017) report that there is a significant relationship between scrapbook media on students' learning motivation. Wardhani (2018) reported that the mini scrapbook series can enhance the learning history of junior high school students.

This increase in learning motivation is possible because abstract concepts in cell material can be made concrete by the presence of more interesting images so that they can provide an understanding of these concepts. Display images that are presented are reinforced in a frame with forms that are not monotonous so that it stimulates student initiative to follow the next picture displays. The presence of pictures is a form of visual assistance to students so that the subject matter is easier to understand. This is in line with Dale in USAID (2013), that learning using visual aids (pictures) is better captured by students than verbal learning and symbol. Asnawir, Usman & Basyiruddin (2002) add that good learning media are those that can instill the basic concepts that are true and concrete, and realistic.

Learning motivation of students is one aspect that needs to be considered in learning activities. When students are motivated it will have an impact on improving student learning outcomes. According to Sardiman (2011), the characteristics of people who have the motivation to learn are diligently doing the task, showing interest, or interest in what is learned. Uno (2009) added that indicators of learning motivation include interesting things in learning, a conducive learning environment. The aspects revealed in this study are aspects of student activity in learning activities, student enthusiasm in participating in learning, and students' interest or interest in participating in learning.

CONCLUSION

Based on the results of research and discussion, it can be concluded that the results obtained that the quality of the scrapbook media is declared very valid with an average rating was 3.725 expert validators and empirical validator was 3.45 with valid categories. The results of the implementation of the scrapbook media on total student learning motivation also increased by

24.80%, and the highest increase was in the aspect of initiative in learning which amounted to 33.40%. Through this research, it was found that the use of creative media is very influential in increasing student motivation, therefore scrapbooks are highly recommended as an alternative learning media for teachers to increase students 'learning motivation as well as an arena for developing teacher creativity in designing learning media that attracts students' attention.

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