ANDROID-BASED *RUSA (RUANG SISWA)* LEARNING MEDIA WITH APPYPIE APPLICATION TO ENHANCE LEARNING MOTIVATION AND OUTCOME OF ANIMALIA MATERIAL OF GRADE X STUDENTS OF SENIOR HIGH SCHOOL: A RESEARCH AND DEVELOPMENT

Sugeng Riyanto[1]; Dian Puspita Anggraini[2]; Marinda Sari Sofiyana[3].
Biology Education Department, Balitar Islamic University
E-mail: [1]Sugengriyanto873@gmail.com, [2]dpuspita4@gmail.com,
[3]sarisofiyana@gmail.com

ABSTRACT

This research aims to identify the effect of RUSA (Ruang Siswa), an Android-based learning media with appypie application, and figure out the validity of the media to enhance motivation and learning outcome of grade X students in Animalia material. The method of this research was Pre-experimental. The type of (R&D). This development model applied Borg & Gall procedure which was limited up to the seventh step, that is, product revision. Based on the hypothetical test of the effect of RUSA (Ruang Siswa) on students' motivation using t test, and the effect of RUSA on learning outcome using Ancova test, it was obtained that the significance value of RUSA (Ruang Siswa) was 0.000. Since the significance value was 0.000 < 0.05, H0 was rejected and H1 was accepted. Based on the result of validity test by media experts, the validity percentage was 74.50% classified as valid criteria, Material expert was 77.03% with classified as valid criteria, Language expert was 83.33% classified as very valid criteria. In addition, the data from students showed the percentage of 89.14% classified as valid criteria, and from the Biology teachers was 75.33% classified as valid criteria. Therefore, it is clear that there was an effect of using RUSA (Ruang Siswa) on students' motivation and learning outcome. Referring to the validity result, RUSA (Ruang Siswa) is valid to use.

Key Word: RUSA (Ruang Siswa) media, android, appypie, learning motivation, and learning outcome.

1. INTRODUCTION

The world-changing has entered industrial revolution 4.0 era where information technology has been the core of human life (Novita et al, 2018). In this globalization era, knowledge and technology rapidly develop that is characterized by the emergence of high-tech technology countinuously launched by the technologists. Science and technology development gives impact to education field mainly with the use of learning material and media in schools and other education institutions (Prasetyo, 2018). For students, the impact caused by science and technology development can be either positive or negative. In this era, learners are more dominant and they prefer to use gadgets in learning.

In the rapid development of science and technology, teachers' professionalism is not enough with just the ability to teach, but also to manage information and environment to facilitate learning activities; one of the ways is by enriching learning resources and media (Daryanto, 2010). Teachers should create a learning atmosphere based on the expectation of the 2013 curriculum and the skills that are needed by the students; amidst them include technology-related skill in information media and skill in using technology (Dadan &

Rosana 2012). Teachers are required to innovate in creating learning applications by utilizing computer and network facilities.

The students are motivated or pushed to do something due to the purpose or necessity that wants to be reached. Students' behavior in Biology learning activities also needs media in order to increase motivation for learning. This desire or urge to learn is called motivation. Sardiman (2014) stated that learning motivation is a non-intellectual psychic factor; its peculiar role is to grow passion, happiness, and eagerness to learn.

Field observations through interviews by giving open and close questionnaires to the students with a total of 120 people were done to know the level of motivation, interest, implementation, students' learning activities, and difficult Biology materials (45 students revealed the difficult materials in Biology). From questionnaires, it was obtained learning motivation percentage of 59.28%, learning interests of 66,57%, learning implementation of 62,28%, and learning activity of 61%. The level of learning motivation was lower than other variables. The material that is considered difficult for the students is Animalia with the percentage of 62.22%. Students' learning motivation in Biology is still quite low. Setiani (2018) developed an android application media using appypie in green plant material in grade V of elementary school.

The field observation was performed to find out students' learning motivation and learning outcome of Biology learning activity. Besides, the observation specifically concerned materials that were considered difficult by the students, namely Animalia material of grade X of Science program in the even semester. This research aims at investigating the effect of RUSA (Ruang Siswa) application on students' motivation and learning outcome of grade X of Science Program of SMAN 1 Talun, Bllitar, in Biology learning notably Animalia material.

2. RESEARCH METHOD

The type of research was Pretest-Posttest Group Design with Pre-experimental Design. The design of this research can be seen in Figure 1. This type of R&D. The model used in this research was Borg & Gall model. The corellation between the use of RUSA (Ruang Siswa) application in Biology learning in Animalia materials and students' motivation and learning outcome was analyzed by using the paired sample T-test and ancova.
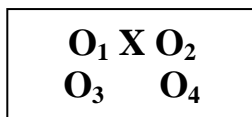
$$
\begin{array}{ccc}
O_1 & X & O_2 \\
O_3 & & O_4
\end{array}
$$

Figure 1. *Pretest-Posttest Group Design* **pattern**

Information:

O_1 : The percentage score of students' motivation before using RUSA

O_2 : The percentage score of students' motivation after using RUSA

O_3 : The pretest score before using RUSA

O_4 : The posttest score after using RUSA

X : Treatment using RUSA

The percentage of validator evaluation, readability, teachers' assessment, and students' responses can be calculated by the following formula.

$P = \frac{\sum X}{\sum Xi} \frac{\sum X}{\sum Xi}$ x 100%

Information:

P = Percentage

$\sum x$ = The score of data collection result

$\sum xi$ = The score of criterion

Table 1. Criteria of Validity Level

Percentage	Category
0%- 20%	Very invalid
20%-40%	Invalid
40%-60%	Moderately valid
60%-80%	Valid
80%-100%	Very valid

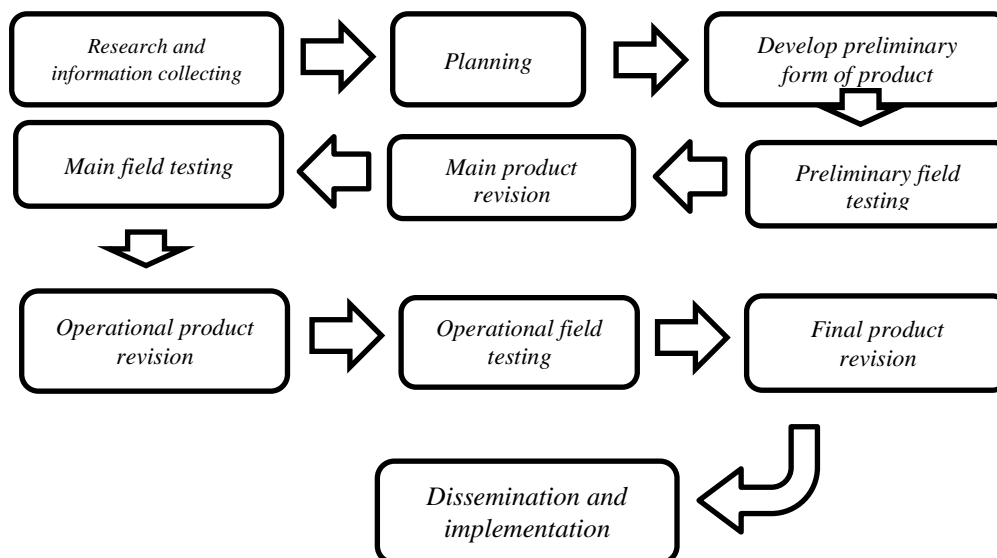**(Source : Adapted from Sugiyono, 2016)**

Image 2. The Borg and Gall's (R&D) Model
(Source: Borg and Gall, Educational Research an Introduction. 2003)

3. RESULTS AND DISCUSSIONS

This research used seven steps due to the limited time, effort, expense, and chance. These are the seven steps.

1. Research and information collecting

This activity was by performing need analysis in learning activity. It was done by administering interview sheet and questionnaire to Biology teachers and students of grade X of SMA/MA that was held in November 2018. In this research and information collecting, observations were done in four schools of SMA/MA in city and regency of Blitar including SMAN 1 of Garum, SMAN 4 of Blitar, MA-Al Muslihun of Kanigoro, and MA-Assalam of Selopuro Blitar.

2. Planning

Planning for the media design was performed to meet specific objectives of this research. From the result of preliminary observation, the researcher began to arrange the research plan such as research design, the ability of resources on research implementation, and the estimation of time and expense, that included the objectives that was expected to be achieved by the product. Those were intended to provide accurate information in developing media that students needed.

In the planning step, the researcher developed android-based learning media named RUSA (Ruang Siswa) with appypie application that could be used to increase students' motivation which remained low in Biology learning, and utilize Information Technology as fun learning media for the students especially about Animalia material. It is because Appy Pie is one of Online App Builder which is on the Internet and easy to operate in making learning media applications (Chusni et al., 2018).

3. Develop preliminary form of product

The researcher prepared the materials such as hardware in the form of computers and android smartphone, and the Internet network to make the preliminary product (draft) of RUSA (Ruang Siswa). RUSA (Ruang Siswa) is a learning media that can support the learning process in the classroom. It is an application that uses android smartphone that covers learning videos, material summary, and test. Frequently, learning media is used interchangeably with tools or communication media as stated by Hamalik (2015) viewing that communication will run well with the opimal result when using communication tools.

The next step of developing the media was validation process by the validators. They are the material, media, and language experts. The evaluation of material component in RUSA (Ruang Siswa) revealed that the materials in RUSA (Ruang Siswa) were eligible and could be implemented in the try-out of learning proces because the materials has been suitable with the KI and KD of the 2013 curriculum. The materials were declared suitable with general knowledge about Animalia material and the basic concept of Animalia, and the difficulty level and material concept were actual. The material descriptions met completeness aspect covering general feature, invertebrate classification, and vertebrate and Animalia's role that were simply displayed so that those were easy to understand with the clear image instrument. Based on the evaluation of three material experts, RUSA media got the percentage of 77.03%. According to Sugiyono (2015), the validity level of 60%-80% in scoring criteria belongs to valid criteria.

4. Field testing

In this preliminary field test, the researcher conducted a product trial in one school involving 2 Biology teachers and 6 grade X students of SMAN 1 Talun Blitar. The field test was conducted by providing android-based RUSA media with the appypie application, and administering readability questionnaire to students consisting of 13 questions and 30 statements for the Biology teacher. Based on the assessment by 6 students, it was obtained the total score of 371 and the percentage of 95.12%. This value is included in the range of 80% -100% in the scoring criteria, and thus it belongs to valid criteria. Therefore, RUSA media viewed from readability aspect is said to be very valid. It can be concluded that the media in the preliminary field test stage is said to be successful and eligible to use in the next stage.

In addition, the evaluation by two Biology teachers revealed the total score of 226 and percentage of 75.33%. This value was included in the range of 60% -80% in the scoring criteria, so it was included in the valid category for the learning process. Based on the evaluation by three experts on language components, RUSA obtained the percentage of 83.33%. The score indicated that RUSA was very valid. In conclusion, the media use is said to be successful and feasible for the next stage.

5. Product revision

In this stage, before the product was tested on the main group, the researcher revised the weaknesses of the product identified during the preliminary test, and it was obtained qualitative data about the product being developed. After revising process was done, RUSA was tested again. The input provided was the addition of some additional time features in the evaluation menu.

6. Field testing

The main field test was performed at SMAN 1 Talun. The main field test was conducted on grade X students of Science program, totalling 30 students. This main field test aimed to determine the effect of the media on students' motivation and learning outcome. In addition, motivation questionnaires consisting of 22 statements and 10 multiple choice questions were administered to each student before and after using RUSA. The results of studens' learning motivation with a total of 30 students before and after using the RUSA media were analyzed using t test. Table 1 shows the result of the t test.

Tabel 1. The Effect of RUSA Media on the Students' Learning Motivation by Using Test
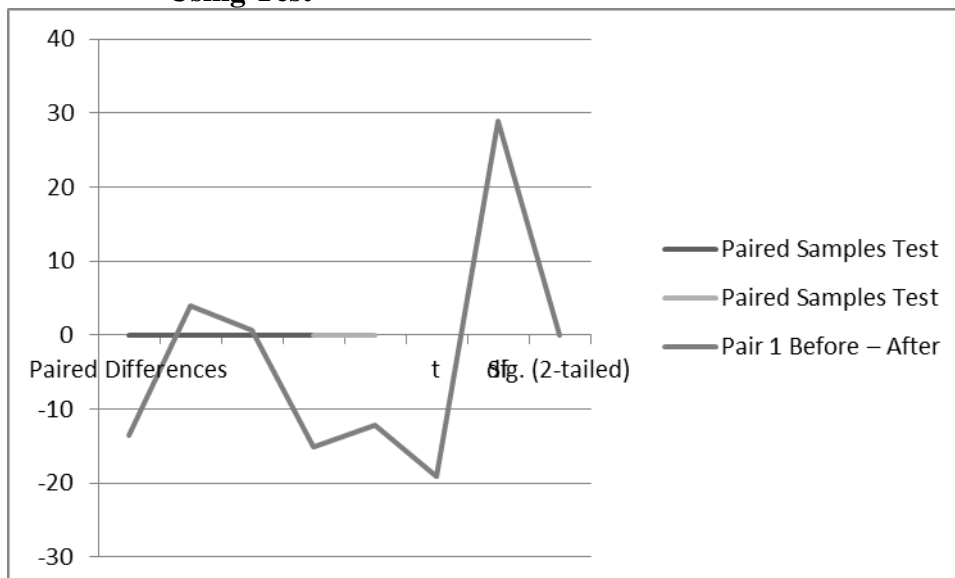
As Table 1 shows, the significant value for the use of RUSA in Biology learning activities, especially in Animalia material on the students' learning motivation is 0,000. Since the significant value is 0.000 <0.05, it can be said that the hypothesis can be accepted.

Based on the results of the study, it was known that the use of RUSA was effective in increasing students' learning motivation in Biology learning activities especially in Animalia material that is considered difficult by students. This is in accordance with a

research conducted by Setiani (2018) revealing that the android application media using the developed appypie software was easy to use and attracted students' attention. The similar result was found by Khakim (2017) figuring out that mobile learning media boosted students' motivation.

According to Arsyad (2017) one of the functions of learning media is to improve the effectiveness of learning and increase students' motivation in learning. Sudjana (2017) states that learning media is beneficial to attract students' attention so that they can enhance thir learning motivation. Thus, through this research we could say that the more effective the learning media used in Biology learning activities, the higher students' motivation in studying Biology.

In addition to students' learning motivation, learning outcome was also analyzed by using t test. Table 2 exemplifies the result of t test.

Tabel 2. The *Ancova* Test on the Effect of Media on Learning Outcome

Tests of Between-Subjects Effects					
Dependent Variable: Learning_Result					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6541.920[a]	2	3270.960	39.199	.000
Intercept	12412.662	1	12412.662	148.751	.000
Pretes	2540.254	1	2540.254	30.442	.000
Teaching_Media	1721.029	1	1721.029	20.625	.000
Error	4756.413	57	83.446		
Continuation					
Total	396900.000	60			
Corrected Total	11298.333	59			
a. R Squared = .579 (Adjusted R Squared = .564)					

As depicted in Table 8, it was known that the Sig. value for pretest covariance is 0.000. Because the Sig 0.000 value <0.05, it can be said that there was a linear correlation between the pretest and posttest scores obtained by the students after using RUSA. Then, for the Sig. value of teaching media or post-test results after using RUSA was 0.000. Because the value of Sig. 0.000 <0.05, then H0 was rejected and H1 was accepted. Hence, it can be concluded that there was an effect on the use of RUSA media on students' learning outcome.

The finding of this study is in accordance with a previous research conducted by Mirawati (2018) about the development of learning media for the Batik Jonegoroan application developed with the appypie website. The result revealed that the

applicaion earned a high percentage of students' learning outcome, and it was suitable as a learning media either in the classroom or outside the classroom. According to Sudjana (2017) learning outcome is something that shows results or good values in the form of numbers from the results of student evaluations that have been achieved after following the learning process in a certain period of time. In this case, students' learning outcome is displayed in the form of values or numbers obtained from the provision of pretest and posttest instruments.

7. Operational product revision

After the main field test had been completed, it was obtained the data in the form of input and suggestions. The results of the main field test would be used to improve and perfect the developed product in order to produce an Android-based RUSA media with appypie application that is suitable for learning Biology, especially in Animalia material. This study only reached the seventh stage of the total ten stages due to limited resources, time, and cost that must be spent.

4. CONCLUSION

This study exemplified the validity and positive effect of RUSA learning media on students' learning motivation and learning outcome of grade X students of Science program in Biology learning activities, especially in material that was considered difficult by students namely Animalia material. The result revealed a moderately-high interpretation indicated from the significant value of paired sample T test and tests of between-subjects effects of 0.000.

5. SUGGESTION

Referring to the conclusion above, the researcher can provide suggestions related to problems in conducting this research. Since this study were terminated at the seventh stage, further researchers can proceed to the tenth stage so that the product can be disseminated. In addition, future researchers have to look for and prepare research objects and subjects well in advance so that during field test, they can manage their time well.

6. ACKNOWLEDGEMENT

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