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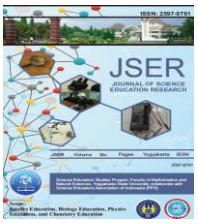

The Development of Interactive Learning Media on Android Platform Assisted By Google Sites

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Interactive learning media, android platform, Google Sites, human respiratory system.

ABSTRACT

This study aims to (1) produce interactive learning media on the android platform assisted by Google Sites that is feasible for junior high school Science learning of respiratory system, (2) produce media that is practical for junior high school Science learning of respiratory system. This development research employed 4D model (Define, Design, Development, and Dissemination). The subject of this research was the second semester of the eighth-grade students in Junior High School 1 Wonosari. Research instruments used in this research included validation sheets, practicality assessment sheets, and student response questionnaires. The results of this study indicate that (1) media is feasible with a percentage value in terms of material is 80% (feasible) and in terms of media is 87% (very feasible). (2) media are practically used with values of V in the aspect of material clarity of 0.86 with a very practical category, the aspect of clarity of display 0.80 with a practical category, the benefit aspect of 0.81 with a very practical category, the aspect of ease of use 0.79 with a practical category. The results from the students' responses of media's practicality showed a P value of 79 %, included in the practical category.

INTRODUCTION

The quality of human resources is closely related to the community education system. One of the quality human resources is obtained from improving the quality of public education (Central Bureau of Statistics, 2014, p.8). A good learning process is one of the characteristics of quality education (UNICEF in Setyosari, 2017, p. 28). As important stakeholders in the implementation of education, educators are required to be creative to achieve educational goals. Educators must be able to master the method and accuracy of media selection in teaching (Emda, 2011, p.149).

There are many types of learning media. The selection of the right learning media to increase learning motivation is very necessary, in this case, it is a learning media that allows students to be active so that students' full attention is focused on the learning process (Nurrita, 2018, p. 186). Media that facilitates the activeness of students in learning is interactive media. Interactive learning media provide feedback to students from what has been included in the media (Ummah, 2021, p.71).

Learning media in the current condition is very much needed because learning is done online. The Education Policy in the Emergency Period for the Spread of Coronavirus Disease (Covid-19) calls for learning from home as a safe step to prevent the spread of Covid-19 (Rachmayanie et al., 2020, p.30).

In a circular from the Minister of Education and Culture No. 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19), points 1 and 3 state that online learning is provided so that students get meaningful learning experiences with learning activities and assignments. Learning from home may vary between students, according to their interests and conditions including considering the gap in access/facilities for learning at home. In conditions like today, there are still many online learnings that burden students because of the limited access and facilities of each student (Arifa, 2020, p.16). Seeing this situation, it is necessary to choose online learning media that have the potential to be used with easy and fast access without reducing the meaning of learning.

The use of android as a learning medium is the result of technological developments as the application of 21st-century learning styles (Climag et al., 2014, p. 90). This is supported by the fact that the use of smartphones is high among students (Azmi in Abdullah et al., 2020, p. 23). The learning media allow students to learn wherever and whenever interestingly (Meister, 2011, p. 28).

From the statements above, a learning media is obtained as a result of the development of internet technology, namely Google Sites with easy access (Suryanto, 2018, p.8). Google Sites offers easy access because it is connected to other Google tools and is free. Another advantage of Google Sites is that it can be made with many pages and interactive buttons so that it is possible to convert it in the form of an android application (Kalyan, 2020, p.51).

In this study, learning media created using Google Sites were converted into application web viewers. The application web viewer is an Android operating system that serves to load a website display into the form of a mobile web display. The web view contains all the attributes on the website such as buttons, texts, images, and so on with HTML format (Destian W et al., 2015, p.2)

This research develops the interactive learning media on the android platform assisted by Google Sites for junior high school learning system materials human breathing. In science learning, the respiratory system material in humans is abstract, so to make it concrete, media that can describe the contents of the material is needed (Saputro & Saputra, 2015, p.157). The material for the respiratory system is also complex because it studies a system that exists in the human body (Anidityas et al., 2012, p.61). The material on the respiratory system has a close relationship with the daily lives of students (Ulfa & Rozalina, 2019, p.11). This material also requires memorization to understand the concepts (Buana, 2015, p. 836).

This study aims to (1) produce interactive learning media on the android platform assisted by Google Sites that are suitable for learning the respiratory system science junior high school, (2) produce interactive learning media on the android platform assisted by Google Sites that are practical for learning the respiratory system science junior high school.

METHOD

The type of this research is Research and Development to produce products and test the effectiveness of products (Sugiyono, 2010, p.407). The development model used is 4D which was developed by Thiagarajan in 1974 with a 4D model. The product of this research development is an interactive learning media based on the android platform assisted by Google Sites for distance learning online methods of respiratory system material. The subject of this research was the second semester of the eighth-grade students in Junior High School 1 Wonosari. The study was carried out on February 1 - February 28, 2021.

The data collection technique used was an observation of the learning process in the classroom and assessment through questionnaires. The data collection instruments used were media feasibility assessment sheets by experts, media practicality assessments by science teachers and participant response sheets. students on the practicality of the media in the form of a questionnaire. The procedure for developing interactive learning media on the

android platform includes 4 stages, namely (1) the definition stage; (2) the design stage; (3) the development stage; (4) defining stage.

Data analysis technique for the feasibility of interactive learning media on the android platform use percentage analysis, the formula can be seen above.

$$P = \frac{f}{N} \times 100\%$$

With:
P = percentage obtained
f = number of respondents' answers
N = the highest score in the questionnaire
The classification of P value for validity can be seen in Table1.

Table 1. Classification of Validity Based on Percentage Value (P)

Persentage	Criteria
81 – 100 %	Very Valid
61 – 80 %	Valid
41 – 60 %	Sufficiently Valid
21 – 40 %	Less Valid
< 21 %	Very Invalid

(Arikunto & Jabar, 2004, p.35)

Practical data analysis technique for interactive learning media on the android platform using Aiken's V analysis, the formula can be seen below. (Azwar, 2013, p.134):

$$V = \sum s / [n(c-1)]$$
$$S = r - lo$$

With:
lo = the lowest validation score (in this calculation lo=1)
c = the highest score of validation value (in this calculation C=5)
r = the number given by the rater.

Furthermore, the level of acceptance (V) or the practicality category of interactive media is classified into four categories. The categories can be seen in Table 2.

Table 2. Feasiblelity Category for V Value

V	Criteria
0 – 0.20	Very invalid
0.21 – 0.40	Invalid
0.41 – 0.60	Less valid
0.61 – 0.80	Valid
0.81 – 1.00	Very valid

(Aiken in Azwar, 2013, p.134).

Product responses are obtained from questionnaires that have been filled out by students. Then, the analysis technique to determine the level of practicality of the product developed use percentage (P) analysis. The formula and category of acceptance value (P) can be seen below.

$$P = \frac{f}{N} \times 100\%$$

With:
P = percentage obtained
f = number of respondents' answers
N = the highest score in the questionnaire

Table 3. Practicality Category Based on Percentage Value (P)

Percentage	Category
75% < x ≤ 100%	Very praktical
50% < x ≤ 75 %	Practical
25% < x ≤ 50 %	Sufficiently practical
0% ≤ x ≤ 25 %	Less practical

(Riduwan, 2009, p.89)

RESULT

Defining Stage

This stage includes five activities, namely the initial analysis, analysis of learners, task analysis, concept analysis, and the analysis of learning objectives. In the initial analysis with interviews and observations, it is known that cognitive learning outcomes in science subjects are low and there is no special online media for the human respiratory system material.

At the student analysis stage, it is known that there is a lack of active participation of students and a reduction in the quantity and timeliness of task collection. At the concept analysis stage, it is known that the material characteristics of the human respiratory system are abstract and related to complex functions and processes (Anidityas et al., 2012, p.61). This material also requires memorization, and there are several foreign languages or scientific languages (Buana, 2015, p. 836). The next stage is task analysis which is carried out by analyzing the KI-KD of the human respiratory system for class VIII semester 2 of the 2013 curriculum. Then, as the result of this analysis stage, the

syllabus and lesson plans are obtained for reference the content in the developed media.

Design Stage

This stage aims to prepare the initial design of interactive learning media on the android platform. At this stage there are four activities, namely the preparation of media assessment tools, media selection, media format preparation, and preparation of the initial media design. At the stage of preparing the assessment tool, a feasibility assessment instrument was made based on the theory of Alessi et al. (2001, p.66-67). Meanwhile, for the assessment of the practicality of the media, the aspects chosen are a combination of practical aspects based on Nieveen's theory in Nuryadi (2019, p.5), Sugianto, (2016, p.3), Sukardi, (2008, p.37), and Akker et al. (2013, p.47). Therefore, at the selection stage, the selected media will be adjusted to the assessment criteria. Through the analyzes that have been carried out, interactive media is obtained on the android platform assisted by Google Sites.

At the stage of formatting, division of menu screens, submenus, material contents, pictures, videos, practice questions, LKPD, and daily test questions on this media, adjusted to the map or concept chart that has been made, format sketches, flowcharts, and storyboards. At the initial media design stage, produced draft 1 which was consulted with the supervisor.

Development Stage

In the development stage, the instrument that has been valid based on the supervisor's validation is used to assess the media. The feasibility of the developed media was obtained from the feasibility test data by material experts and media experts. Product feasibility data on the media aspect can be seen in table 4.

Table 4. Percentage Value of Data Analysis Results Validation of Media Aspect

Indicator Aspect	Value	P	Category
Auxiliary Information	15	100%	Very Feasible
Interface	32	80%	Feasible
Navigation	22	88%	Very Feasible
Robustness	18	90%	Very Feasible
Keseluruhan Aspek	87	87%	Very Feasible

Based on media expert validation in the Table 4 above, the percentage value (P) 87% is included in the very suitable category for use. Then for the feasibility data of the media aspect of the product can be seen in Table 5.

Table 5. Percentage Value of Data Analysis Results of Material Validation

Indicator Aspect	Value	P	Category
Subject matters	40	80%	Feasible
Affective considerations	16	80%	Feasible
Pedagogy	12	80%	Feasible
Keseluruhan aspek	68	80%	Feasible

Based on the validation of the material experts in the Table 5 above, the percentage results obtained are 80% in the appropriate category (Arikunto & Jabar, 2004, p.35).

The practicality of the developed media was obtained from the practicality assessment by the science teacher as a media practitioner which was then analyzed using Aiken's V analysis. The V value of the results of the analysis of the media practicality data assessment can be seen in Table 6.

Table 6. Value V of the Data Analysis of Media Practicality

Aspects of Assessment	Total Value			V	Category
	R1	R2	R3		
Kejelasan materi	29	29	35	0.86	Very Practical
Kejelasan tampilan	20	19	24	0.80	Practical
Manfaat	24	23	29	0.81	Very Practical
Kemudahan Penggunaan	16	16	18	0.79	Practical
Total Nilai	89	87	106		

Based on Table 6 above, the value of V from the assessment of the material clarity aspect is 0.86 which is included in the very practical category, the display clarity aspect is 0.80 which is included in the practical category, the benefit aspect is 0.81 which is included in the very practical category, and the ease of use aspect is 0.79 included in the practical category. practical (Azwar, 2013, p.134).

Then, at the trial stage, a limited trial was carried out on students, so that data on the practicality of using media were obtained. The

analysis of the percentage value (P) obtained can be seen in the table 7.

Table 7. Data Analysis of Student Practical Response Results

Data	**Practicality Aspects**				**Total**
	Material Clarity	Views clarity	Useful ness	Ease of use	
f	1084	895	1338	873	4190
N	1400	1120	1680	1120	5320
P	77%	80%	80%	78%	**79%**
$\bar{P}$		**79%**			
Category		**Practical**			

Based on the Table 7 above, the percentage of the result of the overall practicality of the media is 79% and included in the practical category.

Dissemination Stage

Interactive learning media on the android platform is disseminated in the scope of SMP 1 Wonosari school and uploaded to the Playstore account of the science teacher of SMP 1 Wonosari. The final product is the result of the final revision obtained based on suggestions and comments. The media views can be seen on figure bellow.

Figure 1. Display of the initial media page

Figure 2. Main menu display

CONCLUSION

The conclusions of this study include (1) Interactive learning media on the Android platform assisted by Google Sites is feasible with a value (P) of material expert validation of 80% is included in the appropriate category and the value (P) of media expert validation shows a figure of 87%, including in the very feasible category; (2) The media developed is practically used according to practitioners with a V value in the aspect of material clarity of 0.86 with a very practical category, aspect of display clarity 0.80 with a practical category, benefit aspect of 0.81 with a very practical category, ease of use aspect of 0.79 with a practical category, and results from Student responses show that practical media is used with a value of 79%, including in the practical category.

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