



## The Development of Android-Based Mobile Learning Media in Healthy Lifestyle Teaching Materials for Senior High School Students

Hery Prasetyo; Agus Kristiyanto; Muchsin Doewes

Sports Science, Sebelas Maret University, Surakarta, Indonesia

<http://dx.doi.org/10.18415/ijmmu.v6i2.656>

### **Abstract**

Technological development is highly needed to support education in this modern era. It makes the learning objectives are achieved maximally. Therefore, learning media is one of the success factors of the learning process that has to be considered in all subjects. Physical Education, Sports and Health (PJOK) subject also needs innovative learning media to gain students' interest in learning and understanding the material. The purpose of the research is to analyze the Android-based mobile learning application that is produced to support the aforementioned subject. This research is a development research that produces a learning media in healthy lifestyle teaching materials in Physical Education, Sports and Health (PJOK) subject at senior high school. The result shows that the overall aspects percentage of material expert validation is 73.61% with feasible criteria. The overall aspects percentage of media expert validation is 68.75% with feasible criteria. The overall aspects percentage of practitioner expert validation is 90,00% with very feasible criteria. The percentage of students' assessment through small group tests for all aspects is 81.60% with very feasible criteria. The percentage of students' assessment through large group tests for all aspects is 83.92% with very feasible criteria. The result of the test shows that the mean score of experimental class is 82.97, and the control class is 78.11. The conclusion of the research shows that the development of Android-based mobile learning media product is feasible to be utilized in Physical Education, Sports and Health (PJOK) learning process. The product of the development of Android-based mobile learning media is also effective to improve student learning outcomes.

**Keywords:** Mobile Learning; Learning Media; Healthy Lifestyle

### **Introduction**

Technological development has created various breakthroughs in learning process. In the midst of this development, students intersect with mobile technology devices. Besides, internet technology has become a wave of new tendencies that enable mobile learning or better known as m-learning. The concept in m-learning makes it easier for users to use it. Moreover, it gives more advantages by giving other learning concepts compared to conventional learning (Sutopo, 2012).

There are several real conditions, obstacles, innovation, and various breakthroughs that can be developed by education and technology practitioners in the field of information and communication

technology today. For example, cell phones have been developed to be a strong foundation to support learning process. Thus, they are expected to give a revolutionary learning process in education. Some real conditions that are related to the development of cell phones that become an operational basis of the emerge of mobile learning are elaborated below (Darmawan, 2012).

Mobile learning is a learning support system where students can access learning materials, directions, and applications that are related to learning materials at anytime and anywhere (Husamah, 2014). The concept of mobile learning is feasible to be applied in school subjects, including Physical Education, Sports and Health (PJOK) subject. Mobile learning media helps to improve students' understanding. The learning process of Physical Education, Sports and Health (PJOK) absolutely requires a learning media to both facilitate teachers in delivering materials, and help students to receive the materials. However, there are many teachers who still ignore the importance of a learning media. As the result, the materials are less attractive. Thus students find it hard to understand learning materials. Worse, some materials that have prepared by teachers usually do not delivered maximally.

One of the materials of Physical Education, Sports and Health (PJOK) is healthy lifestyle. This material is also considered unattractive. Whereas, one of the goals of physical education is to understand the concept of physical activity in a clean environment to achieve perfect physical growth, a healthy lifestyle, fitness, ingenious, and positive attitudes (Rosdiana, 2014). Based on this fact, researcher is interested in utilizing smartphone technology as an Android-based learning media in the form of mobile learning for teaching healthy lifestyle at Senior High School 1 Sukoharjo. Learning through smartphone media will help students to study at anytime and anywhere more easily.

## Methods

This research is a research and development (R&D) that aims to develop learning media in the form of Android-based mobile learning media. Sukmadinata (2013) defines R&D as a research and development method for developing new products or perfecting existing products that can be accounted for (Sukmadinata, 2012).

According to Sugiyono (2015), the procedure of R&D research uses 10 research steps. They are Potential and problems - Data collection - Product design - Validation design - Revision design - Product testing - Product revision - User testing - Revision of products - Mass production (Sugiyono, 2015).

## Results and Discussion

### 1. Media Feasibility Test

#### a. Material Validation

Table 4.1 Validation Result Recapitulation of Android-Based Mobile Learning Media by Material Experts

No.	Material Assessment Aspects	Scoring Scale				Criteria
		$\sum ni$	$\sum N$	100%	Score	
1.	Curriculum Aspect	9	12	100%	75,00%	Feasible
2.	Material Presentation Aspect	26	36	100%	72,22%	Feasible
3.	Evaluation Aspect	6	8	100%	75,00%	Feasible
4.	Language Aspect	12	16	100%	75,00%	Feasible
<b>Total Score</b>		<b>53</b>	<b>72</b>	<b>100%</b>	<b>73,61%</b>	<b>Feasible</b>

Based on the table above, it is seen that the assessment results of the development of Android-based mobile learning media by material experts are scored in four material assessment aspects. The percentage of Curriculum Aspect is 75,00% with feasible criteria. The percentage of Material Presentation Aspect is 72,22% with feasible criteria. The percentage of Evaluation Aspect is 75,00% with feasible criteria. The percentage of Language Aspect is 75,00% with feasible criteria. The total score percentage of the overall aspects percentage of material expert validation is 73.61% with feasible criteria. This data shows that Android-based mobile learning media is feasible for learning process.

b. *Media Validation*

Table 4.1 Validation Result Recapitulation of Android-Based Mobile Learning Media by Media Experts

No.	Media Assessment Aspects	Scoring Scale				
		$\sum ni$	$\sum N$	100%	Score	Criteria
1.	Display	35	52	100%	67,30%	Feasible
2.	Technical	20	28	100%	71,42%	Feasible
<b>Total Score</b>		<b>55</b>	<b>80</b>	<b>100%</b>	<b>68,75%</b>	<b>Feasible</b>

Based on the table above, it is seen that the assessment results of the development of Android-based mobile learning media by media experts are scored in two media assessment aspects. The percentage of Display Aspect is 67,30% with feasible criteria. The percentage of Technical Aspect is 71,42% with feasible criteria. The total score percentage of the overall aspects percentage of media expert validation is 68,75% with feasible criteria. This data shows that Android-based mobile learning media is feasible for learning process.

c. *Practitioner Validation*

Table 4.1 Validation Result Recapitulation of Android-Based Mobile Learning Media by Practitioner Experts

No.	Practitioner Assessment Aspect	Scoring Scale				
		$\sum ni$	$\sum N$	100%	Score	Criteria
1.	Content Aspect	20	20	100%	100,00%	Very Feasible
2.	Learning Aspect	34	40	100%	85,00%	Very Feasible
<b>Total Score</b>		<b>54</b>	<b>60</b>	<b>100%</b>	<b>90,00%</b>	<b>Very Feasible</b>

Based on the table above, it is seen that the assessment results of the development of Android-based mobile learning media by practitioner experts are scored in two media assessment aspects. The percentage of Content Aspect is 100,00% with very feasible criteria. The percentage of Learning Aspect is 85,00% with very feasible criteria. The total score percentage of the overall aspects percentage of practitioner expert validation is 90,00% with very feasible criteria. This data shows that Android-based mobile learning media is very feasible for learning process.

According to the validation tables of material experts, media experts, and practitioner experts, it can be concluded that the initial product of the development of Android-based mobile learning media can be tested in facilitating the learning process of healthy lifestyle material in Physical Education, Sports and Health (PJOK) subject in the next stage. It is in line with the clarification from Arikunto (2009: 44).

d. *Small Group Trial*

Table 4.4. Recapitulation of Student Assessments in Small Group Trial

No.	Media Assessment Aspect	Scoring Scale				
		$\sum ni$	$\sum N$	100%	Score	Criteria
1.	Material Aspect	95	120	100%	79,17%	Feasible
2.	Language Aspect	59	80	100%	73,75%	Feasible
3.	Interest Aspect	303	360	100%	84,16%	Very Feasible
<b>Total Score</b>		<b>457</b>	<b>560</b>	<b>100%</b>	<b>81,60%</b>	<b>Very Feasible</b>

Based on the table of recapitulation above, it is shown that the percentage of Material Aspect is 79,17% with feasible criteria. The percentage of Language Aspect is 73,75% with feasible criteria. Meanwhile, the percentage of Interest Aspect is 84,16% with very feasible criteria. The total score percentage of the overall aspects percentage is 81,60% with very feasible criteria. Based on the positive responses from the students, it can be concluded that the Android-based mobile learning media is feasible to use.

e. *Large Group Trial*

Table 4.5. Recapitulation of Student Assessments in Large Group Trial

No.	Media Assessment Aspect	Scoring Scale				
		$\sum ni$	$\sum N$	100%	Score	Criteria
1.	Material Aspect	220	264	100%	83.33%	Very Feasible
2.	Language Aspect	141	176	100%	80.11%	Very Feasible
3.	Interest Aspect	673	792	100%	84.97%	Very Feasible
<b>Total Score</b>		<b>1034</b>	<b>1232</b>	<b>100%</b>	<b>83,92%</b>	<b>Very Feasible</b>

Based on the recapitulation table above, it is shown that the percentage of Material Aspect is 83.33% with very feasible criteria. The percentage of Language Aspect is 80.11% with very feasible criteria. Then, the percentage of Interest Aspect is 84.97% with very feasible criteria. The total score percentage of the overall aspects percentage is 83,92% with very feasible criteria. Based on the positive responses from the students, it can be concluded that the Android-based mobile learning media is feasible to use.

According to the validation tables of material experts, media experts, and practitioner experts, it can be concluded that it can be concluded that the initial product of the development of Android-based mobile learning media can be tested in facilitating the learning process of healthy lifestyle material in Physical Education, Sports and Health (PJOK) subject in the next stage. It is in line with the clarification from Arikunto (2009: 44). [6]

2. *Media Effectiveness Test*

The hypothesis is tested with t test and analyzed with the IBM SPSS Statistics 21 program. The t test is used to see the different mean score in both pre-test and post-test at experimental class and control class. The t test is also useful to measure the effectiveness of Android-based mobile learning media towards the improvement of learning outcomes in experimental class.

a) *The Mean Difference Test of the Pre-test*

Table 4.6. The Mean Difference Test Results of the Pre-test of Experimental Class and Control Class at Senior High School 1 Sukoharjo.

<b>Group Statistics</b>					
	Class	N	Mean	Std. Deviation	Std. Error Mean
Score	Experimental Class	36	68.4444	6.88038	1.14673
	Control Class	36	68.3889	8.01170	1.33528

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	1.536	.219	-.095	70	.925	-.16667	1.76011	-3.67709	3.34375
	Equal variances not assumed			-.095	68.438	.925	-.16667	1.76011	-3.67850	3.34516

on the two tables above, the mean difference test result of the pre-test shows that the mean of experimental class (68,44) and control class (68,39). The significance of the mean difference test result is obtained from Sig (2-tailed)  $0,925 > \alpha (= 0,05)$  and t count  $(0,095) < t$  table  $(1,669)$ , thus the decision of  $H_0$  test is accepted. It means there is no mean difference result of pre-test of the experimental class and control class. Therefore, it can be concluded that there is no significant difference between the student learning outcomes at experimental class and control class at Senior High School 1 Sukoharjo.

b) *The Mean Difference Test of the Post-test*

Table 4.7. The Mean Difference Test Results of the Post-test of Experimental Class and Control Class at Senior High School 1 Sukoharjo.

<b>Group Statistics</b>					
	Class	N	Mean	Std. Deviation	Std. Error Mean
Score	Experimental Class	36	80.4444	7.63617	1.27270
	Control Class	36	75.1111	8.92437	1.48740

### Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Score	.720	.399	2.724	70	.008	5.33333	1.95757	1.42907	9.23759
Equal variances assumed			2.724	68.365	.008	5.33333	1.95757	1.42743	9.23924
Equal variances not assumed									

on the tables above, the mean difference test result of the post-test shows that the mean of experimental class (82,97) and control class (78,11). The experimental class gains higher mean than control class. The mean difference result of the post-test of experimental class and control class is 4,86 points. The significance of the mean difference test result is obtained from Sig (2-tailed)  $0,002 > \alpha (= 0,05)$  and  $t_{\text{count}} (3,175) > t_{\text{table}} (1,669)$ , thus the decision of  $H_0$  test is rejected. It means there is a mean difference result of post-test of the experimental class and control class. The mean difference result of post-test indicates that treatment to experimental class and control class is able to improve learning outcomes. The treatment to experimental class can be achieved through the Android-based mobile learning media. Meanwhile the treatment to control class can utilize the lecture method.

### Conclusion

1. Based on the assessment that is conducted by the expert team and supported by students' responses, it can be concluded that the Android-based mobile learning media that has been developed has met the media feasibility criteria. Therefore, it can be used in learning process of Physical Education, Sports and Health (PJOK) subjects in studying healthy lifestyle.
2. Based on statistical calculations, it is indicated that there is a significant difference between the mean result of post-test learning outcomes of the experimental class and the control class. As a consequence,  $H_0$  is rejected while  $H_1$  is accepted. Therefore, it can be concluded that the Android-based mobile learning media is effective to improve student learning outcomes.

## References

- Arikunto, Suharsimi. 2009. *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Darmawan, D. 2012. *Teknologi Pembelajaran*. Bandung: Remaja Rosdakarya, 2012.
- Husamah. 2014. *Pembelajaran Bauran (Blended Learning) Terampil Memadukan Keunggulan Pembelajaran Face-To-Face, E-Learning Offline-Online Dan Mobile Learning*. Jakarta: Prestasi Pustaka Publisher.
- Rosdiana, Dini. 2014. *Perencanaan Pembelajaran Dalam Pendidikan Jasmani Dan Kesehatan*. Bandung: Alfabeta.
- Sugiyono. 2015. *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Sukmadinata, Nana Syaodih. 2012. *Metode Penelitian Pendidikan*. Bandung: Remaja Rosdakarya.
- Sutopo, A. Hadi. 2012. *Teknologi Informasi dan Komunikasi dalam Pendidikan*. Yogyakarta: Graha Ilmu.

## Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).