HALAMAN OLAHRAGA NUSANTARA (HON)
Jurnal Ilmu Keolahragaan

Volume 6 No II
Tahun 2023

ISSN 2614-2775 (Print)
ISSN 2621-8143 (Online)

EFFECTIVENESS OF USING ANDROID-BASED LEARNING MEDIA IN INCREASING UNDERSTANDING AND BASIC TECHNIQUES OF STUDENT BASKETBALL GAMES

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Abstract
This research is a follow-up study to test the effectiveness of learning media based on android applications that have been developed and validated by experts in previous studies. The Penjas Unsil Basketball Guige (PUBbG) application has been successfully created and validated by experts with good criteria,, which can already be tested for implementation on students, and research articles have been published in the JUARA Sinta 3 Journal. Therefore, in this study, the researcher attempted to investigate the effect of using an Android application-based learning media called Penjas Unsil Basketball Guide (PUBbG) in increasing students' understanding and basic techniques of playing basketball. As an illustration of the information in the Unsil Basketball Guide (PUBbG) Penjas application which includes a video tutorial on basic techniques that must be mastered by students at a minimum, along with a narrative text module which supports the video. The research method used is an experimental method with a pretest-posttest design to determine the effect of applying products made to increasing understanding and basic basketball techniques. Participants in this study were students of Physical Education at Siliwangi University. The instrument used was a student comprehension test with the Basketball Common Content Knowledge test and the Basic Basketball Skills Technique Test. Furthermore, the data analysis technique used is the t test to determine the effectiveness of the product used by testing the differences in pre-test and post-test results after implementing android application products and comparing them with the control group. The results showed that even though the two groups both showed an increase, only the understanding of students who had a significant difference with the experimental group had more impact than the control group. Whereas in basic technical skills, there was no significant difference between the two groups..

Keywords: *Learning Media; Common Content Knowledge; Basic technique; Basketball*
Submitted : 15th of December 2022
Accepted : 10th of July 2023
Published : 14th of July 2023

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DOI http://dx.doi.org/10.31851/hon.v6i2.9976

INTRODUCTION

Learning is the main gate in acquiring knowledge. Innovation in the world of learning has become a necessity in an effort to adapt to the challenges of

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changing times. Physical education is an integral part of education that is useful for developing students' abilities by providing opportunities to be directly involved with various learning movements, movement skills, and thinking skills through physical activities.

In this village, smartphone users in Indonesia are increasing from year to year, namely in 2016 - 2019 there has been a very rapid increase, from 65.2 million to 92 million users (katadata.com, 2019). This shows that in Indonesia itself the use of smartphones is very familiar. Therefore, learning media through smartphones are deemed suitable as well as reducing the negative effects of excessive smartphone use such as playing games that do not know the time (Duke & Montag, 2017; World Health Organization, 2015). In addition, during and after the pandemic, physical education learning was challenged when activities that were usually carried out in person at school had to be replaced with online activities carried out in front of computer screens or smartphones (Filiz & Konukman, 2020). This certainly has an impact on the delivery of learning materials, one of which is basketball game material.

Basketball is one of the most popular sports in the world. This sport has developed rapidly since it was first created in the late 19th century. Basketball game is a very interesting game, apart from having a recreational aspect, it also includes elements of cooperation and cohesiveness. This game is a game that is played by hand, in the sense that the ball is always played from hand to hand by players in one team. Basketball has complete (complex) movements, such as foot movements when running and hand movements when dribbling, baiting the ball, catching and shooting into the opponent's basket. Characteristics in the game of basketball that there are several elements that cannot be separated, namely dribbling while bouncing, throwing (passing), and shooting (shooting).

In facing the challenges of changing times and conditions during and after a pandemic, innovation in providing appropriate learning media is needed by a teacher. The use of appropriate learning media will prove to have a positive

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impact on learning outcomes. Previous research that applied the use of "study journals" in the basketball game course showed that there was an increase in student understanding and motivation in student learning but was still limited to the use of physical books that students collected at the end of every lecture session (Andriyani, 2017). Previous researchers have discussed a lot about the role of smartphones, especially android applications as an alternative means of learning and providing convenience in delivering material and increasing student learning motivation (Mockus et al., 2011). Other studies reveal that the proper use of smartphones can encourage students to assist their learning activities (Anshari, Almunawar, Shahrill, Wicaksono, & Huda, 2017; Vázquez-Cano, 2014; Wu, 2015).

This research is a follow-up study from a series of studies that have been conducted by researchers, namely initial studies on students to find out basic technical skills in basketball games and obtained results that most were still in the sufficient category (Malik & Rubiana, 2019). Furthermore, the pilot project conducted by Sopian (2020) succeeded in making an application to increase Chest Pass for junior high school students, and finally validating the development of the Android-based Unsil Basketball Guide (PUBbG) Penjas application (Rubiana, Indrawan & Malik, 2021). Therefore, in this study the researcher intends to determine the effectiveness of the use of learning media using the Android-based Unsil Basketball Guide (PUBbG) Physical Education application that researchers have made to improve students' understanding and basic techniques of playing basketball.

Basketball game is a game activity carried out in groups with the aim of scoring as many points as possible into the opponent's ring. It is clear that if you want to play well then the basic techniques in a game must be well mastered. The challenge faced during this pandemic is the basketball learning pattern which has been carried out directly by applying various learning models such as Direct Instruction, Teaching Games for Undestanding, Cooperative Learning and various

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activities carried out both in groups and individually with feedback and examples of movement from teachers must be able to do it independently at home when learning is done online. Therefore, we need an appropriate learning media in accordance with the times and the interests of the students themselves to overcome the current learning challenges.

METHOD

This research is an experimental study involving a total of 68 participants consisting of 2 classes, namely the experimental class and the control class. This research was conducted for 8 meetings following the existing lecture schedule with the material provided covering understanding basketball rules, passing, dribbling and shooting skills. The instruments used in this study consisted of understanding instruments and basic technical instruments for basketball games. The understanding instrument used is the Basketball Common Content Knowledge (BCCK) Instrument (Tsuda, et al., 2022) and the basic technique test instrument for basketball skills consists of 3 test items, namely the first is a passing test against a wall with a distance of 3 meters for 30 seconds, the second is a shooting test in the form of under the ring for 30 seconds and the third zig-zag dribbling speed test (Nurhasan, 2014).

RESULT AND DISCUSSION

Table 1. Results Description of The Data in The Experimental Group

Experiment Group	Passing		Dribbling		Under Ring		BCCK	
	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test
Mean	21.62	23.12	28.87	23.62	4.65	5.97	71.60	84.26
SD	6.87	5.35	7.39	3.78	2.41	2.52	11.18	11.78
Gain Score	1.50		5.25		1.32		12.66	

Table 1 shows the results of tests measuring the basic techniques of playing basketball which include student passing, dribbling and shooting (under ring) tests. It can be seen that overall there is an increase in the three aspects of measurement with each gain a mean pre-test and post-test score of 1.50 on the passing test, 5.25 on the dribbling test, and 1.32 on the shooting test. On the

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results of the BCCK test about basketball games in the experimental group, the average pre-test and post-test gain was 12.66. Next, the results of measurements in the control group can be seen in table 2.

Table 2. Results Description of The Data in The Control Group

Control Group	Passing		Dribbling		Under Ring		BCCK	
	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test
Mean	20.47	23.65	29.17	24.54	4.18	6.97	75.51	82.21
SD	5.61	4.66	6.46	3.91	2.89	2.35	13.28	14.44
Gain Score	3.18		4.64		2.79		6.69	

Table 2 shows the results of tests measuring the basic techniques of playing basketball in the control group which includes student passing, dribbling, and shooting (under ring) tests. It can be seen that overall there is an increase in the three aspects of measurement with each gain a mean pre-test and post-test score of 3.18 on the passing test, 4.64 on the dribbling test, and 2.79 on the shooting test. In the results of the BCCK test about basketball games in the control group, the pretest and posttest average gain was 6.69. Furthermore, before testing the data hypothesis, a prerequisite analysis test is carried out which includes the normality test and data homogeneity test.

Table 3. Results of Normality Test Data of the Experimental Group and The Control Group

Group		Skill Test			Tes BCCK		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretes	Experiment	.975	34	.605	.880	34	.001
	Control	.978	34	.713	.739	34	.000
Posttest	Experiment	.967	34	.382	.845	34	.000
	Control	.962	34	.283	.717	34	.000

Table 3 shows the results of the normality test data for the skills test and the BCCK test in the experimental and control groups. In the results of the experimental group's skills test, it can be seen that the sig value for the pre-test results was 0.605 > 0.05 and for the post-test was 0.713 > 0.05. Then in the control group the sig value for the pretest results was 0.382 > 0.05 and the sig value for the posttest results was 0.283 > 0.05, so that overall the sig value was >

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0.05 which means that the skill test data is normally distributed. The measurement results of the normality test of the BCCK test data in the experimental and control groups. In the results of the BCCK test for the experimental group, it can be seen that the sig value for the pre-test was 0.001 <0.05 and for the post-test was 0.000 <0.05. Then in the control group the sig value for the pretest results was 0.000 <0.05 and the sig value for the posttest results was 0.000 <0.05, so that overall the sig value <0.05 which means that the BCCK test data is not normally distributed. In the next step, the researcher conducted a data homogeneity test to determine the level of data homogeneity.

Table 4. Homogeneity Test Results Data From The Experimental Group and The Control Group

	Skill Test		BCCK	
	Levene Statistic	Sig.	Levene Statistic	Sig.
Pretes	.792	.377	.009	.923
Posttest	.002	.961	.011	.917

In table 4 it can be seen that the results of the homogeneity test of the skills test data on the pretest score obtained a sig value of 0.377 > 0.05, and on the posttest score the sig. equal to 0.961 > 0.05 so that overall the data is distributed homogeneously. In the BCCK test data, the pretest score obtained a sig value of 0.923 > 0.05, and the posttest score had a sig. of 0.917 > 0.05 so that overall the data is distributed homogeneously. The next step is to test the data hypothesis.

In testing the hypothesis the researcher's data used two types of hypothesis testing, the first used the Independent Samples Test on the skills test results because the data was normally distributed and homogeneous, while the BCCK test results used the Mann Whitney U Test because the data was not normal and homogeneous.

Table 5. Independent Samples Test Results on the Skills Test

Tes Keterampilan	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

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Equal variances assumed	.002	.961	.000	66	1.000	-.00118	6.26648	-12.51262	12.51026
Equal variances not assumed			.000	65.949	1.000	-.00118	6.26648	-12.51280	12.51044

On the results of the skills test, the results obtained were sig 1.000 > 0.05, which means that there was no significant difference between the two groups. Furthermore, the results of hypothesis testing on the BCCK test are shown in table 6.

Table 6. Mann Whitney U Test Results on the BCCK Test

Test Statistics[a]

	Posttest
Mann-Whitney U	278.500
Wilcoxon W	873.500
Z	-3.688
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable

In table 6 it can be seen that the U value is 278,500 and the W value is 873,500. When converted to a Z value, the magnitude is -3,688. It can be seen that the Sig or P Value is 0.000 <0.05, so it can be concluded that there is a significant difference between the two groups. The results of this study support the findings of previous studies which reveal that the development of instructional media is feasible and recommended to be implemented in supporting the learning process in schools (Majid, Adi, & Dwiyogo, 2021; Yuliana, Astra, & Adi, 2018). Furthermore, the results of previous research reveal that there is a significant influence from the use of Android-based learning media in various learning such as the use of the D'Volleyball Learning application in Volleyball learning (Ramdani & Bayu, 2022), the use of Android-Based Rhythmic Activity Learning Media for learning rhythmic activities (Ngandhika, Rustiana, & Pramono, 2018), and Android-based mobile learning media in healthy lifestyles that are applied to students also have a positive impact during learning (Prasetyo, H., Kristiyanto, A., & Doewes, M. (2019).

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CONCLUSION

This study concluded that there was an increase in understanding and basic techniques in basketball games for students with the application of android-based learning media. There is an increase in understanding and basic techniques in basketball games for students with the application of conventional learning. There is a significant difference in the application of android-based learning media compared to conventional learning in the results of student understanding but there is no significant difference in the results of the basic techniques of playing basketball for students.

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