



Application of Augmented Reality Media on Short Distance Running Material on the Level of Excitement of Class XI Students at Al-Islam Krian High School

Intan Amelia Putri¹, Mochamad Ridwan²

^{1,2}Physical, Health and Recreation Education Study Program, Faculty of Sports and Health Sciences, Universitas Negeri Surabaya, East Java, 60213, Indonesia.

Abstract

Using augmented reality media in the learning process can create excitement. Happiness belongs to positive emotions. Emotions are related to the learning process, the information that enters the students then they remember what the teacher conveys, this is influenced by emotions. In addition, emotions also affect academic achievement. Joy can trigger an overflow of positive emotions that activate the nerves of the brain to record the material being given by the teacher easily because feelings and attitudes will have a very strong influence on the learning process so that a person will have the desire to learn with all his abilities if he likes what is being learned. and he will feel happy to be involved in it. This research method is quantitative with a pre-experimental approach. The research design used the one case study with a purposive sampling technique. the total population is 489 with a sample that will be used as many as 114 students. The results of the study used an excitement questionnaire with 23 questions covering several aspects. Positive aspects of 18.21%, Aspects of full involvement of 18.42%, Aspects of establishing positive relationships with teachers and friends of 24.60%, Aspects of finding meaning in everyday life 12.86%, Achievement aspects of 12, 81%, and external factor aspects of 13.10%. The learning process uses augmented reality media to be used as teaching aids which will be presented in 3D visual form virtually (virtual) which are packaged in the form of modules as learning media or creative and innovative demonstration tools so that they can increase the enthusiasm of students in learning short-distance running material. in PJOK learning.

Keywords: *Augmented Reality, Excitement, Run.*

Correspondence author: Intan Amelia Putri, Universitas Negeri Surabaya, Indonesia.

Email: intan.19117@mhs.unesa.ac.id



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INTRODUCTION

One of the compulsory subjects given to students at all levels of education is PJOK (Physical Sports and Health Education), to increase resources by providing knowledge about healthy living inside and out for the body (Kalnun M, Bayu A, 2022). PJOK has many important roles, therefore it is hoped that teachers can contribute to the development of students, especially those related to character (Dhedhy Y., 2016). The development of the world of education is very rapid, technological advances influence the times so that the world of education also develops and begins to use various technologies in the learning process (Mislán, Santoso DA, 2019). This

development must be balanced with human resources, namely teachers as an effort to improve student learning outcomes.

The current problem at PJOK is based on interviews conducted at Al-Islam Krian High School, the lack of teachers in mastering technology makes students feel bored. Learning media that is often used in learning at school is still conventional. Students need new learning media to support the learning process. an example of modern learning media is audio-visual media. Based on previous research, the effectiveness of learning using audio-visual media is 80.46% (Sari DM, Siagian S, 2013). Preliminary studies were conducted on 40% of students or as many as 30 students with KKM requirements of 70. The first cycle of audio-visual was given an increase to 53.3% or 16 students, the second cycle increased to 66.6% or 20 students, and the cycle at stage III increased to 90% or 27 students. So it was concluded that the use of learning media in the form of audio-visual could improve student learning outcomes.

Developments in the field of education have been in the revolutionary era 4.0 (Anwar K, Firmansyah I, Andriani MW, 2022). Learning in the 4.0 era can rely on technology for learning media, with the psychomotor domain technology it can run without a teacher after students are given media in the form of audio-visual one of which uses augmented reality media by displaying pictures and videos that can attract students' interests so that it is very suitable for the characteristics of the participants students in the 4.0 era (Mauludin et al., 2017; Hariyanto, 2020). Realizing an effective learning requires the role of technology, one of which is virtual technology, virtual technology is chosen because it is able to accurately represent real objects in providing information such as virtual augmented reality technology (Mauludin R, Sukanto AS, Muhandi H, 2017).

The graph of the use of augmented reality media is increasing every year. After the development of augmented reality was tested by selecting seven participants randomly and using the three aspects studied, the results were that 43% strongly agreed, 57% agreed if augmented reality motivated participants in understanding the visualized process, 58% strongly agreed that augmented reality increased learning abilities them and 42% neutral. 57% strongly agree and 43% agree that the class is fun. Students who wanted to see more about augmented reality 86% answered 'of course' and 14% answered unsure (asrif E, Mubai A, Huda A, Rukun K, 2020). The use of augmented reality in Indonesia has been widely applied, especially in high school (Barrow J, Forker C, Sands A, O'Hare D, Hurst W, 2019). The large number of applications of augmented

reality media is proven by the achievement of students, who were examined using the ADDIE method, namely analysis, design, development, implementation, and evaluation with valid results. It was obtained that 88% of students were able to achieve a minimum of learning completeness (Pradana RW, 2020). According to Azhar et al. (2021) 67% of 30 students considered learning using augmented reality very good, then 33% of 30 students thought it was very interesting.

The importance of learning to use technology to support student learning activities will have a positive impact, namely an increase in knowledge so that student test scores in the form of report cards can address a development in the learning process that has been carried out (Amir Iswanti, 2017.). PJOK learning uses augmented reality media to demonstrate the skills being taught so that students' understanding of the lack of movement models from these skills can easily understand them (Azhar, Herfana P, Nasir M, Irawan D, Islami N, 2021).

Atletik has many numbers, one of which is running. Based on interviews that have been conducted by researchers at Al-Islam Krian High School supported by PLP researchers for four months at the school there is a problem in learning to run short distances so that researchers want to solve this problem by providing learning media that can generate a sense of joy. Running numbers that are often used in athletic learning materials in high school are short distance running and squat start, but for athletic learning it will still be guided by the PJOK curriculum that has been set by the Ministry of Education and Culture.

Using augmented reality media in the learning process can create excitement. Happiness belongs to positive emotions. Emotions are related to the learning process, the information that enters the students then they remember what the teacher conveys, this is influenced by emotions. In addition, emotions also affect academic achievement (Tannert & Gröschner, 2021; Wungguli & Yahya, 2020; Sani & Maksum, 2020). Some aspects of joy are positive emotional involvement, full involvement, establishing positive relationships, finding meaning in everyday life, achievement, and outside influences or external factors.

In addition to positive emotions, there is an interaction between joy and physical activity. Spiritual well-being is found in students who carry out regular physical activity because adolescence is the right time to stay active (Brodani J, Kovacova N., 2019). Based on research conducted by Nugraha et al. (Nugraha B, Dimiyati A, Gustiawati R, 2021) students' interest in carrying out PJOK learning 13 students are in the high category with 32.5%, 4 students or 10%

have very high interest, 30% or 12 students have moderate interest, 8 students or 12% have low interest, 3 students or 7.5% have very low interest.

Based on the background, the researcher has the desire to research with the title "Application of Media Augmented Reality on Short Distance Running Material on the Level of Excitement of Class XI Students at Al-Islam Krian High School" in class XI students so they can solve problems and get solutions to make students like material delivered by the teacher and make learning methods better.

METHOD

This research method is quantitative. This study used a pre-experimental approach. The research design uses the one case study. immediately given treatment (X) and then given a post-test (T2) then measured the dependent variable. This research was conducted at Al-Islam Krian High School. The population is all class XI students at Al-Islam Krian High School with a total of 489 students. The sampling technique used is non-probability with purposive sampling. Based on the provisions, the researchers took 25% of the total population, namely 114 students taken from 3 classes that had been determined based on the MIPA regular class with the lowest tuition payments. The independent variable in this study is augmented reality media and the dependent variable is joy. The data was taken by filling in the research instruments using a questionnaire in the form of a questionnaire, and the answers used a Likert scale, documentation, observation, and interviews. Data analysis used SPSS 26 and Excel which showed descriptive statistical results, in the form of mean, standard deviation, and percentage values.

RESULTS AND DISCUSSION

Results

a) Descriptive Statistical Analysis

Descriptive statistics, namely statistical analysis which discusses the general description or characteristics of a research variable as seen from the average (mean), minimum, and maximum values. This study will discuss data that is already normal.

Table. 1. Sample population

Data			
Population	489		
Sample	XI MIPA 5 (38)	XI MIPA 6 (38)	XI MIPA 7 (38)

1. Mean

Table. 2. Data Description

Statistik	Skor
Mean	95.17
Median	96.00
Mode	96
Standar Deviasi	6.753
Range	34
Minimum	76
Maximum	110

From the data above, it can be described that the level of excitement of students in class XI MIPA 5, MIPA 6, and MIPA 7 in learning PJOK short-distance running materials using augmented reality learning media with an average (mean) of 95.17, the median value (median) is 96.00, the value often appears (mode) is 96, the standard deviation is 6,753, the range is 34, while the lowest score (minimum) is 76 and the highest (maximum) is 110.

2. Percentage

Table. 3. Percentage of Each Aspect

NO	ASPECT	INDICATOR	NO ITEMS	OVERALL	PART	%
1.	Emotion Positive	a. have hope for success	2	10088	506	
		b. Develop talent	3		458	

		c. Proud of academic results	4		437	
		d. Follow learning	5		436	
		Total			1837	18,21%
2.	Full engagement	a. Interested when the teacher gives the material	6	10088	496	
		b. Happy when learning media is colored	8		446	
		c. Learning becomes easier	9		464	
		d. Have fun with learning media	10		452	
		Total			1858	18,42
3.	Establish positive relationships with teachers and friends	a. Can explain the material to the teacher	11	10088	392	
		b. Can explain material to friends	12		406	
		c. Exchange opinions with friends	13		421	
		d. Exchange opinions with friends	14		403	
		e. Interact with teachers	16		415	
		f. Interact with friends	17		445	
		Total			2482	24,60%
4.	Finding meaning in everyday life	a. Confident with the media	18	10088	438	
		b. Get lost of information	19		431	
		c. Complete learning assignments	20		432	
		Total			1292	12,86
5.	Performance	a. Achievements at school	21	10088	438	

		b. Improve academic achievement	22		431	
		c. Sure you can get good grades	23		423	
		Total			1292	12,81
6.	External factors	a. Can understand learning media	28	10088	440	
		b. Can pass on information to others	29		434	
		c. The school environment supports the media	30		448	
		Total			13322	13,10
						100,00

The results from the table above are obtained from the results of research using a joy questionnaire with 23 questions covering several aspects. Positive aspects of 18.21%, Aspects of full involvement of 18.42%, Aspects of establishing positive relationships with teachers and friends of 24.60%, Aspects of finding meaning in everyday life 12.86%, Aspects of achievement of 12.81 %, and Aspects of external factors of 13.10%.

Table. 4. Highest Class and Lowest Class in Every Aspect

Aspect	Kategori	Kelas
a. Emotion positive	Lowest	MIPA 6
	Highest	MIPA 5
b. Full engagement	Lowest	MIPA 7
	Highest	MIPA 6
c. Establish positive relationships with teachers and friends	Lowest	MIPA 5
	Highest	MIPA 7
d. Finding meaning in everyday life	Lowest	MIPA 5
	Highest	MIPA 6
e. Performance	Lowest	MIPA 7
	Highest	MIPA 6
f. External factors	Lowest	MIPA 6
	Highest	MIPA 5

The results from the table above are calculated from the percentage of each class from each question per aspect so that after adding up the highest and lowest data obtained from each class. The average percentage of the 23 questions is 82.76%.

Table. 5. Average per Class

NO	Kelas	Mean
1.	MIPA 5	90,23
2.	MIPA 6	96,14
3.	MIPA 7	98,78
Keseluruhan		95,16

Based on the table above with 114 students from 3 classes which were used as research samples, the result was that the highest level of excitement of students or those that gave rise to a sense of joy in them after being given new learning media in the form of augmented reality media, namely MIPA 7 class with a total percentage of 98.78%.

3. Normality test

Table. 6. Normality test

Test of Normality			
Shapiro-Wilk			
	Statistic	Df	Sig.
Total skor	.982	106	.156

The table shows the results of the normality test from the excitement scores of XI MIPA 5, XI MIPA 6, and XI MIPA 7 classes. The normality test used is the Shapiro Wilk Normality Test. The selection of the test was based on the number of samples showing more than 30 samples, namely in this study there were 114 samples. The significance value or p-value indicates the number > 0.05, indicating that the data has been normally distributed. In the results of the normality test, the p-value (sig.) of the joy score was normally distributed, as evidenced by the resulting p-value of 0.156 in the Shapiro Wilk column.

Discussion

In discussing the effect of using augmented reality media running short distances on the level of excitement of class XI students at Al-Islam Krian High School with a sample size of 114 students by giving a questionnaire after being given treatment in the form of augmented reality media. Previously the questionnaire had been validated by experts and tested for validity and reliability. Based on the results of the research above, what is the level of excitement of students after being given augmented reality media for short-distance running material, it turns out that learning using augmented reality can increase students' excitement in the learning process by ninety-five percent. This research was conducted for one day in three MIPA regular classes, namely MIPA 5, 6, and 7.

The results of the study show that the use of augmented reality media on the joy of students has a significant influence. This can be seen from the questionnaire distribution data. Joy will arise after being given treatment in the form of a video, excitement is related to emotions, when emotions increase it can affect behavior and is expected to have an impact on learning focus (Andrade EB, Odean T, Lin S, 2016). After the students were shown the augmented reality media, they were then given a questionnaire to find out the joy of the students from the six highest aspects, namely the aspect of establishing positive relationships with friends and teachers. From the results of the research that has been carried out, each aspect is calculated in terms of the percentage of each class to find out which class has a high percentage or which has a low percentage.

The augmented reality learning model stimulates students to be involved in the learning process. One of the students' favorite subjects is athletics. One of the most popular individual sports, in athletics there are running numbers, one of which is short distance running. Short-distance running is one of the materials taught in PJOK learning at Al-Islam Krian High School. Learning to run short distances (sprints) will certainly pay attention to basic movements (Agari M, Simanjuntak VG, Haetami M., 2019). Speed in short distance running is the result of fast and strong contractions of the muscles which are then converted into smooth, smooth and efficient movements (Lamusu A, Mile S, Lamusu Z., 2022). Therefore, an interesting product or new innovation is needed for learning media so that it is easier for students to learn the short distance running material. One solution is to use augmented reality media.

Augmented reality is a medium that combines the virtual world with the real world in the form of video (Mekni M, Lemieux A, 2014). In the augmented reality media displays images and

videos as well as text or steps in running short distances from start to finish. Augmented reality media will make it easier for students to understand the material because this media can become real just by scanning a barcode. In addition, augmented reality media can be accessed repeatedly so that when students forget or want to study independently, they can immediately click the link or scan the barcode. When the video is displayed, it can show detailed movements.

Learning by using augmented reality media can make it easier for students to understand the material so that students do not only dream but can see the visuals in front of which are demonstrated by animations from augmented reality media and make it easier for teachers to provide material. Research conducted by researchers related to the joy of students after being given augmented reality media, there was a question and answer interaction between the teacher and students which made the goals of effective learning media achieved and supported by other research which also revealed the same thing (Aditama PW, Nyoman Widhi Adnyana I, Ayu Ariningsih K, 2021). The use of augmented reality media in learning is expected that students can add a deeper understanding of the subject matter, therefore this research was conducted with the aim of helping students and teachers gain insight into augmented reality media so that it can bring out a sense of joy in students. so happy in following the learning process (Irfan Sural, 2018).

Happiness is included in positive emotions, happy emotions in a person can be seen from several signs such as decreased heart rate and blood pressure due to decreased oxygen and blood pressure, then when happy the breathing rhythm tends to be loose and long and a person will tend to be more relaxed if in the participants Expressions of joy can be seen in the form of short exclamations, laughing, jumping, clapping, humming and other spontaneous reactions (Harum Sari E makatita P, 2021). Research on the joy of augmented reality media is expected to make students easily remember the material presented and like PJOK learning so that problems in the classroom with learning problems that are less interesting and monotonous learning media are expected to be resolved with evidence of an increase in the number of percentages in the positive emotion aspect questionnaire and several other aspects of excitement that have been propagated in research.

The advantage of augmented reality media is that it is easy to access and can be accessed anywhere. If students want to repeat the material being taught, they can open a link or barcode for access on their mobile phones. Augmented reality also makes it easier for teachers to convey material because without using a projector, teachers can display this media on walls or

floors. In addition, this application makes it easier for students to understand the material through the images, videos, sounds and text presented. If the cellphone used is above the iPhone 7+ type and Android Lollipop, then you can access augmented reality media without the need to download an AR application. However, this application also has weaknesses, namely augmented reality media requires a quota and not all cellphones can access the application.

CONCLUSION

From the results of research on augmented reality media on the joy of class XI students in short-distance running material, it can be concluded that augmented reality media can be used well on computers, laptops, cellphones, by using a camera (webcam) as an image catcher (marker). The learning process uses augmented reality media to be used as teaching aids which will be presented in 3D visual form virtually (virtual) which are packaged in the form of modules as learning media or creative and innovative training tools so that they can increase the enthusiasm of students in learning short distance running material in PJOK learning. Testing augmented reality media has been successfully carried out in 3 classes, namely XI MIPA 5,6, and 7 at Al-Islam Krian High School with very good results on short distance running material. With these results this application can be used as a new learning method or a complement to the previous learning method in the learning process of short distance running material. Researchers hope that improvements and additions to more complete 3D objects and use better features will be carried out.

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