

# Effectiveness of Interactive Multimedia Supported Physical Education Using *Jurus Tunggal Tangan Kosong* in the New Normal Era

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**Abstract** This study was to get the effectiveness of interactive multimedia using *jurus tunggal tangan kosong* that supported physical education. *Jurus tunggal tangan kosong* is part of physical activity in sports subject for a secondary student at Palembang. It is the combination of traditional dance and art move to be sports activity. The method used one-group pretest-posttest experimental design. The data is taken from observation, interview, and test. The data analysis used t-test to know the increase of mastery movement in *jurus tunggal tangan kosong*. The result shows that *jurus tunggal tangan kosong* has been mastered by students very well. Every movement has been practised by the standard score by the Indonesian Pencak Silat Association. The multimedia presentation has been adapted to images, text and accompanied by audio music so that for students in junior high schools it is very interesting. Learning empty-handed single moves can also be understood independently by students at home. It has implications for increasing students' interest in exercising using *jurus tunggal tangan kosong* movement. The use of interactive multimedia in learning activities carried out online has been felt by students as face to face. So, these findings provide teachers with an in-depth understanding for learning media innovations that involve technology in learning and can improve the quality of learning in

schools. Moreover, learning activities that have been carried out online have demanded the use of multimedia technological innovations as learning tools or as substitutes for study rooms in the classroom.

**Keywords** *Jurus Tunggal Tangan Kosong*, Interactive Multimedia, Era New Normal, Physical Activity

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## 1. Introduction

The government has taken a policy for the implementation of education from elementary to tertiary level to be carried out online, so the role of technology in education is very important. Physical learning during the Covid-19 epidemic requires creativity and innovation by taking advantage of technological advances. So, currently, physical education has been directed at a combination of technology using integrated multimedia technology with Information and Communication Technology (ICT) [1][2]. The use of technology must be specifically designed as an effective learning resource [3]. In sports, multimedia can be used as a medium for practical activities such as motor skills [4][5]. Thus, technology has revolutionized

education and is utilized to create healthy learning habits [6] or a new revolution in sports education [7]. Young students have used technology that is adapted to the learning approach [8][9]. Diverse multimedia design with variations of text and voice [10] has had a positive influence on learning desire. Examples of applications that use technology are interactive learning multimedia, game applications, and Interactive Multimedia E-Learning Environment [11].

Several previous studies gave information that interactive multimedia has changed the learning environment, such as physical education. The results of preliminary observations at secondary schools in Palembang City, physical education was included in sports activities often saturated students. Moreover, physical education which is carried out through *jurus tunggal tangan kosong* activity as part of the *pencak silat* movement is very saturating if studied conventionally. Various physical activities at school have been carried out with a variety of traditional sports movements and martial arts movements. However, the conventional learning process does not provide a diversity of knowledge. When a physical activity has to be done online, it has created new problems for teachers. They have to use the innovate interactive multimedia with a combination of communication technology for *jurus tunggal tangan kosong* activity. Especially in the conditions of the Covid-19 pandemic, educators must create online learning classes that are fun and can be felt like face-to-face activities. Thus, the students' difficulties in understanding the *jurus tunggal tangan kosong* movements can be solved.

Some previous research has explored the role of technology in physical activity or exercise. Physical activity like as *pencak silat* is been fun through multimedia interactive model [12]. It makes a trend to design the instructional model using technology [13]. Technology and sport cannot be separated because of the integration of knowledge from multidiscipline [14]. Learning design must pay attention to the age level and needs of the child [15][16][17] and genders [18]. Therefore, the teacher's experience provides innovation in physical activity design [19]. But, it has to take as a result of needs analysis for multimedia [20]. One implementation of the use of multimedia is multimedia blogging in physical learning [21]. Thus, the use of technology in education is not a form of modern pedagogy that is newly designed to achieve educational goals [22]. Therefore, these studies refer to combine the technology in physical education while it will be appropriate with the environment learning. Moreover, the condition of the Covid-19 pandemic is not easy to use technology for online learning [23]. The study has to know the value of pedagogy.

Currently, study must be done because interactive multimedia has an essential role in physical activity using *jurus tunggal tangan kosong*. Moreover, in the needs analysis, students showed great interest in the use of

interactive multimedia for learning *jurus tunggal tangan kosong* [24]. In sports education, schools have developed system changes from the use of the internet and artificial intelligence technology as a form of educational innovation [25].

Therefore, the objective of the study is to get the effectiveness of interactive multimedia in online class which is *jurus tunggal tangan kosong* learning. It can be used for the physical education subject in the Secondary School especially in *jurus tunggal tangan kosong* learning because the proses of learning in new normal era need interactive multimedia.

## 2. Materials and Method

### 2.1. Research Approach

The method of study used an experimental approach using one-group pretest-posttest design experimental. A one-group pretest-posttest design is a research method used to determine the behaviour of a group by giving the effect of treatment on the sample. The feature of this method is that it gives the same treatment to two groups [26].

### 2.2. Participants

The study conducted at Junior High School Palembang. 80 students are 40 students for the experimental group and 40 students for the control group. Participants consisted of 40 men and 40 women who were evenly divided in each treatment group. Participants were in the age range of 12 to 15 years. The determination of the research sample is based on the assumption that the participants are students who receive *jurus tunggal tangan kosong* learning as physical activity in sports subjects at school.

### 2.3. Measures

The data are collected using observation, interview, and test. Observation used to know the process of treatment in implementing of the interactive multimedia for *jurus tunggal tangan kosong* learning in the online class. The interview is done to get students' responses toward the interactive multimedia application. This data is used to support the main data which is the test, so the study knows the effectiveness of interactive multimedia. The test gave as pre-test and post-test. The test is used to assess the level of mastery of *jurus tunggal tangan kosong* through 7 main movements with 48 movements, namely (1) style one consists of seven movements (2) style two consists of six movements, (3) style three consists of five movements, (4) Style four consists of seven movements, (5) style five consists of six movements, (6) style six consists of eight movements, (7) style seven consists of eleven movements.

**Table 1.** Test of Normality<sup>b,c</sup>

Class	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Test result	Post-test experiment	.150	40	.023	.949	40	.069
	Post-test control	.146	40	.031	.925	40	.011

(a) Lilliefors Significance Correction

(b) Test Result is constant when Class = Pre-test Experiment. It has been omitted.

(c) Test Result is constant when Class = Pre-test Control. It has been omitted.

## 2.4. Procedures

In this study, the researcher used a standard instrument made by the Indonesian Pencak Silat Association in assessing *jurus tunggal tangan kosong* move as physical activity, the assessment refers to the true score of the motion. The true score of motion includes 1) the correctness of the movement in each style, 2) the correctness of the motion sequence. Treatment activities were given 9 meetings, 7 meetings were held for physical activity and two were conducted for pretest and posttest data collection in the control and experimental groups.

## 2.5. Analysis

Technique data analysis used t-test for treatment and experiment group. It is Paired Sample t-test. The hypothesis of study is;

Ha: There is the influence of the interactive multimedia on the improve of *jurus tunggal tangan kosong* skills.

Ho: There is no influence of interactive multimedia on the improve of *jurus tunggal tangan kosong* skills.

## 3. Result

The learning process of *jurus tunggal tangan kosong* move becomes one of the physical activities in sports activities at school that are considered the most difficult by students. So far, the learning process has been carried out starting with activities exemplified by the teacher. However, the students were still wrong to make of *jurus tunggal tangan kosong* move. At the first meeting, it was conducted to carry out the pre-test activity, and the results of the test show that all students got a zero score. Therefore, students are given videos to study in weeks 2 to 8. Students are allowed to learn 48 moves on the video which has been divided into 7 meetings. The result of the normality test is presented in Table 1.

The significance value (sig.) for all data both the Kolmogorov-Smirnov test and the Shapiro-Wilk test is  $> 0.05$ . Table 1 shows that the Kolmogorov-Smirnov value has a significant value in the experimental class of  $.023 >$

$0.05$  and in the control class of  $.031 > 0.05$ . The same is shown in the results of the Shapiro-Wilk test. It can be concluded that the research data is normally distributed.

While the result statistic descriptive for the post-test in the experiment and control class is presented in Table 2 below.

**Table 2.** Descriptive Statistic Result

Class	N	Mean	Std. Deviation	Std. Error Mean	
Test result of <i>jurus tunggal tangan kosong</i>	Post-test experiment	40	85.42	5.189	.821
	Post-test control	40	40.94	7.571	1.197

Table 2 concluded that the experimental class shows a greater mean score than the control class. It can be seen from the mean score of the psychomotor test results for *jurus tunggal tangan kosong* in the experimental class is 85.42 and the standard deviation is 5.189, while the mean score of the psychomotor test results for *jurus tunggal tangan kosong* in the control class is 40.94 and the standard deviation is 7.571. So, the multimedia interactive gave a positive impact on the *jurus tunggal tangan kosong* learning. It also can know from the result of the t-test which is presented in Table 4.

The data in Table 3 concluded that multimedia interaction has a positive impact on the student's learning outcome. It increases the student's motivation for learning. In the results of the Independent Samples Test output above, the t value = 3.085 and the Sig. (2-tailed) or p-value =  $0.000 < 0.05$  or  $H_0$  is rejected. Thus, there are differences in the mastery of *jurus tunggal tangan kosong* move after students are given learning using interactive multimedia. While the results of the gain score test are also used to determine the difference between the post-test scores of the control group and the experimental group. The result of the gain score is presented in Table 4.

**Table 3.** Independent sample test

		Levene's Test for equality of variance		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
The result of <i>jurus tunggol tangan kosong</i>	Equal variances assumed	3.085	.083	30.647	78	.000	44.480	1.451	41.590	47.369
	Equal variances not assumed			30.647	69.017	.000	44.480	1.451	41.584	47.375

**Table 4.** The results of the posttest gain score of the control and experimental groups

Code of Respondent	Post-test Score of Control Class	Post-test Score of Experiment Class	Gain Score
A1	39.58	77.08	1.64
A2	41.67	89.58	4.60
A3	39.58	87.50	3.83
A4	33.33	89.58	5.40
A5	41.67	83.33	2.50
A6	37.50	85.42	3.29
A7	35.42	87.50	4.17
A8	45.83	72.92	1.00
A9	47.92	85.42	2.57
A10	35.42	89.58	5.20
A11	43.75	89.58	4.40
A12	33.33	83.33	3.00
A13	35.42	83.33	2.88
A14	35.42	79.17	2.10
A15	52.08	85.42	2.29
A16	50.00	81.25	1.67
A17	35.42	85.42	3.43
A18	50.00	91.67	5.00
A19	41.67	85.42	3.00
A20	39.58	81.25	2.22
A21	50.00	83.33	2.00
A22	45.83	87.50	3.33
A23	35.42	89.58	5.20
A24	31.25	93.75	10.00
A25	37.50	91.67	6.50
A26	35.42	87.50	4.17
A27	45.83	85.42	2.71
A28	39.58	89.58	4.80
A29	39.58	93.75	8.67
A30	39.58	87.50	3.83
A31	35.42	87.50	4.17

Table 4 continued

A32	47.92	79.17	1.50
A33	50.00	83.33	2.00
A34	37.50	91.67	6.50
A35	39.58	85.42	3.14
A36	66.67	79.17	0.60
A37	45.83	85.42	2.71
A38	37.50	91.67	6.50
A39	41.67	72.92	1.15
A40	20.83	77.08	2.45
Minimal Score	20.83	72.92	
Maximal Score	66.67	93.75	
Mean	40.94	85.42	3.65

Table 4 describes the result of the post-test score in the experiment and control class for each student. It can be seen the improvement of student's learning outcome in jurus tunggal tangan kosong learning. The result of the N-gain score shows that the N-gain score means for the experimental class is 93.75% and is included in the "high" category, with a minimum score of 72.92% and a maximum N-gain score of 100%. Meanwhile, the N-gain score for the control class was 66.67% and is included in the "medium" category, with a minimum score of 20.83% and a maximum N-gain score of 100%. Thus, it can be concluded that *jurus tunggal tangan kosong* moves using interactive multimedia has a positive effect on students in physical activity and is more meaningful than learning that is not supported by the use of technology such as multimedia.

#### 4. Discussion

The result of the study gave positive significance to the environment learning for physical activity at Junior High School Palembang, especially for the new normal era which is a live adaptation process for everyone in various lines of life, including the implementation of the educational process. The process of learning should be done online because it was done to prevent the spread of the Covid-19 virus. Therefore, every teacher should deliver learning with technological devices including the use of media that can be done audio and video. The use of technology devices that can provide learning processes, outputs and feedback [27].

The implementation of interactive multimedia in e-learning process of *jurus tunggal tangan kosong* built the student's creativity and critical thinking [28]. Students can study directly at school, at home and can learn independently anywhere and anytime. Moreover, interactive multimedia that has been used in the learning is the product in previous research and it was students' need

in *jurus tunggal tangan kosong* learning [29]. Besides, the outcome of *jurus tunggal tangan kosong* learning has high quality from the students' progressive movement mastery. Thus, the role of online learning has a positive impact on students' quality learning. *Jurus tunggal tangan kosong* has done using the combination between music, movement and value of a story like as tradition value [30][31].

Interactive multimedia applications in *jurus tunggal tangan kosong* have advantages, including (1) practical use by students and it builds the interactive communication [2], (2) the content contained in the application is made simply, (3) it is available in the offline form, so students can access media in large files, and it is more economical than utilization of online media, (4) the level of interactivity is high because they have more learning experiences through text, videos, and animations [32] which are packaged in images that are displayed along with the title and complete voice narrative. Nowadays, technology has given a positive effect on many sports learning like the implementation of computer technology in basketball [33][34]. While in China, the computer has used in the stadium to support athlete training [35], and technology has designed as virtual reality in sports training [36]. It supported the instructional of learning [37]. This study gave the implication on students' interest of *jurus tunggal tangan kosong* learning and they felt like in the class learning.

#### 5. Conclusions

The results of data analysis are known that overall the learning activities of *jurus tunggal tangan kosong* using interactive multimedia provide different concepts and improve mastery of each movement very well. The use of interactive multimedia learning contributes to *jurus tunggal tangan kosong* learning activities, among others, the presentation of teaching material becomes more attractive, learning activities are more interesting, learning activities can be more interactive, the time needed in

learning is more effective, the quality of learning can be improved, learning can be done at anytime and anywhere as you wish. The interactive multimedia is presented and emphasizes the clarity of images and text so that students can understand the motion learning easily, and the audio music presented in the application is made with the suitability of movements in *jurus tunggal tangan kosong* form of *pencak silat* to attract student motivation in learning, learning videos in the application presented with normal movements and accompanied by slow motion so that it makes students easy to learn.

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