Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/***
Vol 5 No 1 2022, pp 1-13
DOI: https://doi.org/10.31537/jeti.v5i1.899

P - ISSN 2621-2137
E - ISSN 2621-2080

THE INFLUENCE OF ANDROID-BASED EDUCATIONAL GAME MEDIA ON COGNITIVE AND PSYCHOMOTORIC STUDENTS AGED 4-5 YEARS OF KINDERGARTEN TK PERTIWI MAYANG JEMBER

Karunia Muda Setya Utama
TK Pertiwi Mayang, Jember, Indonesia
karunia.dzaky26@gmail.com

Article History: Received: June, 21 2021; Accepted: March, 24 2022; Published: June, 30 2022

Abstract:
This research is causal quantitative research that wants to determine the effect of android-based educational games on cognitive and psychomotor for students aged 4-5 years at TK Pertiwi Mayang even semester of the 2019-2020 academic year. The problems studied in this problem are? Is there and to what extent is the influence of Android-based educational game learning media on the cognitive enhancement of students aged 4-5 years at Kindergarten Pertiwi Mayang?
The research design used by the researcher is quantitative with the causal method. Analysis of the data used is multiple correlation. From the results of multiple correlation test analysis using the SPSS v.22 for Windows application. Obtained the value of Sig. (2-tailed) <0.05 that is 0.00 <0.05. It can be concluded that Ho is rejected and Ha is accepted. So that there is an effect of Android-based educational games on cognitive and psychomotor for children aged 4-5 years at Pertiwi Mayang Kindergarten.
Suggestions addressed to several parties in order to increase student interest in learning for the future are as follows: 1) In particular, the headmaster of Kindergarten Pertiwi Mayang can take advantage of the available time to provide competency development to teachers or educators to carry out their roles and duties as educators by even better for the achievement of educational goals as expected. In addition, the principal must also take the time to just look, moreover, it can provide motivation for his students. 2) The teacher councils so as not to get bored guiding, teaching, and achieving creative, innovative, and fun learning breakthroughs in order to carry out a good and optimal learning process so as to generate a better sense of student confidence. 3) Parents should give more space or time to their children to express themselves in order to support children's character development so that it can be even better. Furthermore, parents must be more active in monitoring and motivating their children to explore better potential than before.
Keywords: Andoid-based educational games, Cognitive, Psychomotor

Copyright © 2021 The Author(s)
This is an open access article under the CC BY-SA license.

Introduction

Games are often accused of having a negative influence on children because the use of Android-based games is only limited to games or entertainment which often causes children to be lazy to learn. In fact, games have positive functions and benefits for children, among them, children are familiar with computer technology, lessons to follow directions and rules, practice solving problems and logic, train motor nerves and spatial skills, establish parent-child communication when playing together, and provide entertainment. . In fact, for certain patients, game play can be used as a healing therapy (Samuel Henry: 2010).

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

Education is a process carried out by a person to find his identity, which is done by observing and learning which then gives birth to actions and behavior. Education is actually not much different from learning developed by the flow of behaviorism in psychology. Only this term is often interpreted and interpreted differently from learning which means learning. And this term is often used in educational approaches which of course means more than just learning.

In general, early childhood is a child who is at the age of 0-6 years. Early age is a very important age for child development so it is called the Golden Age. Early childhood is in the most rapid stage of growth and development, both physically and mentally. Young children learn in their own way. When viewed from the nature of early childhood, children have two aspects of development, namely cognitive and psychomotor.

Education is an effort related to fostering and developing various aspects of personality that encourage and influence children to act on their awareness, willingness and responsibility (Ahmad Susanto, 2015). According to Kepmendikbud No. 048/U/1992 (paragraph 1) states that, the purpose of organizing a kindergarten (TK) is to help lay the foundation for the development of attitudes, behavior, knowledge, skills and creativity of students for further growth and development.

National education aims to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state (Kemdiknas). , 2003). The educational path is one alternative that is considered quite capable of overcoming this problem.

Education as a preventive vehicle because through education a new, better generation will be formed. Responding to the importance of character education, it is very necessary character education in schools to realize the nation's civilization by providing exemplary and habituation

a. . Learning Media

The Association of Education and Communication Technology (AECT) defines media as all forms and channels that people use to convey messages or information. Meanwhile, the National Education Association (NEA) gave a different opinion about the media, namely the form of communication both printed and audiovisual and other equipment, for example: OHP (Overhead Projector) in its use this media requires transparent plastic in order to display it, (Sadiman, 2011: 6).

Gerlach and Ely via Arsyad (2014: 4), Media if understood in broad terms are humans, materials and events that build conditions that enable students to acquire knowledge, skills or attitudes in this sense, teachers, textbooks, and the school environment are media . Meanwhile Rusman (2012: 170) suggests learning media is a messenger technology that can be used for learning purposes and learning media is a physical means to deliver subject matter.

The word media comes from the Latin medius which literally means middle, intermediary or introduction. Whereas in Arabic the media is an intermediary or messenger from the sender to the recipient of the message (Arsyad, 2014: 3). Agree with the above statement, Heinich et.al. (in Daryanto, 2010:4) the word media is the plural form of the word medium.

Medium can be defined as an intermediary or introduction to the occurrence of communication from the sender to the receiver. “On nomme média un moyen de diffusion d'informations (comme la presse, la radio, la télévision), utilisé pour communiquer”, which means that media is a tool to convey information used to communicate is described by, http://fr. wikipedia.org/wiki/Media.

Rusman (2012:173) suggests the classification of learning media is divided into three based on the nature, range, and techniques and their use as follows:

1. From its nature, media can be grouped into:
   a. Auditive Media (Audio), namely media that can be heard only or media that has an element of sound. Example: Cassette
   b. Visual media, namely media that can only be seen, does not contain sound elements. Example: photos and pictures

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

c. Audio-Visual Media, which is a type of media that in addition to containing elements of sound also contains elements of images that can be seen. Example: movies and videos

2. From its reach capability, media can also be grouped into:
   a. Media that has a broad and simultaneous input power, namely media that has a wide reach, For example: television, radio or google
   b. Media whose input power is limited by space and time, namely media whose reach is limited, Example: film and video

From the method or technique of use, media can be grouped into:
   a. Projected media, i.e. the media used requires tools
   b. Media that is not projected, i.e. media that cannot require other tools Example: Posters, diagrams, graphics

1. Benefits and Functions of Learning Media

According to Arsyad (2014: 29) also explains the benefits of learning media as follows:
1. Learning media can clarify the presentation of messages and information so that they can improve learning processes and outcomes.
2. Learning media can increase and direct children's attention so that it can lead to learning motivation, more interaction takes place between students and their environment and the possibility of students to learn independently according to their abilities and interests.
3. Learning media can overcome the limitations of the senses, space, and time.
4. Learning media can provide students with a common experience about events in their environment, and allow interaction between teachers, the community, and their environment.

According to Indriana (2011: 48) learning media has the following benefits:
1. Various concepts that are abstract and difficult to explain directly to students can be concretized or simplified through the use of learning media.
2. Presenting various objects that are too dangerous or difficult to obtain into the learning environment through learning media that are samples of these objects. For example the use of photos, videos, and others. Displaying objects that are too large or too small into the learning space.
3. Showing movements that are too fast or slow using learning media.

. Android based educational game

According to Echols (1996: 207) means education, which is related to education. Education is something that is educational, has an element of education. Game according to Echols and Shadily (1996: 263) means a game.

The game is an act that contains preoccupation and is carried out of one's own will, freely without coercion with the aim of obtaining pleasure when carrying out these activities. In general, games are fun and entertaining, games are voluntary.

Ismail (2006: 119) states that educational games are very fun activities and can be educational methods or tools that are educational. Wolf (2000) states that an educational game is a game that has the aim of delivering learning material with elements of scoring, time, and a feedback in it. Ismail (2006: 150) also states, the functions of educational games are as follows:

1. Providing knowledge to children through the process of learning to play while learning.
2. Stimulate the development of thinking power, and creativity and language in order to foster good attitudes, mentality, and morals.
3. Creating an interesting playing environment, providing a sense of security and fun.
4. Improve the quality of children's learning

According to Andrew Rollings and Ernest Adam (2003) game genres can be classified into several types, including:

1. Action games, usually include physical challenges, puzzles, races, and some other conflicts. It can

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

also cover simple economic problems, such as collecting objects.

2. Real Time Strategy (RTS) is a game that involves strategy, tactics, and logic problems. Examples of this type of game are Age of Empire, War Craft, and so on.
3. Role Playing Games (RPG), most games of this type involve problems of tactics, logic, and exploration or exploration. And it also sometimes includes puzzles and economics because the game usually involves collecting loot and selling it for better weapons. Examples of this game are Final Fantasy, Ragnarok, Lord of The Rings, and so on.
4. Real World Simulation, includes sports games and simulations of vehicle problems including military vehicles. These games mostly involve physical and tactical issues, but not exploration, economics and conceptual issues. An example is the game Championship Manager.
5. Construction and Management, such as Roller Coster Tycoon and The Sims games. Basically it is an economic and conceptual problem. These games rarely involve conflict and exploration, and almost never involve physical challenges.
6. Adventure games, prioritizing exploration problems and solving puzzles. But sometimes it includes conceptual problems, and physical challenges but very rarely.
7. Puzzle games, aimed at solving a particular problem. Almost all of the challenges here involve logic problems which are usually limited by time.
8. Slide scrolling games, in this type of game the character can move sideways followed by background movement. Examples of games of this type are Super Mario, Metal Slug, and so on.
9. Shooting, shooting-type games mostly use the mouse as a controller. In this game, the player seems to act as an FPS shooter (first person shooter) or the player controls a TPS shooter (third person shooter). Examples of shooting type games include: Duck hunt, Counter Strike, Onimusha and so on.
10. Fighting, fighting-type games are basically the same as action-type games, except that in fighting-type games the player controls a character to fight with other characters until one of the characters loses. Examples of fighting type games include: street fighter, tekken, duels, pencak silat and so on.
11. Racing, Game type racing is basically a game that moves the camera. Players are given a vehicle or the like to take a certain route. Examples of racing type games include: NFS, Auto bahn, MotoGP, Formula 1 and so on

Android

Lee (2012:34) states that Android is an open source operating system for mobile devices based on the Linux operating system. Agree with Nazaruddin (2012: 1) Android is an operating system for mobile phones based on Linux.

In July 2005 Android was acquired by Google and on November 5, 2007 Android was officially released by Google. In application development, Android provides the Android SDK which provides tools and APIs (application programming interface).

API is a set of commands, functions and protocols used by developers (programmers) for the development of applications with the Android platform in http://updateshare9.blogspot.co.id

Gambar 2. Icon Android

1) *Android provides an open platform for developers to create their own applications for use by various mobile devices. Initially, Google Inc. bought Android Inc., a newcomer who makes*

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

software for mobile phones. Then to develop Android, the Open Handset Alliance was formed, a consortium of 34 hardware, software, and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia. has many versions in its development.

2) *Several versions of Android which were accessed from www.application-android.net on August 10, 2015 are as follows: Android 1.1, Android 1.5 (Cupcake), Android 1.6 (Donut), Android 2.0 (Eclaire), Android 2.2 (Froyo), Android 2.3 (Gingerbread), Android3.0 (Honeycomb), Android 4.0 (Ice Cram Sandwich), Android 4.1 (Jelly Bean), Android 4.4 (Kitkat), and most recently Android 5.0 (Lollipop).*
3) *Android can be used by anyone who wants to use it on their device. Android provides an open platform for developers to create their own applications that will be used for various mobile devices. Initially, Google Inc. bought Android Inc., a newcomer who makes software for mobile phones. Then to develop Android, the Open Handset Alliance was formed, a consortium of 34 hardware, software, and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, TMobile, and Nvidia.*
4) *At the time of the inaugural release of Android, November 5, 2007, Android 10 together with the Open Handset Alliance said they supported the development of open standards on mobile devices. On the other hand, Google releases Android codes under the Apache license, a software license and open standards for mobile devices.*

a. Android advantages

1) Multitasking – If you have ever experienced the advantages of Symbian which can open several applications at once, as well as Android which is able to open several applications at once without having to close one of them.
2) Ease of Notifications – Every time there is an SMS, Email, or even the latest article from the RSS Reader, there will always be a notification on the Home Screen of the Android Phone, not to mention the blinking LED Indicator Light, so you won't miss a single SMS, Email or Miss call though.
3) Easy Access to Thousands of Android Applications via Google Android App Market – If you like to install applications or games, through the Google Android App Market you can download various applications for free. There are thousands of apps and games ready for you to download on your Android phone.
4) Diverse Choice of Cell Phones – Talking about Android phones, it will feel 'different' compared to iOS, if iOS is only limited to iPhone from Apple, then Android is available on cellphones from various manufacturers, ranging from Sony Ericsson, Motorola, HTC to Samsung. And every mobile phone manufacturer also presents Android phones with their own style, such as Motorola with its Motoblur, Sony Ericsson with its Time Scape. So you can freely choose your Android phone according to your favorite "brand".
5) Can install modified ROMs – not satisfied with the standard Android look, don't worry there are many Custom ROMs that you can use on Android phones.
6) Widgets – that's right, with a Widget on the homescreen, you can easily access various settings quickly and easily.
7) Google Maniac – Another advantage of Android if you are a loyal user of Google services ranging from Gmail to Google Reader, Android phones have been integrated with Google services, so you can quickly check email from Gmail.

Android Weaknesses

1) Continuous Internet connection, most cell phones based on this system require a simultaneous internet connection, aka continuously active. GPRS internet connection is always active, that means you must be ready to subscribe to a GPRS package that suits your needs.
2) Ads – Applications on Android Phones can indeed be obtained easily and for free, but the consequence is that in each of these applications, there will always be Ads displayed, whether it is the top or the bottom of the application.

1. Cognitive

Journal of Educational Technology and Innovation
Homepage: http://jurnal.unipar.ac.id/index.php/jeti/ *P - ISSN 2621-2137*
Vol 5 No 1 2022, pp 1-13 *E - ISSN 2621-2080*
DOI: https://doi.org/10.31537/jeti.v5i1.899

Cognitive is how we think which also reflects the intelligence potential of the brain. The reason, there are many things involved in the processing of information in the brain. Since the information was received until it was finally understood well. So apart from reading, we can actually retrieve and process information by listening, imitating, watching, updating, or simply observing the environment around you. Consciously or not, all these activities take advantage of the role of your cognitive function. That's why cognitive skills can't be taken lightly.

Cognitive function also develops from childhood along with the process of physical growth and development until adulthood. Each person has different cognitive abilities, depending on how and how well they process the information they receive.

2. Psychomotor

Psychomotor is a domain related to skills or the ability to act after a person receives a certain learning experience. Psychomotor learning outcomes are actually a continuation of cognitive learning outcomes (understanding something) and affective learning outcomes (which appear in the form of behavioral tendencies). The psychomotor domain is related to physical activity, such as running, jumping, painting, dancing, hitting, and so on.

Skills learning outcomes (psychomotor) can be measured through: (1) direct observation and assessment of student behavior during the practical learning process, (2) after participating in learning, namely by giving tests to students to measure knowledge, skills, and attitudes. , (3) some time after learning is complete and later in the work environment

According to Elizabeth B. Hurlock in developmental psychology, motor development means the development of controlling physical movements through coordinated activities of the nerve centers, nerves and muscles. This control comes from the development of reflexes and mass activities present at birth.

Before this development occurs, the child will remain helpless. However, this helplessness changed rapidly. During the first 4 or 5 years of postnatal life, the child can control gross movements. These movements involve large body parts that are used in walking, running, jumping, swimming, and so on. After the age of 5 years, there is great development in controlling better coordination involving the smaller muscle groups used for grasping, throwing, catching a ball, writing, and using tools. At the age of 3 years, children have had the ability to pick up the smallest object between the thumb and forefinger for some time, but they are still awkward doing it. At the age of 5 years, the child's fine motor coordination is increasing, the hands, arms and fingers all move together under eye commands

METHOD

1. Research Design

The research approach used by the researcher is a quantitative approach because the research data is in the form of numbers and the analysis uses statistics (Sugiyono, 2016:11). This study was also conducted by comparing three variables regarding the effect of android-based educational games on the cognitive and psychomotor abilities of grade A students.

By performing statistical tests, it can be seen whether these variables have a positive or negative effect. This study uses a causal relationship research method (causal). According to Sumiharsono (2015: 15) this causal research seeks to reveal a causal relationship between a variable under study that is spread naturally from the object of research.

From this opinion, it can be concluded that the researcher uses a causal quantitative research approach (cause and effect) in looking at the relationship of variables to the object under study, so that in his research there are independent (X) and dependent (Y) variables. From these variables, it is then sought how much influence the independent variable has on the dependent Sugiyono (in Puspa, 2016: 38).

As explained above, the researcher wants to know whether there is an influence between variable X on variables Y1 and Y2. The variables are educational games based on Android X, while cognitive as Y1 and psychomotor as Y2 variables.

Based on the research design, the steps in this research are as follows:

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

1. Determination of the research area by using a purposive sampling area and determining the number of respondents by using quota sampling.

2. Create grids and questionnaires consisting of educational game method variables based on Android X, while cognitive as Y1 and psychomotor as Y2 variables.

3. To test the validity and reliability of the questionnaire that will be used as an instrument.

4. Formulate a blueprint.

5. Distribute questionnaires to research respondents.

6. Analyze the results of the questionnaire using multiple correlational formulas with the help of SPSS v.20 for windows.

7. Testing hypotheses / data analysis.

8. Draw conclusions whether the proposed hypothesis is rejected or accepted.

9. Compile a report in the form of a thesis.

2. Population and Sample

To determine the research area, the researchers used the Purposive Sampling Area method, namely the technique of determining the research area with certain considerations (Sugiyono, 2016: 126). The research location determined by the researcher was TK Pertiwi Mayang Jember as the research area with the following considerations:

1. Researchers are familiar with the situation and conditions of the research area, making it easier for researchers to conduct research in that place.

2. In TK Pertiwi Mayang Jember, there has never been a research with the same title and problems as this research.

3. The availability of institutional agencies to serve as a place of research.

4. Research at TK Pertiwi Mayang Jember is relevant to the Education Technology Study Program.

3. Operational Definition

a. Research Respondent Determination Method

b. Data Collection Methods and Tools

4. Data Analysis Method

According to Sugiyono (2015: 147) data analysis is an activity after data from all respondents or other data sources are collected. Activities in data analysis are: grouping data based on variables and types of respondents, tabulating data based on variables from all respondents, presenting data for each variable studied, performing calculations to answer the formulation of the problem, and performing calculations to test hypotheses that have been proposed.

The data analysis carried out in this study was as follows: Data analysis in this study used the SPSS 22.00 for Windows program. The following is the analysis of the data in this study, among others:

a. Validity test

b. Reliability Test

5. Data Analysis Techniques

Data analysis technique or data analysis method in this research is Product Moment correlation. According to Masyhud (2014: 303) product moment correlation is to find out whether one variable has a significant relationship with other variables or to find out whether the state of a variable is in line with other variables. (Masyhud, 2014:255)

In this study using multiple correlation using SPSS v.22 for Windows. Data analysis technique or data analysis method in this research is multiple correlation. According to Riduwan (2014) multiple correlation to determine whether one variable has a significant relationship with other variables or to determine whether the state of a variable is in line with other variables.

The following is a table of interpretations of multiple correlation index numbers.

Tabel 1. Tabel Tingkat Korelasi *Product Moment*

Besarnya "r" *Product Moment*	Tingkat Hubungan
0,00 – 0,199	Sangat lemah

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

0,20 – 0,399	Lemah
0,40 – 0,599	Cukup
0,60 – 0,799	Kuat
0,80 – 0,100	Sangat kuat

(Siregar, 2017: 337)

Decisions taken based on probability values are:
If (sig) > , then H0 is accepted.
If (sig) < , then H0 is rejected.
(Siregar, 2017: 350)

RESULTS AND DISCUSSION

Results

As the research flow and procedures have been planned, the initial results of this study are in the form of data from the test results of research instrument data, data on variable X and variable Y1 Y2.
These results are research data on children aged 4-5 years in Pertiwi Mayang Kindergarten Even Semester for the 2019/2020 Academic Year.
1. Data Analysis and Hypothesis Testing Media educational games on cognitive
In this study, hypothesis testing uses product moment correlation using the SPSS v.22 application for Windows. The following table shows the results of the correlation of data analysis in this study:

Tabel 2. Tabel Uji Hipotesis Instrumen Correlations

		kognitif	Media
Kognitif	Pearson Correlation	1	.803**
	Sig. (2-tailed)		.000
	N	40	40
Media	Pearson Correlation	.803**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Data Source: Processed Results SPSS v.22

In this hypothesis test, H0 is rejected if the value of Sig. (2-tailed) < 0.05 and vice versa H0 is accepted if the value of Sig. (2-tailed) > 0.05. It can be seen in the table above that the value of Sig. (2-tailed) is .000 then Sig. (2-tailed) < 0.05 so it can be concluded that H0 is rejected and Ha is accepted. Which means that in this study there is an influence of educational game media on children aged 4-5 years in Pertiwi Mayang Kindergarten.

This research was conducted because the researcher wanted to know the effect of educational game media on the cognitive of children aged 4-5 years in Pertiwi Mayang Kindergarten. Based on the data from the hypothesis test, it shows that the above calculation shows that the correlation between variable X and variable Y1 is not negative, meaning that there is a positive correlation between the two variables (the correlation runs in the same direction). In the hypothesis test table above, the correlation between variables X and Y1 is 0.803, so the correlation is positive or unidirectional which includes a strong positive correlation.

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

This can be seen from the calculation of the results of the distribution of questionnaires conducted by researchers. If the Android-based educational game media for students whose implementation material is carried out by the supervising teacher is carried out properly and appropriately both from the material, implementation and follow-up on introduction, numbers, colors, according to student learning needs, then these students will not experience problems in recognizing letters, numbers, colors. So that students have a low level of knowledge, they can still improve their knowledge by studying at home. And vice versa if the use of Android-based educational games is not good, parents can directly guide their children at home and continue to learn.

In this study, positive correlation got a strong category. Where this happens because the provision of material by the accompanying teacher or class teacher can be continued by parents to apply the Android-based educational game.

From the explanation above, it is proof of the hypothesis in chapter II where Ho is rejected which means "There is no influence of android-based educational game media on children aged 4-5 years in Pertiwi Mayang Kindergarten, Mayang District, Jember Regency

In the SPSS v.22 calculation results show a correlation with the sign ** with a confidence level of 99%. Thus Ho was rejected which reads "There is no influence of educational game media on the cognitive of grade A students of Pertiwi Mayang Kindergarten, Mayang District, Jember Regency,
The purpose of this study was to find out whether and to what extent the influence of android-based educational game media on the cognitive of 4-5 year old children at Pertiwi Mayang Kindergarten. This can be explained in the working hypothesis proposed by the researcher is accepted, from the results of data analysis obtained 0.803 this means 80.3% of the data both have a positive effect. Which means that android-based educational games have an effect on students' cognitive.

1. Data Analysis and Hypothesis Testing of educational games on psychomotor
In this study, hypothesis testing uses product moment correlation using the SPSS v.22 application forwindows. The following table shows the results of the correlation of data analysis in this study:

Table 3. Table of Instrumental Hypothesis Testing

Correlations

		Psikomotorik	Media
Psikomotorik	Pearson Correlation	1	.734**
	Sig. (2-tailed)		.000
	N	40	40
Media	Pearson Correlation	.734**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Data Source: SPSS v.22 Processed Results

In this hypothesis test Ho is rejected if the value of Sig. (2-tailed) < 0.05 and vice versa Ha is accepted if the value of Sig. (2-tailed) > 0.05. It can be seen in the table above that the value of Sig. (2-tailed) is .000 then Sig. (2-tailed) < 0.05 so it can be concluded that Ho is rejected and Ha is accepted.

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

Which means that in this study there is an influence of educational game media on the psychomotor of children aged 4-5 years in Pertiwi Mayang Kindergarten.

This research was conducted because the researcher wanted to know the effect of educational game media on the psychomotor of children aged 4-5 years in Pertiwi Mayang Kindergarten. Based on the data from the hypothesis test, it shows that the above calculation shows that the correlation between X and Y2 is not negative, meaning that there is a positive correlation between the two variables (the correlation goes in the same direction). In the hypothesis test table above, the correlation between variable X and variable Y2 is 0.734, so the correlation is positive or unidirectional which includes a strong positive correlation.

This can be seen from the calculation of the results of the distribution of questionnaires conducted by researchers. If the android-based educational game media is applied to students whose implementation material is carried out by the supervising teacher, it is carried out properly and appropriately both from the material, implementation and follow-up on introduction, numbers, colors, according to student learning needs, then these students will not experience problems in learning. recognition of letters, numbers, colors.

So that students have a low level of knowledge, they can still improve their knowledge by studying at home. And vice versa if the use of Android-based educational games is not good, parents can directly supervise students at home and continue to direct them to use the media properly and correctly.

In this study, positive correlation got a strong category. Where this happens because the provision of material by the accompanying teacher or class teacher can be continued by parents to apply the method. From the explanation above, it is proof of the hypothesis in chapter II where Ho is rejected which means "There is no influence of android-based educational game media on the psychomotor of children aged 4-5 years in Pertiwi Mayang Kindergarten, Mayang District, Jember Regency. In the calculation results SPSS v.22 shows a correlation with a ** sign with a confidence level of 99%. Thus Ho was rejected which reads "There is no influence of educational game media on the psychomotor of children aged 4-5 years in Pertiwi Mayang Kindergarten, Mayang District, Jember Regency.

he purpose of this study was to find out whether and to what extent the influence of android-based educational game media on the psychomotor skills of children aged 4-5 years at Pertiwi Mayang Kindergarten was achieved. This can be explained in the working hypothesis proposed by the researcher is accepted, from the results of data analysis obtained 0.734 this means 73.4% of the data both have a positive effect. Which means that android-based educational games have an effect on students' psychomotor.

1. Data Analysis and Hypothesis Testing Android-based educational games on cognitive and psychomotor

In this study, hypothesis testing using multiple correlation using SPSS v.22 for Windows application.

The following table shows the results of multiple correlation data analysis in this study:

Journal of Educational Technology and Innovation
Homepage: ***http://jurnal.unipar.ac.id/index.php/jeti/*** *P - ISSN* 2621-2137
Vol 5 No 1 2022, pp 1-13 *E - ISSN* 2621-2080
DOI: https://doi.org/10.31537/jeti.v5i1.899

Table 4. Table of Instrument Hypothesis Testing

Correlations

		Kognititif	Psikomotoik	Media
Kognitit if	Pearson Correlation	1	.719**	.676**
	Sig. (2-tailed)		.000	.000
	N	40	40	40
Psikom otoik	Pearson Correlation	.719**	1	.722**
	Sig. (2-tailed)	.000		.000
	N	40	40	40
Media	Pearson Correlation	.676**	.722**	1
	Sig. (2-tailed)	.000	.000	
	N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Data Source: Processed Results SPSS v.22

In this hypothesis test, H0 is rejected if the value of Sig. (2-tailed) < 0.05 and vice versa H0 is accepted if the value of Sig. (2-tailed) > 0.05. It can be seen in the table above that the value of Sig. (2-tailed) is .000 then Sig. (2-tailed) < 0.05 so it can be concluded that H0 is rejected and Ha is accepted. Which means that in this study there is an influence of Android-based educational games on cognitive and psychomotor children aged 4-5 years in Pertiwi Mayang Kindergarten.

This research was conducted because the researcher wanted to know the effect of Android-based educational games on the cognitive and psychomotor of children aged 4-5 years in Pertiwi Mayang Kindergarten. Based on the data from the hypothesis test, it shows that the above calculation shows that the correlation between X and Y1 is not negative, meaning that there is a positive correlation between the two variables (the correlation runs in the same direction). In the hypothesis test table above, the correlation between variables X and Y1 Y2 is 0.676 and 0.719, so the correlation is positive or unidirectional which includes a sufficient positive correlation.

In this study, the positive correlation was categorized as sufficient. Where this happens because the provision of material by accompanying teachers or classroom teachers is very innovative in applying Android-based educational games. The approach taken by the classroom teacher is also very intensive every day and there is a cooperative collaboration with parents and various parties who help.

From the explanation above, it is proof of the hypothesis in chapter II where Ho is rejected, which means "There is no effect of Android-based educational games on cognitive and psychomotor children aged 4-5 years in Pertiwi Mayang Kindergarten, Mayang District, Jember Regency. In the SPSS v.22 calculation results show a correlation with the sign ** with a confidence level of 99%.

The purpose of this study was to find out whether and to what extent Android-based educational games on the cognitive and psychomotor skills of children aged 4-5 years at Pertiwi Mayang Kindergarten in the even semester of the 2019-2020 school year were achieved. This can be explained in the working hypothesis proposed by the researcher is accepted, from the results of data analysis obtained 0.676 this means 67.6% and 0.722 this means that both data have a positive effect. Which means that Android-based educational games affect the cognitive and psychomotor abilities of children aged 4-5 years in Pertiwi Mayang Kindergarten.

Journal of Educational Technology and Innovation
Homepage: http://jurnal.unipar.ac.id/index.php/jeti/ *P - ISSN 2621-2137*
Vol 5 No 1 2022, pp 1-13 *E - ISSN 2621-2080*
DOI: https://doi.org/10.31537/jeti.v5i1.899

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the research that researchers have done, the results of research on Android-based educational games on cognitive and psychomotor children aged 4-5 years, the researchers can conclude as follows:

Android-based educational game media for students whose implementation material is carried out by the supervising teacher is carried out properly and appropriately both from the material, implementation and follow-up on introduction, numbers, colors, according to student learning needs, then these students will not experience problems in recognizing letters. , number, color. So that students have a low level of knowledge, they can still improve their knowledge by studying at home. And vice versa if the use of Android-based educational games is not good, parents can directly guide their children at home and continue to learn.

References

Ahmad Susanto, 2012. Perkembangan Anak Usia Dini. Jakarta: Kencana.

Arikunto, Suharsimi. 2013. Manajemen Penelitian. Jakarta: Rineka Cipta.

Darminiasih, N.N., dkk. 2014. Pengembangan Metode Bermain Permainan Tradisional Dalam Upaya Meningkatkan Kemampuan Berbahasa dan Sosial Emosional Anak Kelompok B TK Sebana Sari". Jurnal Perogram Pascasarjana Universitas Pendidikan Ganesha. Singaraja.

Depdiknas, 2004. Kurikulum TK dan RA, Jakarta: Depdiknas.

Blackman, S. 2013. Beginning 3D game development with Unity 4: All-in-one, multi-platform game development. New York: Apress Media LLC.

Blumberg, F. C., & Fisch, S. M. 2013. Introduction: digital games as a context for cognitive development, learning, and developmental research. New Directions for Child and Adolescent Development, 2013 (139), 1–9. https://doi.org/10.1002/cad.20026.

Clark, R. C., & Mayer, R. E. 2011. E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning. San Francisco USA: Pfeiffer.

Darmawan, D. 2015. Teknologi pembelajaran. Bandung: Remaja Rosdakarya.

Dopo, F. B., & Ismaniati, C. 2016. Persepsi guru tentang digital natives, sumber belajar digital dan motivasi memanfaatkan sumber belajar digital. Jurnal Inovasi Teknologi Pendidikan, 3(1), 13–24. https://doi.org/10.21831/tp.v3i1.8280.

Duckett, I., & Tatarkowski, M. 2005. Practical strategies for learning and teaching on vocational programmes. London: Learning and Skills Development Agency (LSDA).

Filsecker, M., & Kerres, M. (2014). Engagement as a volitional construct. Simulation & Gaming, 45 (4–5), 450–470. https://doi. org/10.1177/1046878114553569

Finnegan, T. 2013. Unity android game development by example beginner's guide. Birmingham UK: Packt Publishing.

Gunawardhana, L. K. P. D., & Palaniappan, S. 2015. Psychology of digital games and its effects to its users. Creative Education, 6(16), 1726–1732. https://doi.org/10.4236/ce.2015.616174

Hergenhahn, B. R., & Olson, M. H. 2012. Theories of learning. (Terjemahan Tribowo B.S.). Jakarta: Kencana Prenada Media.

International Data Corporation. 2016. Smartphone OS market share, 2015 Q1. Retrieved January 2, 2016, from http://www. idc.com/prodserv/ smartphone-os-market-share.jsp.

Joyce, B. R., Weil, M., & Calhoun, E. 2015. Models of teaching. New Jersey: Pearson Education.

Kementerian Pendayagunaan Aparatur Negara republik Indonesia. Peraturan Menteri Negara Pendayagunaan Aparatur Negara Nomor: PER/2/M.PAN/3/2009 tentang Jabatan Fungsional Pengembang Teknologi Pembelajaran (2009).

Miarso, Y. 2013. Menyemai benih teknologi pendidikan. Jakarta: Kencana Prenada Media.

Muhtadi, A. 2006. Karakteristik gaya belajar mahasiswa ditinjau dari preferensi sensori dan lingkungan. Jurnal TEKNODIKA, 4(7), 1–21.

Rusman. 2014. Model-model pembelajaran: Mengembangkan profesionalisme guru. Jakarta: Rajagrafindo Persada.

Schunk, D. H. 2012. Learning theories an educational perspektif (teori teori pembelajaran: perspektif pendidikan) (terjemahan Eva Hamdiah dan Rahmat Fajar). Yogyakarta: Pustaka Pelajar.

Seels, B. B., & Richey, R. C. 1994. Instructional technology: The defination and domains of the field. (Terjemahan Dewi S. Prawiradilaga, Raphael Rahardjo, & Yusufhadi Miarso). Jakarta: Universitas Negeri Jakarta Pres.

Setyawan, Sigit. 2013. Nyalakan Kelasmu: 20 Metode Mengajar dan Aplikasinya. Jakarta: PT Grasindo.

Sumiharsono, Rudy, dkk. 2015. Pedoman Penulisan Tesis. Jember: Program Pascasarjana IKIP PGRI Jember.

Smaldino, Sharon E. Dkk. 2011. Instructional Technology and Media for Learning: Teknologi Pembelajaran dan Media untuk Belajar. Jakarta: KENCANA Prenada Media Group.

Sudjana, Nana. 2009. Penilaian Hasil Proses Belajar Mengajar. Bandung: PT Remaja Rosdakarya.

Sugiyono. 2014. Metode Penelitian Kuantitatif, Kualtatif dan R & D. Bandung: Alfbeta.

Sukmadinata, Nana Syaodih. 2013. Metode Penelitian Pendidikan. Bandung: PT Remaja Rosdakarya.

Suratno. 2005. Pengembangan Kreatifitas Anak Usia Dini. Jakarta: Depdiknas.

Sujiono, Yulianti Nuraini, dkk. 2007. Metode Pengembangan Kognitif. Jakarta: Universitas Terbuka

Spector, J. M. 2012. Foundations of educational technology: Integrative approaches and interdisciplinary perspectives. New York USA: Routledge.

Sumpter, J. 2015. Make a 2D arcade game in a weekend: with unity. New York: Apress Media LLC.

Ulicsak, M., & Williamson, B. 2011. Computer games and learning: A handbook. London: Futurelab.

Ulicsak, M., & Wright, M. 2010. Games in education: serious games. Bristol: Futurelab.

Warsita, B. 2013. Perkembangan definisi dan kawasan teknologi pembelajaran serta perannya dalam pemecahan masalah pembelajaran. Jurnal KWANGSAN, 1(2), 72–93.

Widoyoko, S. E. P. 2013. Evaluasi program pembelajaran: panduan praktis bagi pendidik dan calon pendidik. Yogyakarta: Pustaka Pelajar.

Woo, J.-C. 2014. Digital game-based learning supports student motivation, cognitive success, and performance outcomes. Educational Technology & Society, 17(3), 291–307.

Zechner, M. 2011. Beginning android games. New York: Apress Media LLC.