APPLICATION INTRODUCTION OF ANIMAL CHARACTERISTICS FOR EARLY CHILDHOOD USING VR TECHNOLOGY BASED ON ANDROID (A CASE STUDY OF KOBER MULYASARI AND KOBER AL-BARKAH)

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ABSTRACT

The introduction of animals is one of the lessons learned in early childhood education. This lesson discusses the introduction of animals from the physical shape and sound of animals. Learning system introduction of animals used in most of OLD/KOBER, teachers simply deliver the introduction of animals using a book or small posters and teachers have to imitate the animal sounds, because the distance is quite far away to show the types of animals are rarely encountered in the vicinity of the school so that teachers should take students to the safari park for the delivery of Introductory animal characteristics.

Therefore, to solve that problem, then created an application introduction of animal characteristics using virtual reality technology based on android. Features in this application is a 3d model of an animal, animal names, animal sounds and animal characteristics. Users can run the application in two modes appearances, namely standard appearance and the appearance of virtual reality. Applications created using Unity3D software and applications can be run on an Android version 5.1.1 or Lollipop.

Based on the results of tests performed, it can be concluded that the application meets the criteria that is good, that allows teachers to introduce the animal to the child. Application introduction of animal characteristics can also improve the children's interest in learning and improve children's understanding of the characteristics of the animal.

Keywords: Animals, Virtual Reality, Android

1. INTRODUCTION

Early childhood education is the level of education before secondary base is a construction effort is intended for children from birth up to the age of six through the awarding of educational stimulation to help the growth and development of physical and spiritual so that children have preparedness in entering further education.

Early childhood is the new child is born until the age of six years, this age is the age of a very decisive in the formation of the character and personality of the child. An early age is the age where children are experiencing rapid growth and development, physical and motor development of children will be fulfilled properly and optimally when they are familiar with a variety of activities to play freely and move freely undertaken in early childhood education. Play moves that require physical involvement and children's motor can be done by playing a mimic of animal behavior [10].

The introduction of animals is one of learning that is studied by students of early childhood education. This material discusses the introduction of animals ranging from physical form, colour and sound of animals. The learning system is the introduction of the animals used in the Kober Mulyasari and Kober Al-barkah teachers only convey the introduction of animals by using books and small posters because access far enough to reveal the types of animals that are rarely found around the school.

Based on the results of interviews with the mother of Cicih Kurniasih as teacher in the Kober Mulyasari and Mrs. Ukasih as a teacher in Al-barkah Kober on 8-9 February 2016, obtained a statement that ways of learning as it has a few drawbacks, namely the students are learning in the classroom sometimes doesn't focus on the material that is being taught due to lack of interaction of the students against the material and also less details the introduction of animals directly so that students are hard-pressed to know the physical form of each animal. One of the aspects that should be attempted by the teacher in the learning is student must be active both physically, mentally, and emotionally. In practice, the teacher is not always able to make students active just by way of lectures, q & a and others but needed the media to attract interest or passion of student learning [3].

Based on direct observations conducted at the Kober Mulyasari and Kober Al-barkah on 8-9 February 2016 in mind that of the 40 students who were in the Kober Mulyasari and Kober Al-barkah there are 22 students who can attend a school with a good but still there are 18 students who cannot follow the lesson properly, so this led to the existence of the students still value the level of achievement of the child's development which is still under the average. Therefore it takes media to

multimedia-based learning so that the media would be more interactive learning.

Refer to the exposure of the problem required a solution in introduce interesting animal characteristics and easily understood by a child. One of the technologies that can be used to solve the problem of the introduction of the characteristics of the animals is by building an application introduction the characteristics of animals for early childhood using virtual reality technology. With the technology of virtual reality users can interact with an environment that simulated by an application, a fact that emulated environment or is it really an environment that exists only in the imagination.

1.1 urpose and Objectives

The purpose of this research is to build applications using animal characteristics introduction of virtual reality technology on android devices.

The objectives to be achieved in the research that will be done is as follows:

1. Help the child to know the characteristics of each animal with more interactive.
2. Facilitate teachers in introducing sound and characteristics of animals.
3. Build an interactive learning media can increase children's learning motivation in getting to know the characteristics and the sounds of animals.

2. THE CONTENT OF RESEARCH

2.1 Animal

Animal eukaryotic organism that is organisms with cells that have a nucleus and other organelles heavy wings, namely multicellular organisms that have a lot of cells, i.e. refer to heterotrophic organism that requires organic compounds in which carbon is extracted for its growth. Different from the nutrition autotrofik on plants, animals incorporate organic materials that are already so, into his body by means of swallowing (ingestion) or eat other organisms, or eat an organic material decomposes. The largest component of animal cells consist of structural protein collagen. Most of the animals reproduce sexually, with diploid stages that dominates her life cycle [1]. While according to the animal organism Widayati or living things have a way of life there is an assortment of independent living, take on other organisms as parasites, and some were living a huddle or group [8]. In his book, Widayati lays out some general characteristics of the animals include:

1. Animals multicellular eukaryotic organisms and is.
2. Animals are heterotrophic, i.e. get energy by eating other organisms (plants or animals). This is a common trait that distinguishes the plants and animals.
3. Animal cells do not have cell walls.
4. Do not have klorofi so it is not capable of photosynthetic.
5. Reproduce the typical manner, namely in mating (sexual). Only a few types that can reproduce asexually.
6. Most animals have a brain and nervous system.
7. The animal is actively moving organisms (motile).

Based on the explanation of 925silverbali and Widayati, it can be concluded that animals are living beings which has its own way of life, and have similar habits of men among them requires the intake of nutrients and energy by way of consuming other organisms, reproduce by means of mating (sexual), is actively moving organisms, as well as having a brain and nerves but the difference with humans is humans can think because given the excess of IE have common sense.

In this world a great many types of animals, and every animal has its own characteristics, the characteristics of the animal that is the characteristic that distinguishes between animals with other animals and usually characterize these not all animals have it. Characteristics of animals that are easy to distinguish, namely the number of legs, body shape, sound, color, food, how to breed as well as the habitats they live.

2.2 Virtual Reality

Virtual Reality (VR) the digital space is where all user's movement can be tracked and known or know the description of the surroundings. The results obtained are arranged and displayed to the human senses in accordance with movements done [4]. While according to Wulandari Virtual reality (VR) or virtual reality is a technology that allows a user can interact with an environment that simulated by the computer (computer-simulated environment), an actual environment emanating from an environment that exists only in invaginasi [9].

Can be summed up in a simple, Virtual Reality is the appearance of three-dimensional images that are in the computer, it does look real with the help of a number of specific equipment. His most important trait is by using a device designed for a specific purpose, this technology is able to make the person feel the virtual world be puzzled and convinced that hers is real.



Pictures 1 User Simulation Virtual Reality

To get a more resembling the real world, virtual reality can be combined with equipment called a glove, headset, and walker.

1. Glove input device that is able to capture the movement of the hand and send information to the movement system of virtual reality.
2. The Headset is a device that serves to monitor the movement of the head. In addition it is this device that gives a view of the artificial environment to users so that it is as if the user looking at the real world.
3. Walker is the equipment that is intended to monitor the movement of the foot. This equipment can make the wearer feel the sensation of stepping in the real world.

The virtual reality can be applied in various aspects such as seen in the following table:

Table 1 The application of Virtual Reality [9]

Industry	The application of the
Manufacturing	1. Training 2. Testing of the draft 3. the prototype of the pseudo 4. Anaisis engineering 5. analysis of orgonomik 6. simulation of pseudo in the Assembly, production, maintenance.
Architecture	The design of the building
Military	1. training (Pilot, astronaut, Driver) 2. simulation of warfare
Medicine	1. surgical Training 2. surgical Planning 3. physical therapy
Research/Education	1. virtual physics laboratory 2. the study of Typhoon 3. configuration of Galaxy 4. Testing of complex math
Entertainment	1. virtual Museum 2. air battle Simulation 3. Arcade 4. virtual Garden

2.2.1 The History of Virtual Reality

In 1968, Ivan Shuterland with the help of their students named Bob Sproull created what is widely regarded as the precursor of virtual reality and the system. Primitive tool, both in relation to the tool user liaison and realism, and the HMD to be worn by the user is very heavy so it should be hung. The technology of virtual reality which is the map of early Cinema Aspen, which was created by MIT in 1977. The program is a rough simulation of Aspen in Colorado City. There users can wander in any of the three seasons summer, winter, and spring [9].

In its development the current virtual reality can be enjoyed using android smartphone, in its use required an additional tool i.e. VR Glasses. Here is a comparison chart between the virtual reality on android and the computer.

Table 2 Comparison of virtual reality on android and the computer

Android	Computer
Support tools accessible	Support tools are still hard to obtained
The price of the VR Glasses relatively cheaper	The price of the VR Glasses still high enough
There have been many applications that support virtual reality	Application of virtual reality is still in the development stage so it is still hard to obtained
Easy to carry anywhere	Use must be in front of the computer
Does not require a high hardware specifications	It requires a very high computer specifications

2.2.2 Component system of Virtual Reality

The main component of this system is the hardware VR engine or computer system, device input and outputdevices. I General, the input device is responsible for the interaction, device output to a sense of imersif and VR engine or the following computer software for the control and accuracy of synchronization of the whole virtual environment [6].



Pictures 2 Components Of The System Of Virtual Reality

2.2.2.1 Input Devices

Input device used as a means for the user to interact with the virtual world. These devices send a signal to the system of user actions, thus providing a precise reaction back to the user through the output in real time. This device can be classified for example as a means of tracking, point-input and sound device.

Tracking tools are sometimes also referred to as position sensor, which is used in tracking a user's position. An example of this type of sensor is like electromagnetic, ultrasonic, optical, mechanical and gyroscopic sensors, data gloves, controlling nerves and muscles or bio. An example of the tool point-input is the mouse , 3D joystick, pointers, and mechanical arms.

Motion detection real time is used to capture the user's position and movement. So it allows users to interact with virtual worlds intuitively by using natural gestures.

2.2.2.2 VR Engine

VR Engine or computer is processing and data storage. Realtiming, graphical display and image processing are some of the important factors and can be time-consuming in operating systems should be selected so that the VR corresponds to the character application needs.

The election of the VR Engine depending on the field of application, the user itself, device Input and output, the level of imersif and output the necessary graphics, because the VR Engine is responsible for calculating and generating graphical models, rendering objects, lighting, mapping, texturing, simulations and so on to be displayed in real time. Computer as VR Engine also handles interaction with users and serve as an interface with the device input or output.

2.2.2.3 Output Devices

The device output is a device used to receive feedback from the VR Engine and presents them to the user via the tool output appropriate to stimulate the senses. Some classification tool output is based on the senses is: graphics (visual), audio (hearing), haptic (perabaan or style), smell and taste.

Visual display output is most popular in the system while the other display type of VR is as a complement. Visual display is a device that is specialized for the eyes of users who present the 3D world. Sample tool output visual appearance i.e. the Oculus Rift, Cardboard, VR Gear Google, Microsoft Eye Tracking FOVE Hololens, VR, Magic Leap and the Sony Project Morpheus.

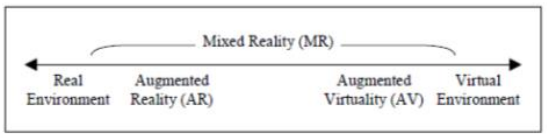
2.2.3 Analysis of Virtual Reality

Application of 3d animation has been widely developed in the various platforms, however applications are built by default users can only view the animated model as viewed the video. Unlike the virtual veality and augmented reality application that is able to create virtual environments.

The term Virtual Reality shows a world of trust experienced through our sensory skills, but not physically exist in the actual world. In other words, VR is to create a replacement for an actual space, events, objects or environments that accepted man as real or true.

Augmented Reality (AR) is a variation of the VR. AR similar to VR in the sense that both are using computer-generated data virtually. Virtual Reality of trying to generate a complete environment, simulation or synthetic, which surrounds the conditions or submerge the subject. AR is different from the virtual reality that is not trying to block the real environment surrounding it from the user. Instead the aim is to improve the environmental conditions for specific purposes [7].

Components of the AR system similar to the system of VR. It's just that the AR System are not intended to soak the users in a virtual environment but to come up with real objects that generated computer graphics in the actual space so the user as if looking at these objects exist in the real world.



Pictures 3 Simple Representation Of Virtuality Continuum

2.3 Android

Android is an operating system for mobile devices is a linux-based operating system, which includes middleware and applications [5] and according to the android operating system is Xeniagreekmuslimah for cell phones based on rheumatic pain [2]. Android provides an open platform for developers to create their own applications so that it can be used by a variety of propulsion devices.

Based on the exposure by h. Safaat opinions and conclusions to be drawn, Xeniagreekmuslimah android is an operating system for mobile linux-based which is open source so it gives developers to do the development in accordance with the satisfactory so very fast development of this operating system.

2.3.1 The History of Android

Initially, Google Inc. bought Android Inc. that is a newcomer that makes software for mobile phones/smartphones. To develop Android, an Open Handset Alliance, that is a combination of the 34 corporations hardware, software, and telecommunications. At the time of the release of Prime Android, November 5, 2007, Android along with the Open Handset Alliance States support the development of open source on the device mobile. On the other hand, Google released the Android code under the Apache license, a free software license and open platform for mobile devices. There are two types of distributors operating system Android. First got full support from Google or Google Mail Services (GMS) and the second is a completely free distribution without the direct support of Google or known as the Open Handset Distribution (OHD) (Nazruddin, 2012:2).

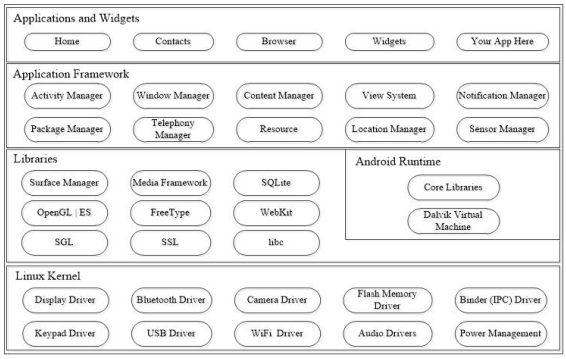
At this time most smartphone vendors already produce android-based smartphone . Not only the operating system on smartphones, Android currently being the main competitor of the Apple Tablet PC operating system. Due to the rapid growth of Android Android itself is a platform that is very complete either of the operating system, applications, development tools, as well as a very high support from the open source community in the world. The following is the development of the Android OS to date.

2.3.2 Android Architecture

Outline the architecture of Android has 5 layers, namely Application and Widgets, Application Frameworks, Libraries, Run Time, Android and the Linux Kernel [5].

1. Application and Widgets
   Application and Widgets this is the layer where we connect with applications only, where we typically download the application and then install and run the application.
2. Application Frameworks
   Application Frameworks this is the layer where the application makers do development/creation of applications that will run on the android operating system, because this is the application layer can be designed and manufactured.
3. Libraries
   Libraries this is the layer where the features of android is, usually the application makers access libraries in order to run the application.
4. Android Run Time
   It is this layer that makes android applications can be run where in the process using the linux implementation.
5. Linux Kernel
   Linux kernel this is the layer where the core of the android operating system. Contains system files that manage the system processing, memory, resource, drivers, and the operating systems of the other android.

Here is a picture of the android architecture schemes can be seen in Figure 4.



Pictures 4 The architecture of Android [5]

2.4 Implementation

The purpose of the implementation of the system is to explain about the manual modules to all users who will use the system. This step will also explain the implementation of hardware, software implementation, implementation and implementation of application introduction application interface characteristics of the animal with the technology of virtual reality.

2.4.1 the hardware Implementation

The computer hardware that is used to build applications using animal characteristics introduction of virtual reality -based android can be seen in table 3.

Table 3 Implementation Of Computer Hardware

No.	Hardware	Specifications
1	Processor	Intel Core i3-4010U 1.70 GHz
2	RAM	6 GB
3	Hard drive	500 GB
4	VGA	GeForce GT 720M 2 GB

While the hardware used to run android applications using animal characteristics introduction technology virtual reality -based android can be seen in table 4.

Table 4 Android Hardware Implementation

No.	Hardware	Specifications
1	Processor	Octa-core 1.5 GHz Cortex-A53
2	RAM	2 GB
3	Internal Memory	16 GB
4	Sensor	Gyroscope
5	Display	5 inch
6	Bluetooth Gamepad	Terios T-3
7	VR Glasses	Octagon VR Luna

2.4.2 Software Implementation

Computer software used to build application introduction the characteristics of animals for early childhood using virtual reality technology based android can be seen in table 5.

Table 5 Software Implementation

No.	Software	Description
1	The Operating System	Windows 8.1 x 64
2	Android SDK	25.1.7 version
3	JDK	Version 1.8.0
4	Unity3D	Version 5.5.0
5	MonoDevelop	Version 5.9.6
6	Adobe Photoshop	CS6 Version

While the android software used to run the application using animal characteristics introduction technology virtual reality -based android is using android versions 5.1.1 or Lollipop.

2.4.3 Interface Implementation

Implementation of the interface that was done on the application introduction of animal characteristics by using the technology of virtual reality comprised of some of the views. The following are some of the look of the interface has been implemented.

1. The Main Menu Interface

The main menu interface is the first display at the time the application is run. There are a few menu in it, such as the start menu, help and exit the menu. Display the main menu can be seen in Figure 5.



Pictures 5 The Main Menu Interface

2. Application Interface

The interface in the game is the display that will be displayed when the user presses the Start button on the display of the main menu. Look in the game can be used in two modes of appearance i.e. the standard appearance mode and the mode of appearance of virtual reality.

a. The standard appearance mode Interface

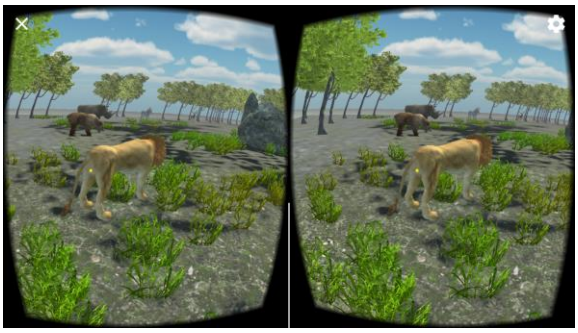
The interface is the standard appearance of the display mode in which the application can be used without additional tools i.e. vr glasses and bluetooth joystick.



Pictures 6 Mode Of Appearance Of The Standard

b. The interface mode of appearance of virtual reality

Interface mode of appearance of virtual reality is display in which applications can be used with a maximum by using additional tools i.e. vr glasses and a bluetooth gamepad.



Pictures 7 Mode Of Appearance Of Virtual Reality

3. How to use Interfaces

How to use interface is the display that will be displayed when the user presses the help button on the main menu display. Display the help can be seen in Figure 8.



Pictures 8 How To Use Interfaces

2.5 Testing System

2.5.1 Testing Against Teachers

Table 6 Interview with teacher Ukasih

No.	Question	Answers
1	Whether with the introduction of application characteristic of these animals make easier in conveying the introduction of animals?	Yes, but it takes quite a lot of android devices for use by foreign children.
2	Introduction of application characteristic of these animals help in introducing sound animals?	Yes, because the sound is similar to the sound produced in animals.
3	Whether the application introduction the characteristics of these animals helped to introduce other types of animals?	Yes, because the animal models that exist in the application is quite diverse.
4	Whether the application introduction the characteristics of this	Yes, because the model applications used are similar to the actual animal,

	animal to assist students in the know the physical form of animals?	and applications can provide information from animal parts.
5	This application is easy to use?	Yes, because the application has a menu that is easy to understand, and does not have many features that are complicated.

Table 7 The results of the interviews with the mother of Cicih Kurniasih

No.	Question	Answers
1	Whether with the introduction of application characteristic of these animals make easier in conveying the introduction of animals?	Yes, the application is very helpful because the child can immediately see hear and know the animals are there.
2	Introduction of application characteristic of these animals help in introducing sound animals?	Yes, because applications can output sound in accordance with the desired animal.
3	Whether the application introduction the characteristics of these animals helped to introduce other types of animals?	Yes, because a child can immediately see the kinds of animals that exist in the application.
4	Whether the application introduction the characteristics of this animal to assist students in the know the physical form of animals?	Yes, because the application has features to remove the information from the animal's body.
5	This application is easy to use?	Yes, because the menu is not too complicated and easy assistance feature is provided in the understand.

2.5.2 Test Against Students

The test is divided into two stages, the first stage is carried out observation testing to students without using Animal Characteristics introduction of Applications while the second observation conducted testing to students using the Application Introduction the characteristics of animals. Students will get the assessment index A, B, C, or D where A is the index progressed very well, B is the index of expectations, growing index C was developed, and an index of D is not yet developed.

2.5.2.1 Students Against Testing prior to using the application

Test the first testing before using the application Introduction the characteristics of animals. Following the results of observations against the 40 respondents prior to using the application.

Table 8 Observation Against Students Before Using The Application

No.	No Parent	Name Of Student	Assessment Of The Introduction Of The Animals
1	20150187	Adinda Rahayu	B
2	20150188	Alif Firmansyah	B
3	20150189	Andini Restu Rahmadhani	A
4	20150190	Dava Maulana Haryadi	C
5	20150191	Devan Nur Firman	D
6	20150192	Engkar Karnemah	C
7	20150193	Herlan Vahlevy	A
8	20150194	Jaenal Aqmal Muttakin	A
9	20150195	Kirani Fazriyanti Hermawan	B
10	20150196	Lena Hindriyani	D
11	20150197	Melinda Tassya Pebriyanti	C
12	20150198	M. Nur Rachman Pratama	C
13	20150199	M. Wahyu Dimansyah	A
14	20150200	M. Yazid Allamah Aini	B
15	20150201	Nizham Lukmanul Hakim	D
16	20150202	Raid Nurdiansyah	B
17	20150203	Satria Rafka Putranto	A
18	20150204	Sigit Pratama	B
19	20150205	Zacky Andhika	C
20	20150206	Yayat Supriatna	C
21	20150058	Abel Benadin S.	A
22	20150059	Alfi Irham R.	B
23	20150039	Aulia Rahmawati	D

No.	No Parent	Name Of Student	Assessment Of The Introduction Of The Animals
24	20150060	Aulia Santika S.	B
25	20150061	Azka Miftah A.	A
26	20150062	Deandra An-Nazwa	A
27	20150063	Ela Nurmaela	B
28	20150064	Fitra Raiya A.	D
29	20150065	Keyla Putri D.	C
30	20150066	Meisha Nur A.	C
31	20150067	M. Azmaludin	D
32	20150049	M. Fathuroji	A
33	20150068	M. Rifa Agustian	B
34	20150051	Nasya Syafira N.	A
35	20150069	Neiska Aulia H.	C
36	20150053	Rahayu Aulia P.	D
37	20150054	Ria Rahmawati	A
38	20150070	Ridho Irianto H.	B
39	20150071	Shakila Almalika	D
40	20150072	Talin Hamdan	C

Based on the results of the observational data processing average index gained respondents from observations taken from the animal's characteristic recognition test prior to using the application introduction the characteristics of animals can be seen in table 9.

Table 9 Description average Index

Description	The Number Of Students
A	11
B	11
C	10
D	8

The result of the observation before using applications there are students who are still getting the valuation index of C and D index i.e. children still haven't developed in the process of the introduction of the animals.

2.5.2.1 Testing against the Students after using the application

Testing the second IE testing after using the application Introduction the characteristics of animals. Following the results of observations against the 40 respondents after using the application.

Table 10 Observation Against The Students After Using The Application

No.	No Parent	Name Of Student	Assessment Of The Introduction Of The Animals
1	20150187	Adinda Rahayu	A
2	20150188	Alif Firmansyah	B
3	20150189	Andini Restu Rahmadhani	A
4	20150190	Dava Maulana Haryadi	B
5	20150191	Devan Nur Firman	C
6	20150192	Engkar Karnemah	B
7	20150193	Herlan Vahlevy	A
8	20150194	Jaenal Aqmal Muttakin	A
9	20150195	Kirani Fazriyanti Hermawan	A
10	20150196	Lena Hindriyani	B
11	20150197	Melinda Tassya Pebriyanti	B
12	20150198	M. Nur Rachman Pratama	B
13	20150199	M. Wahyu Dimansyah	A
14	20150200	M. Yazid Allamah Aini	A
15	20150201	Nizham Lukmanul Hakim	B
16	20150202	Raid Nurdiansyah	A
17	20150203	Satria Rafka Putranto	A
18	20150204	Sigit Pratama	A
19	20150205	Zacky Andhika	B
20	20150206	Yayat Supriatna	A
21	20150058	Abel Benadin S.	A
22	20150059	Alfi Irham R.	A
23	20150039	Aulia Rahmawati	C
24	20150060	Aulia Santika S.	A
25	20150061	Azka Miftah A.	A
26	20150062	Deandra An-Nazwa	A
27	20150063	Ela Nurmaela	A
28	20150064	Fitra Raiya A.	C
29	20150065	Keyla Putri D.	B
30	20150066	Meisha Nur A.	A
31	20150067	M. Azmaludin	B
32	20150049	M. Fathuroji	A

No.	No Parent	Name Of Student	Assessment Of The Introduction Of The Animals
33	20150068	M. Rifa Agustian	A
34	20150051	Nasya Syafira N.	A
35	20150069	Neiska Aulia H.	B
36	20150053	Rahayu Aulia P.	B
37	20150054	Ria Rahmawati	A
38	20150070	Ridho Irianto H.	B
39	20150071	Shakila Almalika	C
40	20150072	Talin Hamdan	A

Based on the results of the observational data processing average index gained respondents from observations taken from the animal's characteristic recognition test after using the application introduction the characteristics of animals can be seen in table 11.

Table 11 Description average Index

Description	The Number Of Students
A	23
B	13
C	4
D	0

The results of observation after using the application, students earn above average index C. Based on the test's conclusion after using the learning application introduction of animals, students who obtain the index B learners have developed appropriate expectations and students who obtain the index A learner has developed very well.

2.5.3 Conclusion Testing System

Based on the results of the interview against teachers and students against the observations obtained from beta testing, then it can be inferred that the application made can help teachers in the process of teaching and learning, as well as assisting students in getting to know the animals. Application made easy to use and has an attractive appearance.

3. Conclusions

3.1 Conclusions

The conclusions of the research Thesis titled: "the introduction of Application Characteristic Animals For early childhood Using Virtual Reality Technology Based Android (Kober Mulyasari case study and Kober Al-Barkah)" is as follows:

1. Applications to be built was able to help in knowing the characteristics of the animal with more interactive.
2. provides convenience to the teacher introducing the characteristics of animals to children.
3. Applications that are built can be interactive learning media and increasing the motivation of learning in the introduction to the characteristics of the animals.

3.2 Advice

Introduction of application characteristic animals is certainly still far from word perfect and still has many shortcomings. For that to be done in order for application development and refinement is better. As for the advice so that these applications can run with more optimized and more interesting as follows:

1. Develop applications introduction of animal characteristics by adding more varied animal objects.
2. Develop applications introduction to the characteristics of the animals into different platforms (IOS, Windows Phone OS, Tizen).

1. So the author can give suggestions, hopefully these suggestions can be used as input material that can be useful for authors in particular and for developers in General.

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