



Use of the Animal 4D Application to Improve English Vocabulary for Elementary School Children

Lailia Rahmawati ¹

¹ Universitas Darul Ulum, Indonesia

Corresponding Author: Name, Lailia Rahmawati E-mail; liaundarjombang@gmail.com

Article Information:

Received January 10, 2024

Revised January 19, 2024

Accepted February 25, 2024

ABSTRACT

Utilization of the animal 4D application as an approach to increasing English vocabulary for elementary school children. However, problems also often arise, namely that a teacher's efforts to collaborate with students are very minimal, and managing responsibilities is difficult to implement because students have different points of view regarding the use of the Animal 4D application. Then there are other problems that also have an impact on students' academic knowledge, so that students' thinking becomes complicated to understand. Apart from that, raising student enthusiasm requires a supportive environment, but high academic demands are a challenge for students to face new concepts. This research aims to examine the influence of using the Animal 4D application to improve the English vocabulary of elementary school children. Apart from that, researchers also admit that in the educational environment, especially elementary schools, it is very necessary to apply English vocabulary which becomes a reference for these schools to increase the use of the animal 4D application. This research method uses a quantitative method, namely this method is an indication for respondents that this research is in the form of numbers. This was obtained through observations in the classroom and outside the classroom to find out how collaboration and cooperation between teachers and students went well during learning based on the Animal 4D application. Next, the researchers conducted interviews with teachers and students regarding the use of the animal 4D application to improve elementary school children's English vocabulary, as well as collecting quantitative data by distributing online-based questionnaires in the form of Google forms. The results of this research explain that the use of the animal 4D application has an impact on the motivation of elementary school students. When students are able to collaborate with other students, these students are able to develop innovative thinking skills and foster a sense of caring for each other. The conclusion of this research shows that a combination of good collaboration in learning based on the use of the Animal 4D application has great potential to increase students' creativity in mastering English vocabulary.

Keywords: *Application, Students, Utilization*

Journal Homepage

<https://journal.ypidathu.or.id/index.php/Sciencetchno>

This is an open access article under the CC BY SA license

<https://creativecommons.org/licenses/by-sa/4.0/>

How to cite: Rahmawati, L. (2024). Use of the Animal 4D Application to Improve English Vocabulary for Elementary School Children. *Sciencetchno: Journal of Science and Technology*, 3(1). <https://doi.org/10.55849/Sciencetchno.v3i1.709>
Published by: Yayasan Pendidikan Islam Daarut Thufulah

INTRODUCTION

Technological developments are currently developing very quickly, especially in the field of technology. This will influence the child's learning style, where the teacher plays a role in the student's academics (Sokolova & Kefi, 2020). One example of using an application that can support student learning is the animal 4D application (Matondang dkk., 2020). However, problems often occur in this regard which is a consideration for researchers as to how this application can be used effectively at the elementary school level with students' mastery of English vocabulary using the animal 4D application (Bardach dkk., 2019). On average, children at elementary school age understand more about learning methods using books than using applications. Apart from that, the lack of students' curiosity about the Animal 4D application is also a major factor that becomes a benchmark in these educational institutions (Allotey dkk., 2020). This requires students to be able to master and keep up with current developments by using technology in the learning process. If researched, elementary school students' understanding is very minimal and they do not understand how to use the application, which causes students to be lazy about studying.

Lack of motivation is a challenge in the world of education, because this is a factor that will shape student creativity. This information will have an impact on reducing children's thinking power in the learning process (Škare dkk., 2021). Of course, this is an obstacle for students to develop their innovations. This is a challenge for students, because of the students' inability to use the animal 4D application implemented by the teacher in developing English vocabulary (Xie & Derakhshan, 2021). Not only that, inadequate network limitations for digging up information are the main trigger for an educator, because a poor network system causes students to complain when using the application. The role of the teacher is very important, because a teacher must be able to guide students so that the desired goals in the learning process are achieved efficiently.

The use of the animal 4D application to develop elementary school students' English vocabulary is very important in the world of education. Student activity needs to be fully supported by the teacher, this will enable students to cooperate and collaborate with fellow students and students are also able to learn in groups which will foster students' sense of concern for each other (Lu dkk., 2019). For example, students who understand how to use the animal 4D application will think creatively, because these students hear and pay attention to what the teacher says. Vice versa, students who are not proficient in using the animal 4D application will complain and be confused, which will cause students' enthusiasm for learning to decrease (Khan dkk., 2019). Collaboration between students and teachers is very necessary, so that students do not feel confused and can revive student motivation. Apart from that, parents also play a

major role because parents are the first home for students, so that students can develop new ideas and innovative learning concepts for continuity in everyday life.

Using the animal application to master English vocabulary is an effective way for elementary school students. If students are familiar with several applications for learning media, then it will be easy for students to understand the Animal 4D application. This application is of course used to improve student learning style models in the current technological era. It is understood that almost all over the world have widely used applications as learning methods (Wang dkk., 2021). This also does not cover the big possibility that students must be able to keep pace with the times. Of course, this will affect the child's future as an adult. Students will be motivated to use 4D animal-based technology, because the application provides media in the form of animal images which make the images appear real. Media like this makes children enthusiastic about learning, so that children are enthusiastic in class and can make good combinations with teachers and friends. This media can also be downloaded on mobile phones with the name Animal 4D application.

The ineffective use of social media is a problem that often occurs today. Because many factors cause this, such as the environment of friends, family and society. Apart from that, the lack of parental monitoring of children in using the application also needs to be considered (Gassman-Pines dkk., 2020). Because, if children are left like this while parents don't care, children will become addicted to using applications on social media so that children will not want to socialize. This problem must be followed up effectively, because children's elementary school age is a time when children are in growth and development. So, teachers and parents make policies for children so that children only use social media for positive things. For example, parents monitor their children when they use cellphones, do not let their children play freely, and give advice to their children about how important it is to gain knowledge. This will provide good feedback to the child, because the child has received good guidance from the parents.

The research included several references from previous researchers which became references for researchers in this research. First, research conducted by Moeis, D. (2016) related to a discussion regarding the use of Android-based English learning applications for children. Which in the title is similar to the research conducted by the researcher. However, this research explains that the use of Android-based applications can help students get to know various kinds of animals and plants. Then children are also able to develop creativity through the understanding they have gained in this application. Furthermore, the latest research was also carried out by Nurhasan, U. (2019) entitled the use of augmented reality content for learning English. This research explains that mastering the use of applications requires maximum effort to understand how to use augmented reality-based applications. Good cooperation needs to be supported in order to create a good collaboration between students and teachers. Furthermore, this application also increases students' curiosity about recognizing animals that can be seen as real when the application is used.

The work that students in elementary school are able to create should be appreciated. This makes students' enthusiasm rise again, for example a teacher can give small gifts to students. Then relative innovation can encourage students to increase their curiosity about using the animal 4D application. With great responsibility, students also have goals to achieve, for example students can share experiences with friends who don't understand. This will lead to good cooperation among students so that the teacher will get a good assessment at the elementary school.

The aim of this research is to find out how students understand the use of the Animal 4D application. The use of social media is very important nowadays to make students advanced towards digital thinking. In the future, students will already have the provisions to understand various applications related to learning media. Of course, it is beneficial for students so that students do not experience difficulties that become obstacles for them. With thorough provision from the teacher, students will have more freedom in using social media which is based on learning media. Not only that, students will think more critically in the future, because students have gained knowledge regarding the introduction to the use of the animal 4D application.

Researchers hope that there will be better changes in the mastery of English vocabulary for elementary school children so that children will be wiser in using applications in any condition. Researchers also hope that this research can be useful for many audiences who help in producing scientific work. It is also a consideration for researchers to develop this article better and make it accessible to students and lecturers. In this way, the problems faced by students and teachers can be overcome effectively, because in this case it does not require an element of compulsion.

RESEARCH METHODOLOGY

Research design

Researchers used a quantitative research design by distributing a questionnaire to respondents in the form of 20 questions using Google Form. This research covers the impact that will occur on the use of the Animal 4D application on elementary school students (Klok dkk., 2020). The aim of researchers using this method is to examine the benefits students obtain when using the animal 4D application. Furthermore, the researcher also formulated problems that were accounted for according to the difficulties faced by students. This data collection is to determine accurate comparisons and the data obtained is in accordance with what was researched by the researcher (Du dkk., 2019). This quantitative method consists of 20 questions with objective answers provided by the researcher to make it easier for respondents to take part in answering these questions. The researcher also conducted research on the data obtained and found the highest and lowest data. This is the main research material for researchers in comparing the data that has been obtained.

Research procedure

The research procedure carried out by the researcher was to ask permission from the campus, including lecturers who taught at Mahmud Yunus Batusagkar State Islamic

University. The lecturer also has the criteria to be an expert in the field of social media and learning media. Then the questionnaire filled out by students from several departments studying at Mahmud Yunus Batusangkar State Islamic University became a benchmark and consideration for researchers, whether the results of data acquisition would be in accordance with the researchers' expectations or not. So that students filling out the questionnaire can quickly complete the questions given by researchers to respondents (Roy dkk., 2020). Students are also able to provide critical arguments and opinions which are mastered by every student studying at Mahmud Yunus Batusangkar State Islamic University.

Research subject

The research subjects in this study were students from Mahmud Yunus Batusangkar State Islamic University from several departments. Students who took part in filling out this questionnaire were active students, thought creatively, and were able to provide aspirations for this research. Apart from that, the researcher was also assisted by lecturers who are experts in the field of social media and teaching and learning at Mahmud Yunus Batusangkar State Islamic University so that the process faced by the researcher ran smoothly (Sista dkk., 2021). The answers given by researchers in the research are in accordance with students' cognitive abilities. Of course, this also makes it easier for students to give statements spontaneously so that they get maximum results (Xia dkk., 2019). The answers given by students to researchers are of course material for consideration, because the students who answered have different perspectives on how to use the Animal 4D application to motivate elementary school children.

Research Ethics

In this study, researchers only obtained 50 answers from students at Mahmud Yunus Batusangkar State Islamic University. Which consisted of 30 women and 20 men with an age range of 20 years. The study program participating in this research is the Islamic Religious Education study program, the researcher conducted this research for 3 days, namely from January 1 to 3 2024. The research ethics are that the researcher is honest with the acquisition of the data obtained, because the researcher has received permission from the lecturer concerned. This research also complies with legal regulations regarding article research (Zhang dkk., 2021). Then researchers are also wise in determining the right subjects and objects to take part in this research. Thus, researchers apply the values of openness to this research, so as not to harm either party.

Data collection technique

The data collection technique used by researchers in this research was after obtaining permission from the lecturer in charge of learning media, then the questionnaire link was distributed to students at Mahmud Yunus Batusangkar State Islamic University. Distribution of questionnaires in the form of questions given online using Google Form. The questionnaire data obtained was then uploaded to an Excel file and transferred to the SPSS application to examine the data further. Obtaining the number of participating students through direct interviews. Then the names of the

students involved in answering the questions were summarized for consideration by researchers.

Data Collection and Analysis

Next, the data that has been obtained is input through the SPSS application which is a consideration for researchers. The data is presented in the form of tables and diagrams to make it easier for respondents to understand the results obtained by researchers. The method used by researchers is to compare several answers from respondents, of course the researcher knows what average will be obtained. The data results are presented in the form of scores and percentages. Researchers also used the t-test, which compares independent and accurate averages. Researchers are very focused on the answers given by respondents without leaving out any of the answers proposed by respondents. The researcher also concluded that the data obtained included the actuality of the problems discussed.

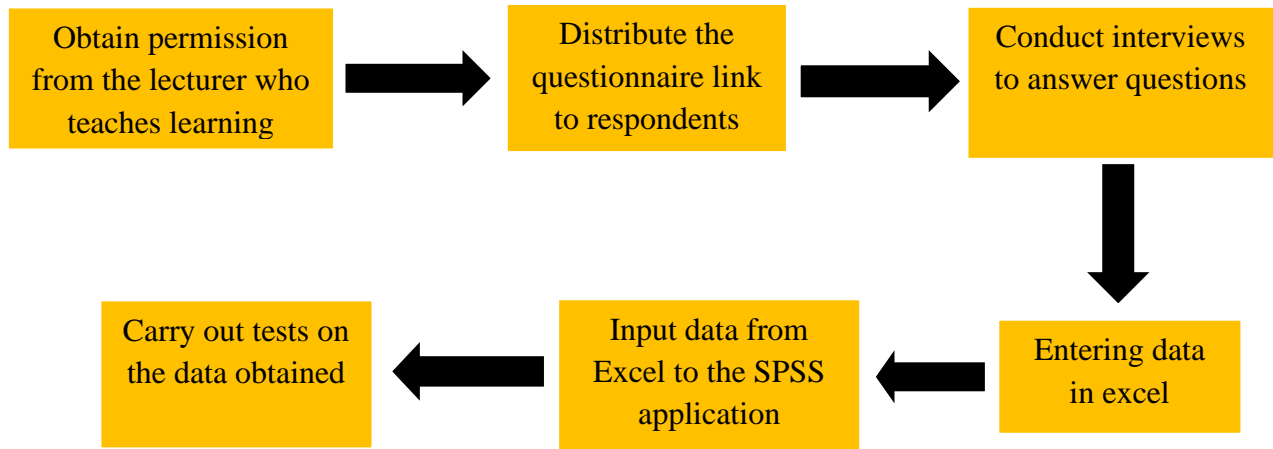
Table 1.1 The acquisition category is the use of animal applications in improving the English vocabulary of elementary school children

No	Earning Category	Value Percentage
1.	Strongly agree	85%
2.	Agree	75-80%
3.	Disagree	65-70%
4.	Strongly Disagree	0-60%
	Total	100%

Table 1.2 Details of the Research Sample

No	Class	Number of participants	Percentage
1.	Class D	20	50%
2.	Class E	20	50%

Flow of Data Collection and Data Analysis



RESULT AND DISCUSSION

Results

Utilization of the Animal 4D Application in Improving English Vocabulary for Elementary School Children

2.1 Implementation of Target Image

In designing data, the data used is in the form of a marker image, where the image is used as a target image to explain the 4D object. Examples of animal markers presented by researchers include chickens, ducks, bears, crocodiles, tigers, fish, sharks, goats, rabbits, butterflies, deer, cows and wolves. Furthermore, the researchers also explained food markers consisting of carnivores, herbivores and omnivores. Then the markers have been uploaded to the Vuforia database so they can be easily accessed by Android smartphone cameras.



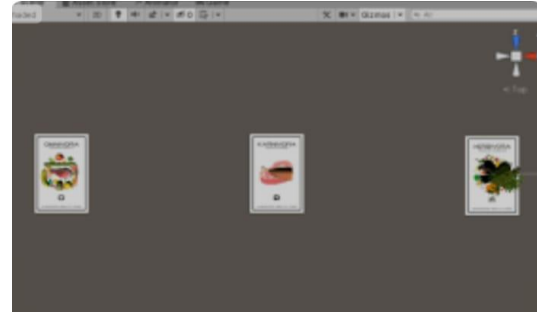
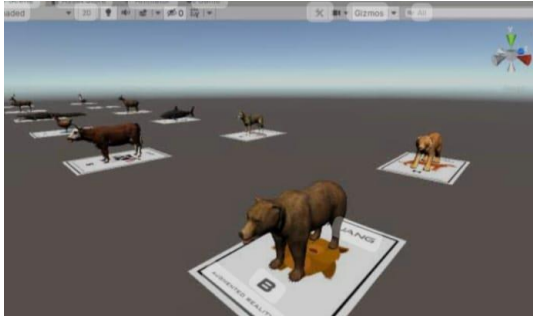


Figure 1.2 4D Object

Figure 1.2 explains that 4D objects are displayed when the marker has detected the object being studied. 4D objects consist of several types of animals including chickens, ducks, bears, crocodiles, tigers, sharks, goats, rabbits, butterflies, deer, cows and wolves. The type of food obtained based on the type of animal is carnivore (meat), herbivore (grass), and omnivore (meat and plants).

Table 1. Interaction of food markers and animal markers

Food Markers	Animal Markers	Action
Herbivore	Crocodile	Shut up
Carnivore		Walk
Omnivore		Shut up
Herbivore	Tiger	Shut up
Carnivore		Walk
Omnivore		Shut up
Herbivore	Wolf	Shut up
Carnivore		Walk
Omnivore		Shut up
Herbivore	Shark	Walk
Carnivore		Shut up
Omnivore		Shut up
Herbivore	Cow	Walk
Carnivore		Shut up
Omnivore		Shut up
Herbivore	Goat	Walk
Carnivore		Shut up
Omnivore		Shut up
Herbivore		Shut up

Carnivore	Rabbit	Shut up
Omnivore		Walk
Herbivore		Shut up
Carnivore	Butterfly	Shut up
Omnivore		Walk
Herbivore		Shut up
Carnivore		Shut up
Omnivore		Walk
Herbivore	Chicken	Shut up
Carnivore		Shut up
Omnivore		Walk

In the table above is a table that explains food markers and animal markers. Where if the food marker is connected to the animal marker it will cause action or animation from the 4D. The animal will move towards the food marker if the marker matches the type of food. Vice versa, if the 4D object food marker does not match then the action displayed will remain silent.

2.3 Implementation of Multiple Markers

Multiple implementations are presented according to the objects that will be displayed on the smartphone. The implementation used in the multiplr marker method aims to display 4D objects carefully through several markers as well as displaying several animal objects.

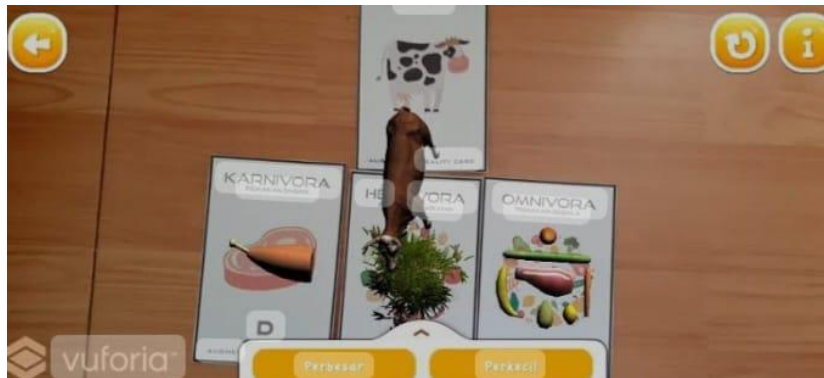


Figure 1.3 Animation of 4D objects based on food type

In figure 1.3 is a display that will be used when using the animal 4D application as an effort to increase the English vocabulary of elementary school children. Multiple markers are also a tool, so students can easily match animal pairs with food.



Figure 1.4 Application of Multiple Markers

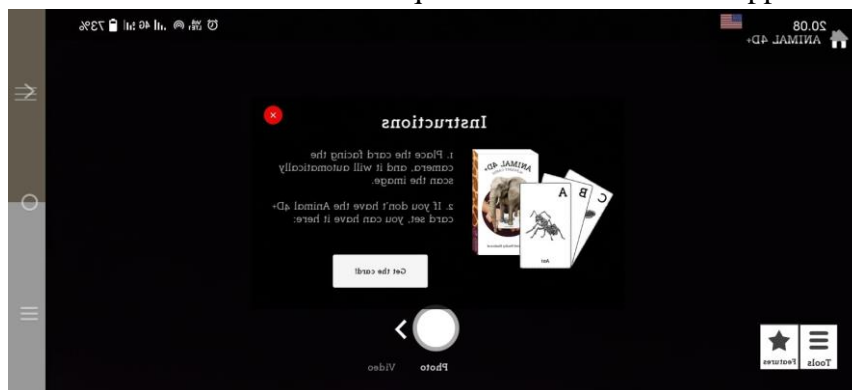
It can be seen in Figure 1.4 that the animated display of the 4D animal object knows which type of food is suitable according to its type. Like the picture of the cow, the appropriate food is grass which is classified as a carnivore. If connected, the cow will act on the food by walking.

2.3 System Implementation



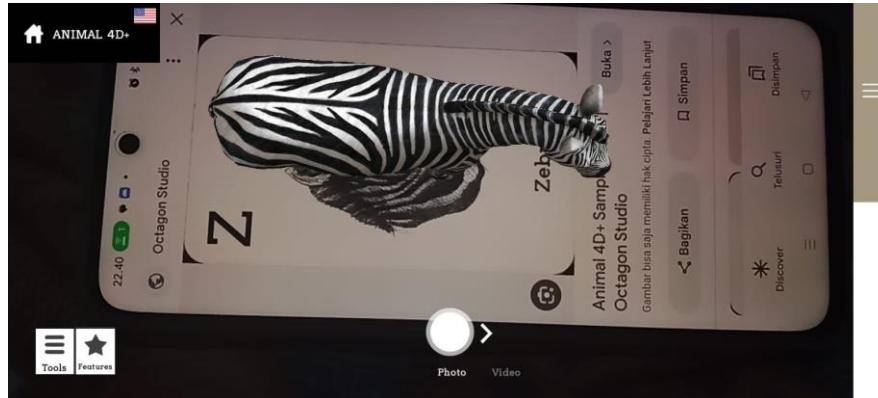
Login Page

After the Animal 4D application is downloaded on Android, the main menu display will appear. To be able to download this application, you need a strong internet network, so that the download process is not hampered. The main menu is presented with pictures of animals which are the unique characteristics of the application.



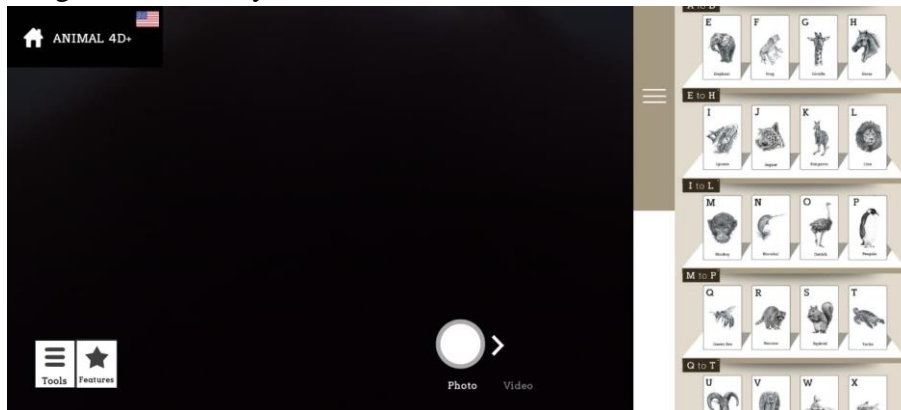
Menu Display

In this menu section there is a camera that connects to a character card with an animal image. If the camera is aimed at the target part of the card, the image of the animal seems to be alive and can make sounds. To get maximum results, it is necessary that when directing the camera at the object you want to target, you must focus the direction of the camera so that the image can be detected well.



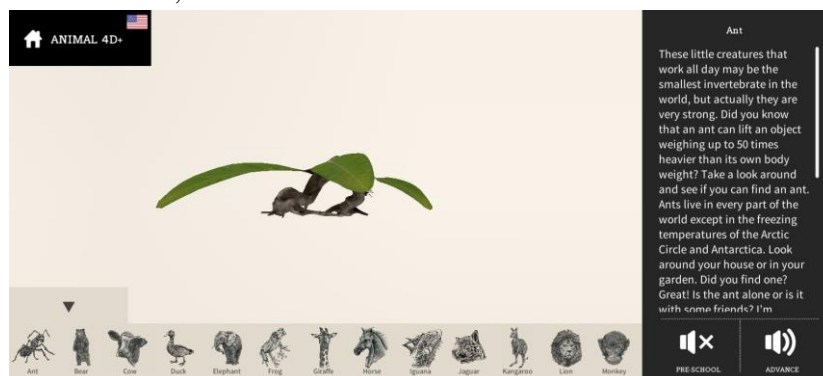
Example of Image Display

In this part of the picture, students are able to examine the types of animals shown previously. The animal pictures presented are certainly in accordance with what the students want. For example, if a student wants to see a cat, rabbit or zebra, the animal will automatically appear. This effort is able to make students more focused and careful about the English vocabulary used.



Display of Animal Types

This section explains menus consisting of several types of animals. Students can choose and access the type of animal they want. There are around 30 types of animals served on this menu. Of course, these types of animals are classified into types of food in the form of carnivores, herbivores and omnivores.



Animal Type Display

The display in this section contains a description of the animal that has been previously selected. This section explains about the animal, in terms of definition, type

of food, what environment it lives in, and how the animal breeds. This display uses English. In this section the sound volume is also displayed, which if students access can increase and decrease the desired sound level.

2.4 Questionnaire Test Results

The rapid use of technology is a challenge faced by educational institutions. Schools that use technology as a learning medium need to pay careful attention, because children who are still in elementary school do not yet have maximum abilities regarding the use of technology. One technology that is very easy to access is a cellphone, the average school child in Indonesia already has a cellphone. There are many applications on cellphones that can be used as learning media. For example, using the Animal 4D application can help students develop vocabulary, especially in English. In the world of education, students must be able to maximize students' academic scores, which is also a major factor for students when undergoing the learning process.

The table presented by the researcher is to determine the amount of data obtained. Respondents who participated in answering this question came from Islamic Religious Education students for the 2023 academic year at Mahmud Yunus Batusangkar State Islamic University. A total of 20 people participated in this research, students answered with one answer which was considered correct. Then the results of data obtained from these respondents will also be presented in the table below, which will later be used as consideration for researchers. So the student's contribution is very important in the assessment for this research, the final results will show the influence of using the Animal 4D application to increase the English vocabulary of elementary school children.

Table 2. Results of observations

No	Question	SS (%)	S (%)	TS (%)	STS (%)
1.	Using the animal application is very useful for students	90%	70%	5%	0%
2.	The animal 4D application can increase student motivation	85%	75%	50%	0%
3.	Decreased student grade when using the animal application	75%	50%	0%	0%
4.	The role of the teacher very important in the learning process	90%	80%	0%	0%
5.	Parents take part in guiding children	75%	80%	0%	0%
6.	Collaboration between teachers and parents is the most important factor	95%	75%	0%	0%
7.	Collaboration between	85%	60%	0%	0%

	students and classmates can				
	create unity in learning				
8.	Most students do	80%	70%	0%	0%
	understand technology				
9.	The animal 4D application	95%	65%	0%	0%
	has a positive impact				
	students				
10.	Using the Animal 4D	90%	80%	0%	0%
	application makes students				
	lazy about reading books				
11.	The animal 4D application	70%	90%	0%	0%
	able to increase students				
	English vocabulary				
12.	Using Android to access	95%	80%	0%	0%
	Animal 4D application makes				
	children addicted to using				
	cellphones				
13.	There are many negative	40%	30%	50%	70%
	impacts that arise when using				
	the Animal 4D application				
14.	Good contributions from	85%	70%	0%	0%
	teachers have a good				
	influence on students				
15.	Students' insight into animal	90%	70%	0%	0%
	4D applications needs to				
	be considered				
16.	The influence of using	85%	65%	0%	0%
	animal applications is very				
	large in the world				
	education				
17.	Students get good grades	90%	70%	0%	0%
	with the help of animal 4D				
	application				
18.	Students become more active	80%	75%	0%	0%
	in class				
19.	Parents are the main factor	95%	85%	0%	0%
	in child development				
20.	Students know more about	85%	70%	0%	0%
	English vocabulary				

The highest score obtained was the strongly agree answer with an average of strongly agree with a percentage of 90%. This means that the use of the animal 4D application can support improving the English vocabulary of elementary school

students. Furthermore, the highest score obtained in second place was in the agree answer category, where respondents answered with the highest percentage of 90% and also had the same previous score obtained. Every answer the respondent gave to the researcher was an accurate answer. If you look at the table above, the lowest score is in the strongly disagree answer category.

However, on question 20 regarding students knowing more broadly about English vocabulary, the answers were 70% agree, 85% strongly agree, and 0% in the strongly disagree and disagree categories. It can be concluded that mastery of English is very necessary for continuity during the learning process by utilizing 4D animation applications. Then the researchers also considered the impact that would occur on students when using the application. Whether students are able to use it well or there are obstacles, this must be addressed properly so that students do not have difficulties in learning.

2.5 Test Results with T-Test

Utilization of the Animal 4D Application in Improving English Vocabulary for Elementary School Children

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE TEST	10.5000	20	5.91608	1.32288
	POST TEST	55.7500	20	21.65975	4.84327

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRE TEST & POST TEST	20	-.042	.860

Paired Samples Test

Paired Differences						t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	PRE TEST	-45.25000	22.69216	5.07412	-55.87026	-34.62974	-8.918	.000
	POST TEST							

The table presented above is a test carried out by the researcher in the form of a t-test on the SPSS version 26 application. In the first output section discussing paired statistical samples, there are results obtained by the researcher from the respondents' answers. This part consists of the mean, namely the average of 10,500 and 55,7500. From this information, it is understood that there is a significant difference between the two data. This difference explains that elementary school students have very high interest in using the Animal 4D application. Part N is the amount of data with

a score of 20 people, then Std.Deviation has 2 different numbers, namely 5.91608 and 21.65975, and Std.error mean also has values of 1.32288 and 4.84327. Not only that, in the second item there is a paired sample correlation, which shows that there is a relationship that can be independently accounted for. The score obtained is with a correlation of -.042 and sig .860. These results show that each answer obtained will determine the level and enthusiasm of students to increase their potential. Then in the third output there is data in the form of a paired samples test, which consists of a mean of -45.25000, Std. Deviation with a total value of 22.69216, Std. Mean Error obtained a score of 5.07412, and Lower -55.87026. Obtaining these data results is a consideration for researchers, because there are significant differences in these numbers.

Discussion

Utilization of the Animal 4D Application in Improving English Vocabulary for Elementary School Children

The use of applications at the educational level really supports students in the learning process. Students need modern online-based learning media, for example the use of the animal 4D application. This helps students learn the names of animals, the types of food they eat, and how the animals sound (Khazaei dkk., 2019). Of course, students will be more creative in understanding this, a high level of curiosity is also needed because students have different points of view. Not only that, parents are also involved in this, because it is from parents that students get their first education. If parents provide complete facilities to their children, then the children must be able to use them wisely and not excessively.

Mastery of the level of English in elementary schools needs to be improved in line with developments over time. In particular, students are able to deepen their English vocabulary for future preparation. This makes students focus and think creatively, because students have got what they need. Teachers and the school also provide direction and policies to students, where these regulations are made according to mutual agreement. Students who apply these rules will easily participate in learning well (Wu dkk., 2020). Likewise, students who do not follow the rules well will have more freedom to make mistakes continuously. Things like this are a challenge for the school, because if left unchecked there will be social inequality in the school environment

The use of the Animal 4D application which is accessed on a smartphone is a problem for students' parents. Because at an early age, children are required to use cellphones, of course this is a problem for parents. Because parents have to give their children a cellphone to learn about the Animal 4D application. Not all parents have sufficient funds to buy a cellphone for their children (Kristjanpoller dkk., 2020). There are parents from low, middle and high economic backgrounds. This difference is a problem that needs to be overcome by the school. The school must be wiser in providing guidance to students' parents. With good cooperation between teachers and parents, they can create a good agreement on the problems faced.

It is necessary to use English in elementary schools, because curriculum development requires students to be able to master English. Because English is the national language in the world. There needs to be adequate provision for students, so that students are able to speak English fluently and fluently (Ryu & Ryu, 2021). To achieve this, teachers must prepare a mature design, to which teachers and students can contribute well. Not only that, teachers also design effective learning methods so that students don't get bored during the learning process. One way that can be done is by ice breaking, this can raise students' enthusiasm when studying. A teacher must be more creative than students, because teachers are role models for students.

Using the Animal 4D application is very suitable for elementary school students. Because the menu presented is very supportive according to students' interest in Android-based learning. However, it is also necessary to pay attention when students use Android so that they do not deviate from learning. Very high level of guidance from teachers is an important factor in an educational field, so that students who are taught to use the application can listen and listen well. Not only that, student collaboration when using the animal 4D application is also directed, because some students do not understand how to use the application. If cooperation between teachers and students has been achieved, then the implementation of the learning process will run effectively and efficiently

CONCLUSION

The use of technology in learning really helps students in developing new innovations. The use of technology that supports the learning process in the classroom is the main key carried out by teachers. The teacher will determine the consequences for students, whether they understand or do not understand. This is a benchmark in education, because every child has a different opinion. The use of technology as a learning medium is very beneficial for students. One of them is that students are able to use technology well at the age of 10 years. Which, it is not easy for a child to reach this point, most children at the age of 10 are still thinking about playing, not learning. A teacher must appreciate students who are able to develop their work well with the knowledge they have.

Examples of learning media that can be used are YouTube, TikTok, and so on. Parental supervision of children needs to be supported. Because ajika will not have a negative impact on children, such as children being lazy about studying, procrastinating on work, and not wanting to blend in with the surrounding environment. However, the positive impact that technology has on children's comprehension skills is very effective, as children can search for information related to the learning they want to make. Apart from that, children can understand and understand the material they are looking for, so that the assignments given by the teacher can be completed on time. Then there are several other supporting applications on the smartphone, such as 4D animation which displays several types of animal images. So children can choose which animal they want to look for, then the image will make a sound and appear real.

This approach shows that technology has a big influence on children, especially learning media. By utilizing 4D animation applications you can facilitate students' needs. For example, students work together, collaborate, and make assignments in groups. With technology, integration of teachers, parents, students and the school can be carried out well. Because this determines how children develop after implementing the Animal 4D application at the educational level. The teacher's hope is that students will be able to increase their motivation to learn both at school and at home. Then the researchers in this study have a goal that students are able to keep up with technology according to current developments. Because there are so many challenges in the digital era, seriousness and responsibility are needed from both students and teachers.

ACKNOWLEDGEMENT

This is a short text to acknowledge the contributions of specific colleagues, institutions, or agencies that aided the efforts of the authors.

REFERENCES

- Allotey, J., Fernandez, S., Bonet, M., Stallings, E., Yap, M., Kew, T., Zhou, D., Coomar, D., Sheikh, J., Lawson, H., Ansari, K., Attarde, S., Littmoden, M., Banjoko, A., Barry, K., Akande, O., Sambamoorthi, D., Van Wely, M., Van Leeuwen, E., ... Thangaratinam, S. (2020). Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: Living systematic review and meta-analysis. *BMJ*, m3320. <https://doi.org/10.1136/bmj.m3320>
- Bardach, L., Lüftenegger, M., Yanagida, T., Schober, B., & Spiel, C. (2019). The role of within-class consensus on mastery goal structures in predicting socio-emotional outcomes. *British Journal of Educational Psychology*, 89(2), 239–258. <https://doi.org/10.1111/bjep.12237>
- Du, W., Yang, J., Peng, Q., Liang, X., & Mao, H. (2019). Comparison study of zinc nanoparticles and zinc sulphate on wheat growth: From toxicity and zinc biofortification. *Chemosphere*, 227, 109–116. <https://doi.org/10.1016/j.chemosphere.2019.03.168>
- Gassman-Pines, A., Ananat, E. O., & Fitz-Henley, J. (2020). COVID-19 and Parent-Child Psychological Well-being. *Pediatrics*, 146(4), e2020007294. <https://doi.org/10.1542/peds.2020-007294>
- Khan, T., Johnston, K., & Ophoff, J. (2019). The Impact of an Augmented Reality Application on Learning Motivation of Students. *Advances in Human-Computer Interaction*, 2019, 1–14. <https://doi.org/10.1155/2019/7208494>
- Khazaei, B., Khatami, S., Alemohammad, S. H., Rashidi, L., Wu, C., Madani, K., Kalantari, Z., Destouni, G., & Aghakouchak, A. (2019). Climatic or regionally induced by humans? Tracing hydro-climatic and land-use changes to better understand the Lake Urmia tragedy. *Journal of Hydrology*, 569, 203–217. <https://doi.org/10.1016/j.jhydrol.2018.12.004>

- Klok, F. A., Kruip, M. J. H. A., Van Der Meer, N. J. M., Arbous, M. S., Gommers, D. A. M. P. J., Kant, K. M., Kaptein, F. H. J., Van Paassen, J., Stals, M. A. M., Huisman, M. V., & Endeman, H. (2020). Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thrombosis Research*, 191, 145–147. <https://doi.org/10.1016/j.thromres.2020.04.013>
- Kristjanpoller, W., Bouri, E., & Takaishi, T. (2020). Cryptocurrencies and equity funds: Evidence from an asymmetric multifractal analysis. *Physica A: Statistical Mechanics and Its Applications*, 545, 123711. <https://doi.org/10.1016/j.physa.2019.123711>
- Lu, Z., Wang, B., Hu, Y., Liu, W., Zhao, Y., Yang, R., Li, Z., Luo, J., Chi, B., Jiang, Z., Li, M., Mu, S., Liao, S., Zhang, J., & Sun, X. (2019). An Isolated Zinc–Cobalt Atomic Pair for Highly Active and Durable Oxygen Reduction. *Angewandte Chemie International Edition*, 58(9), 2622–2626. <https://doi.org/10.1002/anie.201810175>
- Matondang, H. H., Joelianto, E., & Widiyantoro, S. (2020). Application of Butterworth high pass filter as an approximation of Wood Anderson seismometer frequency response to earthquake signal recording. *ACTA IMEKO*, 9(5), 379. https://doi.org/10.21014/acta_imeko.v9i5.1005
- Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian Journal of Psychiatry*, 51, 102083. <https://doi.org/10.1016/j.ajp.2020.102083>
- Ryu, S., & Ryu, S. (2021). Feeling excited and fluent: How consumers respond to the visual appeals of products in an online shopping environment. *Behaviour & Information Technology*, 40(11), 1219–1233. <https://doi.org/10.1080/0144929X.2021.1942989>
- Sista, A. K., Horowitz, J. M., Tapson, V. F., Rosenberg, M., Elder, M. D., Schiro, B. J., Dohad, S., Amoroso, N. E., Dexter, D. J., Loh, C. T., Leung, D. A., Bieneman, B. K., Perkowski, P. E., Chuang, M. L., & Benenati, J. F. (2021). Indigo Aspiration System for Treatment of Pulmonary Embolism. *JACC: Cardiovascular Interventions*, 14(3), 319–329. <https://doi.org/10.1016/j.jcin.2020.09.053>
- Škare, M., Soriano, D. R., & Porada-Rochoń, M. (2021). Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change*, 163, 120469. <https://doi.org/10.1016/j.techfore.2020.120469>
- Sokolova, K., & Kefi, H. (2020). Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of Retailing and Consumer Services*, 53, 101742. <https://doi.org/10.1016/j.jretconser.2019.01.011>
- Wang, Y., Yao, Q., Kwok, J. T., & Ni, L. M. (2021). Generalizing from a Few Examples: A Survey on Few-shot Learning. *ACM Computing Surveys*, 53(3), 1–34. <https://doi.org/10.1145/3386252>

- Wu, H., Hao, Y., & Ren, S. (2020). How do environmental regulation and environmental decentralization affect green total factor energy efficiency: Evidence from China. *Energy Economics*, 91, 104880. <https://doi.org/10.1016/j.eneco.2020.104880>
- Xia, A., Pu, X., Tao, Y., Liu, H., & Wang, Y. (2019). Graphene oxide spontaneous reduction and self-assembly on the zinc metal surface enabling a dendrite-free anode for long-life zinc rechargeable aqueous batteries. *Applied Surface Science*, 481, 852–859. <https://doi.org/10.1016/j.apsusc.2019.03.197>
- Xie, F., & Derakhshan, A. (2021). A Conceptual Review of Positive Teacher Interpersonal Communication Behaviors in the Instructional Context. *Frontiers in Psychology*, 12, 708490. <https://doi.org/10.3389/fpsyg.2021.708490>
- Zhang, Y., Zhang, D., Huang, T., Gillett, A. J., Liu, Y., Hu, D., Cui, L., Bin, Z., Li, G., Wei, J., & Duan, L. (2021). Multi-Resonance Deep-Red Emitters with Shallow Potential-Energy Surfaces to Surpass Energy-Gap Law**. *Angewandte Chemie International Edition*, 60(37), 20498–20503. <https://doi.org/10.1002/anie.202107848>
-

Copyright Holder :

© Lailia Rahmawati et al. (2024).

First Publication Right :

© Sciencetechno: Journal of Science and Technology

This article is under:

