

Educational Integration of Prayer in Islam using an Augmented Reality Approach

Sri Murhayati, M. Arrafie Abduh, Rahmat Rizal Andhi, Rado Yendra, Miftahur Rahman, Ahmad Fudholi

Abstract: Recently, the majority of researchers are interested to utilize advanced technology to find several new creative methods so that students are able to understand the lessons easily. Furthermore, AR “Augmented Reality”, a well-known innovative technology, is the most important transformation in education world. AR is, in addition, a new method uniting several aspects, such as social and tangible computing. Besides, this method has been widely used some education levels since it unites the differing world between virtual and physical world. Nevertheless, the execution in early childhood education has not been maximum yet and, especially for moral values that are taught since childhood for instance praying or Muslim often call as Do’a. Furthermore, in Islam Do’a is a very crucial thing although some people assume that it is trivial. This is probably caused by many variations of Do’a, so that Do’a is little tough to be practiced. Accordingly, with growing technology learning through e-learning like AR can solve this problem. This study aimed to delve deeper into AR that has been designed in “Marker-based” namely “Do’a 4D” and installed in mobile. Lastly, this research explains that the Augmented Reality’s approach is particularly suitable to increase and to ease the understanding of children about Do’a.

I. INTRODUCTION

Augmented reality an enhanced version of reality where live direct or indirect views of physical real-world environments are augmented with superimposed computer-generated images over a user’s view of the real-world, thus enhancing one’s current perception of reality [1]. Many people utilize this technology in education as it has great features that enhance teaching and learning system [2]. AR has created a new creative method, so that learning becomes more interesting, interactive, dynamic, contextual and easier to be understood and be interpreted. AR has the two-way information transfer, provides a dynamic content, can give tasks to learners, and also there are some Augmented

Reality’s outputs that can be enjoyed by user such as video, audio, animation, and 3D objects. Hence, many students are interested in all given offers because some of them may be reluctant to read or to learn Do’a through printed materials. The learners can access the materials through their smartphone and they are able to know the real and virtual objects. They can understand so well about abstract and complicated concept [3].

The technology is a very useful for Muslim in learning and teaching system because in Islam, there are lot of prayers and each prayer of course has different function one another. In the other hand, the majority of children may be unwilling enough to remember Do’a through texts. This causes that they would probably experience little difficulty to recall the prayer because many Muslims also has a short memory although the most of learning systems that are related to Do’a need a more remember. Nevertheless, children especially can memorize daily short prayers easily using the technology, for instance prayer before eating, sleeping, etc. the importance of Do’a for Muslims’ daily life, prayer-related education should be enhanced. The AR “Augmented Reality” is able to be a new technology to build Virtual Environment where the learners can see the virtual objects directly [4].

The most important point that want to be given in this study is to encourage student to use a new creative method or different approach in learning. It means that this is to create an educational software having the AR technology in a mobile device that encourages children to learn and to recall the daily short prayers. Firstly, we needed to focus on creating a marker that students would use to learn and remember the prayers. For instance, if children desire to learn and memorize a prayer used before eating, the AR will be able to show a food on the table and to visualize the prayer voice while the food is going to be eat, or the children can also use to other prayers. It is because the AR has been available for Smartphone and all children can access it that has to be installed in advance.

II. METHOD

It has elucidated above that the AR is great tool to improve learning efficiency, such as prayers-related Muslim’s practice, mainly self-learning ability. There are four process that is explained below.

2.1. Practical Design Module

Modules that was designed are to offer an attractive learning books which contain many daily short prayers. The application of the AR will need some markers established to express several specific situations that refer to a prayer that will be read by users. It is because each situation has a different Do’a one another.

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* Correspondence Author (s)

Sri Murhayati*, Faculty of Education and Teacher Training, Universitas Islam Negeri Sultan Syarif Kasim Riau, Pekanbaru 28293, Indonesia. Correspondent author,

M. Arrafie Abduh, Faculty of Ushuluddin, Universitas Islam Negeri Sultan Syarif Kasim Riau, Pekanbaru 28293, Indonesia

Rahmat Rizal Andhi, Department of Mathematics, Faculty of Science and Technology, UIN Sultan Syarif Kasim Riau, Pekanbaru, Indonesia.

Rado Yendra, Department of Mathematics, Faculty of Science and Technology, UIN Sultan Syarif Kasim Riau, Pekanbaru, Indonesia. Rado Research Centre, Indonesia.

Miftahur Rahman, Rado Research Centre, Indonesia.

Ahmad Fudholi, Solar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600 Bangi Selangor, Malaysia.

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The users will select a marker depending on prayer having a script or logo that they want to read, such as the prayer used before eating, driving, entering bath room and so on. The AR application will once show a display and give the voice of Do'a after the smartphone is closely pointed by users to a prepared marker.

2.2. Working Environment

Hardware and software: the prayer's application, Do'a 4D, should be downloaded and installed first. The users or the learners need an up-to-date smartphone model to display the virtual object and to capture the AR's prepared marker. Furthermore, the markers have been provided in the application.

2.3. Procedure

This application offers many markers and the users have to download them. Then, with the marker, the module is scanned through smartphone and the application show the display and voice that is chosen. Furthermore, the app will also offer Do'a information and related things. They can also work in practice by the end of the section.

2.4. Benefits

Many researchers have indeed described the Augmented Reality has many benefits in education, an overview of the AR's further implementation needs in an education system of early childhood.

III. RESULT

The marker-based Augmented Reality is very important to fix the 4D object [5]. Furthermore, in this paper the markers, a book shown on Figure 1 called "module of Do'a 4D" contain some daily short prayers pointed on Figure 2. Therefore, some prayers expressing a particular situation that the users want to read can be created. It is because the all prayers that is read is totally different one another as each situation and condition have a specific prayer, such as the prayer used before eating, driving, entering bath room etc.

Currently, the use of this technology, Augmented Reality, becomes trendy since many interested people in AR's printed books. The Hungarian's authors elucidated that their study in making an AR-based chemistry syllabus for the Secondary Schools showed a higher effectivity than the use of other textbooks or syllabuses that are too costly and cumbersome [6].



Fig 1. AR's module "Doa4D"

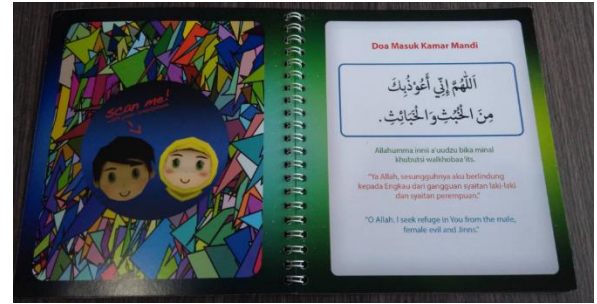


Fig 2. The module of Short Do'a or "Do'a 4D"



Fig 3. (a) Do'a before entering the bath room, (b) Do'a before entering the house, (c) Do'a before eating

On Figure 4, The AR software will once show a display and give the voice of Do'a after the smartphone is closely pointed by users above to a prepared marker. This in addition becomes popular in education [7, 8].

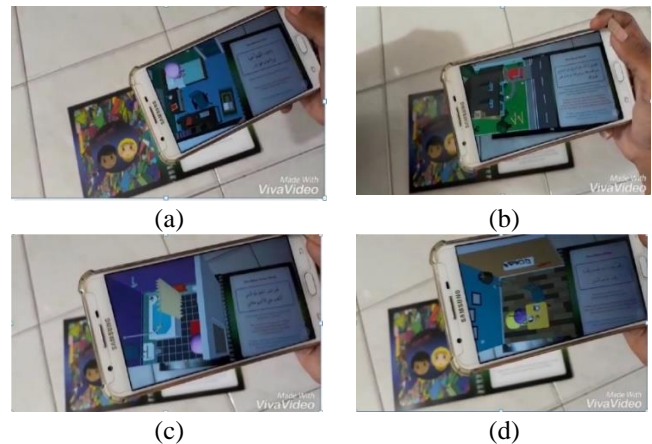


Fig 4. Smartphone use AR shows some prayers like (a) before learning (b) before going out of house (c) before going out of bathroom (d) before eating

The AR's textbook can be only operated if the smartphone camera is pointed to the textbooks, so that it will show interaction and visualization of the book. Firstly, in this paper, the main software should be installed and run called as DOA 4D into the device, shown on the picture below. Moreover, the users or learners have to download the prepared markers in the application. In addition, before running the program, the users have to paste the markers to scan the markers using the application. Then the application will show the selected prayer and its voice through an audio, and provides a feedback of the related prayer. This way is suit for people who have no enough capability in operating new technology like computer etc. They will be able to do that and have a new interactive and creative method in learning.





Fig 5. E-module of DOA 4D in Device's Appstore

The exact advantage from this study is to facilitate early childhood in understand and remembering the prayers that are needed daily. Some children would be taught about several short prayers through the AR technology using smartphone, shown on Figure 6. They are so excited and addicted to learn using this way. These children are also able to understand well the meaning of Do'a and to remember the Do'a very quickly. As we know above that this technology is very useful since many people utilize it for education and many masters had published the benefits of Augmented Reality. Nevertheless, the most important advantages of the AR are such as willingness to learn, giving positive attitude [9], giving pleasure, excitement [10-12], involvement [9], [13, 14], attention [13], gratification [15, 16]], and conviction [16].

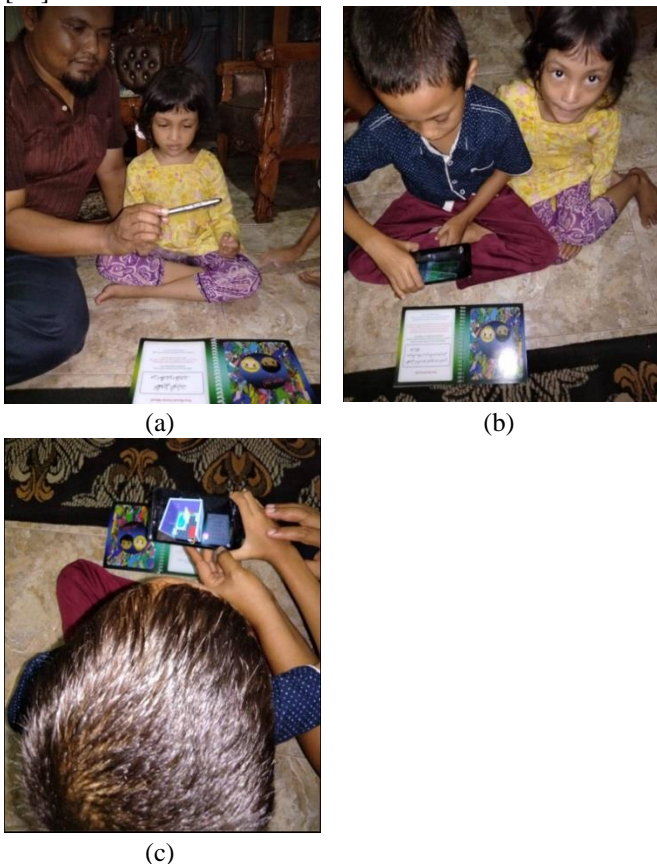


Fig 6. Several early childhoods were learning using DOA 4D using smartphone

IV. CONCLUSION

To conclude, it is clear that Do'a or prayer is one of worships that is very crucial in Islam. Using a traditional way

or method sometimes complicates Muslims in several specific situations to learn and recall some prayers that is needed. Therefore, learning through new technology like Augmented Reality needs to be expanded and utilized so that this simplifies the learners. The AR's approach is very helpful method because it would be an option for the learners who still have a traditional method.

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REFERENCES

1. Azuma, R., Bailiot, Y., Behringer, R., Feiner, S., Julier, S., & MacIntyre, B. (2001). Recent advances in augmented reality. *IEEE Computer Graphics & Application*, 21(6), pp. 34-47.
2. Wu, H. K., Lee, S. W. Y., Chang, H. Y., & Liang, J. C. (2013). Current status, opportunities and challenges of augmented reality in education. *Computers & education*, 62, pp. 41-49.
3. Lee, K. (2012). Augmented reality in education and training. *TechTrends*, 56(2), 13-21.
4. Carmigniani, B., Furht, M., Anisetti, P. Ceravolo, Damiani, & Ivkovic, (2011). Augmented reality technologies, systems and applications, *Multimed. Tools Appl.*, vol. 51. 341-377.
5. Ozdemir, M., Sahin, C., Arcagok, S., & Demir, M. K. (2018). The effect of augmented reality applications in the learning process: a meta-analysis study. *Eurasian Journal of Educational Research(EJER)*, pp. 74..
6. Pasaréti, O., Hajdú, H., Matuszka, T., Jámbori, A., Molnár, I., Turcsányi-Szabó M.: Augmented Reality in education. In: *INFODIDACT Informatika Szakmódszertani Konferencia*. http://people.inf.elte.hu/tomint/infodidact_2011.pdf (2011). Accessed 17 Jan 2018.
7. Kesim, M., & Ozarslan, Y. (2012). Augmented Reality in Education: Current Technologies and the Potential for Education. *Procedia - Social and Behavioral Sciences*, 47(0), 297-302. doi: <http://dx.doi.org/10.1016/j.sbspro.2012.06.654>.
8. Wagner, D., & Schmalstieg, D. (2006, 25-29 March 2006). Handheld Augmented Reality Displays. Paper presented at the Virtual Reality Conference, 2006.
9. Rasalingam, R. R., Muniandy, B., & Rass, R. (2014). Exploring the application of augmented reality technology in early childhood classroom in Malaysia. *Journal of Research & Method in Education (IOSR-JRME)*, 4(5), pp. 33-40.
10. Rambli, D. R. A., Matcha, W., & Sulaiman, S. (2013). Fun learning with AR alphabet book for preschool children. *Procedia computer science*, 25, pp. 211-219.
11. Gopalan, V. (2016). A study of students' motivation based on ease of use, engaging, enjoyment and fun using the augmented reality science textbook. *Revista de la Facultad de Ingeniería*, 31(5).
12. Yilmaz, R. M., Kucuk, S., & Goktas, Y. (2017). Are augmented reality picture books magic or real for preschool children aged five to six?. *British Journal of Educational Technology*, 48(3), pp. 824-841.
13. Jeffri, N. F. S., & Rambli, D. R. A. (2017). Design and development of an augmented reality book and mobile application to enhance the handwriting-instruction for pre-school children. *Open Journal of Social Sciences*, 5(10), pp. 361.
14. Hsu, Y. S., Lin, Y. H., & Yang, B. (2017). Impact of augmented reality lessons on students' STEM interest. *Research and Practice in Technology Enhanced Learning*, 12(1), pp. 2.
15. Bacca, J., Baldiris, S., Fabregat, R., & Graf, S. (2015). Mobile augmented reality in vocational education and training. *Procedia Computer Science*, 75, pp. 49-58. *The International Journal of Multimedia & Its Applications (IJMA)* Vol.10, No.6.
16. Santos, M. E. C., Taketomi, T., Yamamoto, G., Rodrigo, M. M. T., Sandor, C., & Kato, H. (2016). Augmented reality as multimedia: the case for situated vocabulary learning. *Research and Practice in Technology Enhanced Learning*, 11(1), pp. 4.

