

# Augmented Reality Technology for Learning Shalah

Yuliharti, Yasnel, Agustiar, Rahmat Rizal Andhi, Rado Yendra, Mahdini, Ahmad Fudholi

**Abstract:** *The scarcity of Islamic learning materials especially guidance to do shalah using animation technology with interactive interfaces become a reason to the implementation of this study. In this study, we integrates Augmented Reality (AR) elements into a children's learning book, named AR SHALAT 4D Educational Book. It has been designed in 'Markerless-based AR' using mobile devices. The study was tested on an audience of randomly selected children aged 5-6 years and give the conclusion that, AR prayer is a suitable app for solving problems for prayer. Furthermore, this app can be used as one of the forms of mobile learning to the Muslim community regardless of age and background limits.*

## I. INTRODUCTION

The technological improvements for education has been instigated the need for innovation in educational practice, especially in increased evaluation of teaching methods worldwide [1]. Many people utilize this technology in education as it has great features that enhance teaching and learning system. Augmented reality (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 AR's outputs that can be enjoyed by user such as video, audio, animation, and 3D objects. The application of AR in the education field, give strong motivation to students in learning subjects especially for weak students [2-4]. AR technologies also have been already used in engineering, inspection of hazardous environments and surgery. However, only operate indoors and cover relatively small areas. The advances of the wireless technology, vision and computer make possible development of outdoor wireless systems to support complex analysis, governing processes and decision-making. The advantages of utilising such systems in these processes are twofold: 1)

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provision of 2D, 3D geo-information, and 2) data supply on "the spot" (location-based services). Especially in terms of education some AR-based applications are developed to help teach and deliver information. The benefits of AR on education have made AR one of the main technologies that emerge for education in the field of the next five years [5]. The application in teaching and learning for teaching and learning of Islamic Study [6]. Recently, Khan et al [7] studied the impact of an AR application on learning motivation of students. They reported many authors own mobile device and therefore have access to AR. The use of AR for education has been made more feasible due to advances in mobile technology and the increased use of smartphones. The idea of this study to create an educational tool that uses AR technology in a smartphone that motivate children to learn how to done the proper shalah. For this purposes, we focused on create the markers, that can be used when a student wants to learning how to proper shalah.

## II. METHOD

Various studies have found that AR has a great potential in improving learning especially self-learning, so the AR approach can be used to improve the skills and practice of shalah-related Muslims in everyday life. In this study, illustrates the development stages mentioned as shown in Figure 1. The five process as: (1) storyboard development, (2) 3D modelling, (3) animation development, (4) natural feature tracking, and (5) prototype.

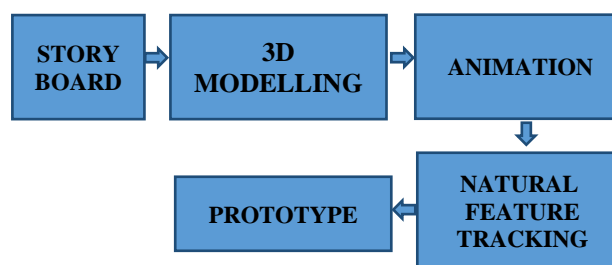


Fig 1. Illustrates the development stages mentioned

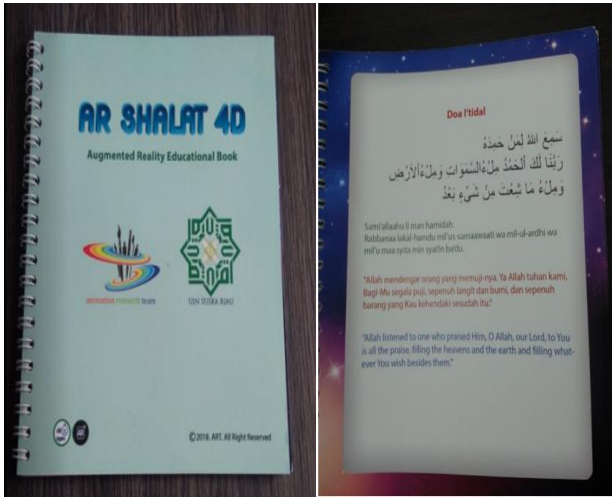
## III. RESULT

Storyboard this study begins with the development of the storyboard for The Guidance to Do Shalah Educational Book. The storybook consists of shalah movements and recitation by voice and reading material that matches the movement. Each character of movements is assigned to a various action in connection to their roles in each scene of the book. In this research the storyboard designed as the book as



## Augmented Reality Technology for Learning Shalah

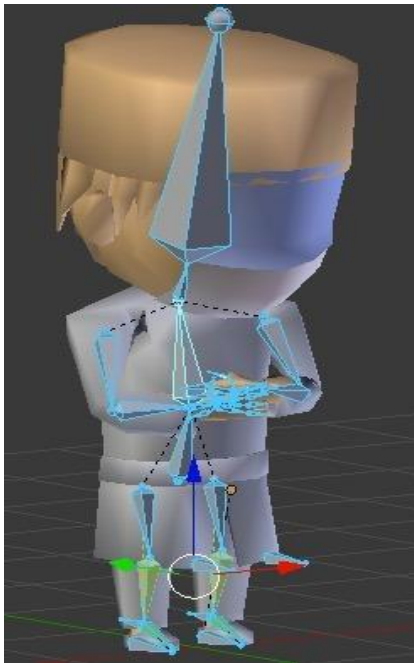
shown in Figure 2(a) and called the “AR SHALAT 4D” and contains shalah recitation as shown in Figure 2(b).



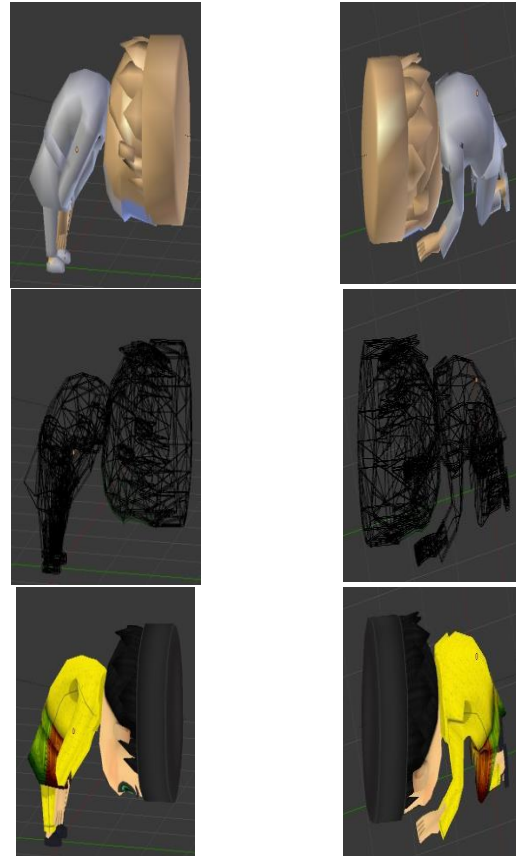
(a) (b)

**Fig 2. (a) Storyboard “AR SHALAT 4D” and (b) some of recitation for shalah**

Blender software is free and open-source 3D computer graphics software, which is used to model, apply texture or color and animate each object [8]. The result of this software is illustrated in Figure 2 and Figure 3.

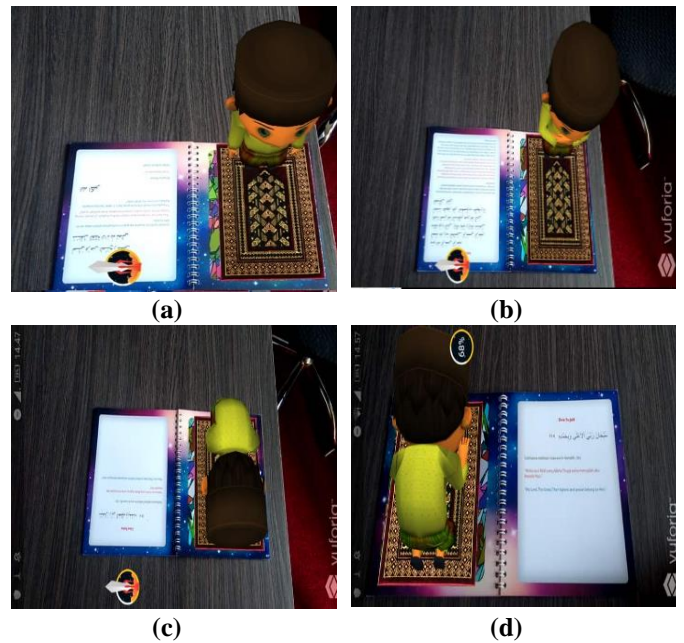


**Fig 2. Envelope bone display**

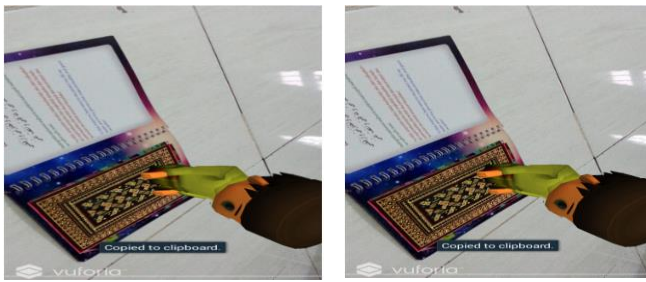


**Fig 3. The Process of some shalah movements (Bow and Prostration)**

The virtual models displayed in the AR SHALAT 4D educational book are animated, they appear to be popping out of the book as shown in Figure 4.



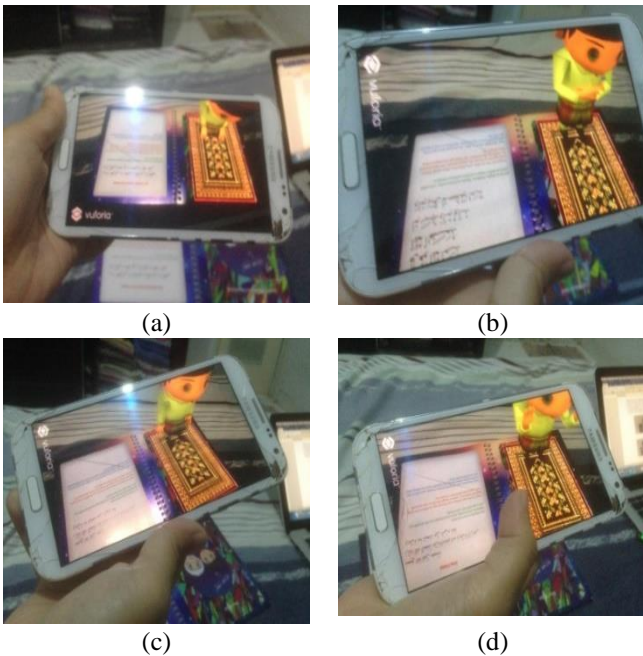
(a) (b)  
(c) (d)



(e) (f)

**Fig 4. Some examples of prayer movements: (a) praying intentions, (b)read prayer iftitah, read surah al-fatimah, and read short chapters, (c) bow, (d) prostration, (e) Sitting between the two prostration, and (f)last seating (attahiyatul)**

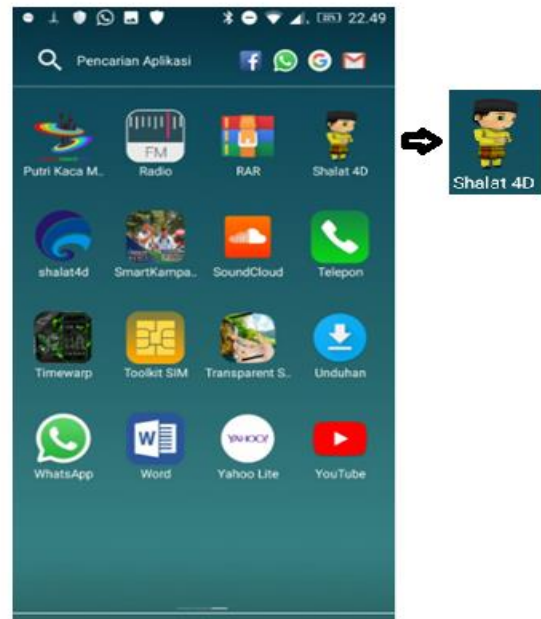
A smartphone may detect different markers as labels that each of them may be assigned to different scenes of the animation, as shown in Figure 5.



(a) (b) (c) (d)

**Fig 5. visual technology that capable to capture visual objects some of movements shalah**

In this study, “Shalat 4D” software should be downloaded and run, as seen in Figure 6. The user or learners starts by downloading the markers that provided from the application. Then, the learners paste the marker in the appropriate place before scan the marker with the application. The app will display the selected shalah movements together with the audio reading. The app also will provide an explanation of shalah movements and related matters.



**Fig 6. Application storybook Shalat 4D in app store for smartphone**

#### IV. CONCLUSION

In conclusion, shalah is a form of worship to Allah SWT demanded by Islam. Learning to do shalah traditionally using the recitation method sometimes makes it difficult for Muslims to practice it consistently in life. Therefore, mobile learning whether e-learning or m-learning needs to be utilized. The AR approach has the advantage of providing the user with the latest learning space that can be used as an alternative to existing traditional learning. This approach is still new, but it having a good impact on the social, also can even be improved in the future. Therefore, AR prayer is a suitable app for solving problems for prayer. Furthermore, this app can be used as one of the forms of mobile learning to the Muslim community regardless of age and background limits.

#### V. ACKNOWLEDGMENT

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## Augmented Reality Technology for Learning Shalah

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