Augmented Reality Book to Aid Learning Tadabbur Al-Quran: A Visualization Tool

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Abstrak. Augmented Reality (AR) is one of the newest technologies explored in education, promises the potential to promote teaching and learning and making learners' experience more "engaging". Innovations in Islamic educational materials and learning approach should be enhanced so that learners are able to learn better. In this paper, we describe the importance of AR in education, tadabbur approach, related research for augmented book, learning principles to promote learning using AR book technology and the potential use of AR book technology in understanding tadabbur Quran. We also explain a model of AR book's affordances work with other factors in shaping a meaningful learning process.

Keywords: Augmented Reality, Tadabbur Al-Quran, visualization tool.

INTRODUCTION

Industrial Revolution 4.0 has changed the direction of an organization in achieving its goal [1]. It has also introduced new innovation such as Augmented Reality (AR) in the education sector. Thus, this has attracted many researchers and industrial players to deeply discover the potential of AR technology toward students learning environment [2]. The same goes with Islamic education, there is a need for Islamic teaching materials and approaches to be integrated with technology in order to make it the learning is more effective.

The Quran is a holy scripture that was revealed by Allah SWT to the beloved prophet Muhammad p.b.u.h. as a guideline and guidance in managing and regulating the life of the mankind. Therefore, Muslims were not only commanded to read the Quran, but were also required to understand and implement the content of the Quran which consists of instructions to be followed as well as prohibitions, and injunctions that need to be abandoned. The process of understanding the contents of the Quran and the efforts to appreciate His instructions and injunctions are called “tadabbur”.

In [3], Tadabbur is a word originated from the derivation of other words (مشتق) in the Arabic language which are:

i. dabbara (-) ج organize, plan and make plans.
ii. tadabbar ( ✅)  زـ رـ contemplate, think, consider.
iii. tadabbur ( ✅)  زـ رـ reflection, observation.

According to linguist, Ibn Faris: dabbara (دـرـ) gives meaning the end of something. While tadabbur means to see the consequences or effects of a thing or action that was done. Tadabbur is the observation, research, reflection and study done on the meaning of the Qur’an [4]. This process takes place through research, reflection and thinking about the reality of something or part of it observing the opposite. In conclusion tadabbur can be formulated as reciting the Quran accompanied by the use of the mind and heart in understanding, appreciating and contemplating every verse of the Qur'an with an understanding of the meaning. Next, give a reflection on the people who tadabbur the Quran through the deeds, attitudes and practices in life all day.

Nowadays, the practice of tadabbur al-Quran among the community is yet to be considered as a culture. Some people who cannot understand an Arabic language or not in religious study only read the Quran without understand the verse’s meaning in depth. Yet, a very low attention is given by Muslim community in regard to the requirement for understanding the content of the quran and the appreciation of its instructions and injunctions i.e. tadabbur al-Quran. This will make the Muslim cannot practise the guidance and instruction in Quran.

In [5], Kirkley et al considers the AR technology in education as the next generation blended learning environment that is realistic, authentic, engaging and extremely fun. These capabilities provide exciting opportunities for designing innovative learning environments that can hopefully make learning more fun, interactive, effective, relevant and powerful. AR book which used the AR technology on real books has the potential to promote learning. In this paper, we describe the design of AR book as a potential tool to promote understanding on tadabbur Al-Quran.

RELATED WORKS

In this section, we describe the tadabbur learning process, related research for augmented reality book, learning model to promote learning using AR book technology and the potential tadabbur AR learning model to promote understanding on tadabbur Al-Quran.

Tadabbur Learning Process

There are various earlier studies that discussed the use of technological approach to attract learners to learn [6]; [7] the Islamic content specifically [8]; [9]; [10]. Augmented reality enables the virtual contents such as text, animation, sound, and videos to be embedded in the real-world situation [11]; [12]. Interactivities, attractiveness, and experiential learning in augmented reality elicit myriad emotions and appeal to the learners to engage in a learning process [7].

Tadabbur learning process is often trapped in an uninteresting learning process nature. Besides that, translation is different from tadabbur. Although some read the Quran and see the meaning through translation but sometimes the meaning of translation can not be understood in depth the true meaning conveyed by Creator. Although there are several
models of tadabbur Quran developed in the play store, but tadabbur Quran verses is too long and unattractive in delivering messages to users. Nowadays, with the new media and technology, there are varities of strategies in tadabbur Quran. To tadabbur the Quran requires a vast understanding and a high mental acuity in order to relate the meaning of Quran with real life. Through tadabbur, human mind can be stimulated to contemplate. By contemplating, human can find the path to the truth [13]. Clearly, the concept and meaning of tadabbur al-Quran can be well understood through a study from Abas Asyafah who has concluded that tadabbur al-Qur’an includes reading, hearing, understanding, feeling, receiving truth and response to verses of the Quran. This can be seen in the figure 1 below:

FIGURE 1. The Scope and Meaning of Tadabbur.

So, to ensure that someone understands the content of the Quran and its interpretation, they will inevitably need to learn Arabic. The interest in learning the language is the main key that will help them achieve excellence in tadabbur al-Quran [14]. In addition, there needs to be a new strategy in studying the Quran. They should always be focus and give full attention, so that they can learn faster and easier. Furthermore they will remember for a long time.

Kolb Experiential Learning Model

Thorough design process in learning is very important in order to avoid cognitive overload during the learning process. In order, for the learners to be motivated and engage, there are four stages of Kolb’s experiential learning model, namely concrete experience, reflect observation, abstract conceptualisation, and active experimentation that will be integrated in the tadabbur AR learning model (TARLM).
Knowledge gained from experience can definitely be applied to the daily and future life, which is crucial in learning [15]. Experiential learning is different from the teacher-centred learning as the learners personally control and experience the learning processes [16]. Through interactive learning processes, the learners obtain understanding of the core of the learning content and will parallelly comprehend the relations between the concepts or rules.

Experiential learning model proposed by Kolb argued that learning is a process of experience transformation. The model discussed four cyclic stages of learning, namely concrete experience (CE), reflect observation (RO), abstract conceptualisation (AC), and active experimentation (AE). In the proposed approach, the adapted experiential learning cycles for tajweed learning require:

i. CE (feeling) – the learners learn through direct experience and specific experience with peers.
ii. RO (watching) – the learners observe the experience and make judgements.
iii. AC (thinking) – the learners learn and are able to understand ideas, concepts, rules, and situations.
iv. AE (doing) – the learners achieve the goals by completing tasks and activities (challenges).

Augmented Reality

The concept of augmented reality (AR) technology was first introduced by Ivan Sutherland in 1965. However, it was until the early 1990s that the term augmented reality (AR) was first used by [17], who developed an AR system as a tool to train employees at Boeing Corporation USA, understand and operate on-board wiring. In [18], Milgram and Kishino also introduced the Reality-Virtuality taxonomy to identify the relationship between real environment and virtual reality (VR) as seen in Figure 1. Based on the taxonomy, virtual environment refers to the VR environment that features all objects virtually. Reality (AR) is located near the real world where the real world is expanded with computer-generated virtual objects. Augmented Virtuality (AV) is a system that is usually in the form of synthetics with few images from the real world such as patterns mapped to virtual objects. Mixed reality (MR), on the other hand, is a combination of expansive reality (AR) and expansive virtuality (AV).

![Mixed Reality (MR)](image-url)

**FIGURE 2.** Kontinuum reality-virtuality Milgram.
AR has strong potential to provide both powerful environment, on-site learning experiences and unforeseen exploration and discovery of the connected nature of information in the real world [19]. AR has also been applied in several topics such as science [20], astronomy [21], mathematics [22], Arabic language [23], Jawi [24] and language [25] as teaching and learning aid. However, the application in teaching and learning for Islamic Study is still rare [26]. This AR technology could be an alternative instructional media for the teachers as well, especially those who are teaching Islamic Study [27].

Based on the previous studies, it was found that studies on the use of Augmented Reality technology in learning the Al-Quran have been widely done in the learning of Al-Quran interpretation, Al-Quran memorization, tajweed law, makhraj letters and prayer applications. A study on the use of Augmented Reality technology in the interpretation of verses of Al-Quran was conducted by [28] and found that learning the interpretation is more easier and provides greater benefits with the text and sound elements included. In addition, in [29], they have conducted a study on the use of Augmented Reality technology in memorizing Al-Quran to facilitate the hearing impaired to memorize Al-Quran and found that memorization by this group is better than conventional methods such as use of sign language and writing.

TADABBUR QURAN AR BOOK (TQAR BOOK)

Tadabbur AR Book (TAR Book) is a real book that use AR technology and integrated the multimedia elements with content. In this section, we describe a proposed tadabbur AR learning model for TAR Book’s affordances work with other factors in shaping a meaningful learning, and also the content for developing TAR Book.

Proposed Tadabbur AR Learning Model

This study has constructed an innovative model named Tadabbur augmented reality-learning model (TARLM) as depicted in Figure 1. TARLM describes how we believe a Tadabbur AR Book’s affordances work with other factors in shaping a meaningful learning environment which was adapted from tadabbur learning process (reading, hearing, understanding, feeling, receiving truth and response), and AR, with four stages of Kolb’s experiential learning model, namely concrete experience, reflect observation, abstract conceptualisation, and active experimentation.
Reading
The learners will learn the tadabbur verse in Quran through TAR Book and AR environment in smartphone.

Hearing/Listening
The learners hear the learning of tadabbur verse in Quran through audio in AR environment.

Understanding
Learning method in tadabbur is based on the theme of 7 principles of Islam and 4 elements of tadabbur.

Feeling
The learners will feel the meaning of tadabbur Quran.

Receiving truth
After feeling the meaning, the learners will receive the truth, know what to do and how to relate to real life.

Response
The learners will response to the truth and the right action is performed.

Concrete Experience (CE)-Feeling: the learners learn tadabbur Quran through direct experience from the TAR Book based on the theme of 7 principles of Islam and 4 elements of tadabbur.

Reflect Observation (RO)-watching: the learners observe the experience of watching the visual and hearing the audio of tadabbur Quran.
Abstract Conceptualisation (AC)-thinking: the learners will introduce the basic concept of tadabbur. They will learn and are able to understand, think and contemplate the tadabbur Quran based on the 4 elements of tadabbur method.

Active Experimentation (AE)-doing: the learners achieve the goals by completing tasks and activities (mind test) in tadabbur to reflect learners understanding.

The system is embedded augmented reality environment to complete the learning process, which highlight the role of augmented reality in enriching experience and interactivity in the learning process. The system also attracts the learners to learn tadabbur, as well as improves the learning outcomes.

By applying tadabbur learning process, experience and AR in TARLM, it will help in designing and developing the tadabbur AR book as a visualization tool to promote understanding and meaningful learning on tadabbur Al-Quran.

Content

This TQAR Book will be printed with 2D background scene. The computer will generate virtual content either 3D static models, 3D dynamic models, ambient sound (music, background) and spatial sound (sound depending on the user action and location).

CONCLUSION

In this paper we have discussed the potential of AR book as a visualization tool to promote understanding on tadabbur Al-Quran. We also describe a model that of a TQAR Book's affordances work with other factors in shaping a meaningful learning, and also the content required for developing TQAR Book.

REFERENCES

3. Ishak Abdul Manaf, Ridzuan Ahmad, Ab. Halim Tamuri & Khadijah Abdul Razak (2017). The Concept of Tadabbur and the Impacts of the 5 Minutes Program with Al-Quran: A Case Study among Student Teachers in IPG KSAH, Tinta Artikulasi Membina Ummah 3(1), 100-114, e-ISSN: 2289-960X.


13. Ishak Abdul Manaf, Rizduan Ahmad, Ab. Halim Tamuri & Khadijah Abdul Razak. (2017). The Concept of Tadabbur and the Impacts of the 5 Minutes Program with Al-Quran: A Case Study Among Student Teachers in IPG KSAH, Tinta Artikulasi Membina Ummah. 3(1), 100-114, e-ISSN: 2289-960X.


