

Research article

Analysis of Interactive Application Development as a Tahfidz Al Quran Learning Strategy

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ORCIDYayuk Fauziyah: <https://orcid.org/0000-0002-5625-2819>**Abstract.**

Hafidz al Quran is the desire of every Muslim. Many Islamic educational institutions ranging from elementary schools to universities are vying to make the lessons of *tahfidz* al Quran as a flagship program. *Hafidz* al Quran is not easy, many people fail, forget, are tired, lazy, and even desperate. This is because the learning process is less innovative, monotonous, boring, inefficient, and unattractive to students. The purpose of this research was to conduct a systematic literature review on developing interactive applications especially for the learning of *tahfidz* al Quran. Data were collected by reviewing all articles related to interactive applications published between 2015 and 2021. In total, 19 articles from national and international journal were selected from Google Scholar and lens.org. Interactive applications are software that contains text, images, sounds, animations, and videos. The software is packaged into apps that can be installed and operated on Android smartphones, laptops, and computers. The results of this study examined the need for software, design, movie clip, and testing. It was found that several selected studies had shown that the development of interactive applications in the form of software, design, movie clip, and testing can be used as a learning strategy for *tahfidz* al-Quran to improve memorization.

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1. Introduction

The development of the digital world has facilitated all activities of human life[1], [2], and digital innovation in the learning process[9] has brought about substantial changes in the field of education[3]. By understanding systematic learning design concepts as well as appropriate learning theories and techniques, the development of educational applications can improve learning outcomes[4], [5].

Recent studies have shown that the application of digital technology in learning has shown positive results [6]. However, there are still many people who use the old method in the Quranic *tahfidzul*, namely by waiting for his mentor first when he wants

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to memorize it. In addition, the *tahfidzul* Quran is still done manually using paper or books.

Most of the methods of *tahfidz* al Quran applied are *muraja'ah*, namely reading and listening over and over again[7], the equipment provided in the form of mushaf al Quran[8], [9] and audio equipment. In addition, in *tahfidz* al Quran still uses conventional means, when you want to listen to sound must require equipment in the form of tape recorder, vcd player, active speakers and so on. The learning process is less innovative, monotonous, boring, and unpleasant.

The proper use of media in learning will be very helpful in minimizing problems[10], [11]. This condition can be overcome by a solution that is by developing interactive applications as a learning strategy for *tahfidz* al Quran. The Research Questions (RQi) in this paper are:

Research Question 1 (RQ1): *what are the interactive applications and problems in tahfidz al Quran as revealed by existing research?*

Research Question 2 (RQ2): *What are the results of the analysis of interactive applications as a learning strategy for tahfidz al Quran?*

This paper comprehensively describes the current research in the analysis of interactive application development as a learning strategy for *tahfidz* al Quran. We begin, in Part 2, by describing the term interactive application, the problems faced by institutions related to Qur'anic *tahfidz*, Part 3, outlining the methods used to conduct our literature review. Section 4, reporting on our findings to Section 5, provides conclusions and future work..

2. Interactive Applications and problems in the tahfidz of the Quran

2.1. Definition of interactive application terms

Interactive application is (software) that contains text, images, sounds, animations and videos packaged into application files[12], consisting of two versions, namely the windows version and the android version. Windows version applications are packaged in the form of Compact Disc learning that can be operated with a set of computers or laptops, while the android version of interactive applications are packaged into application installers, which can be installed and operated with android smartphones. Media is packaged in the form of interactive applications for the dominant student to use gadgets[13].

2.2. Problems in Tahfidz al Quran

Memorization of the Qur'an is often considered a skill[14] or a difficult thing to learn[15] because it requires constant discipline[16] and strong memory. Several researchers have conducted previous studies aimed at developing effective memorization methods [17], [18]. However, there are still many students who have not been able to memorize the Quran well.

Many studies have found difficulties in memorizing the Qur'an including poor memory, disturbances from the environment, indistinction and confusion over the verses being read, and problems in mastery of the Qur'an[19], [20]. In learning *tahfidzul* Quran teachers are required to be proficient in strategies and methods, as well as teach *tahfidz* al Quran through technological approaches[21] and identify how students learn styles to acquire knowledge[22]. However, most methods are applied in *tahfiz* al Quran institutions without considering the student's learning style, although different student learning styles may require a different approach to *tahfidz* al Quran[23].

Lately interest in *tahfidz* al Quran has increased[24], this is due to parents' claims against their children against *tahfidz* al Qur an. However, in the *tahfiz* school curriculum, not all students are able to memorize 30 juz of the Quran within 3 years. There are four problems in *Tahfiz's* curriculum approach[25]. including (a) students not meeting the target of memorization, and not being able to memorize 30 juz of the Qur'an within 3 years; (b) students have not been able to apply good and correct memorization techniques; (c) emphasis on language as a mechanism of learning strategy; and (d) existing mechanisms that do not measure memorization strategies. This problem is seen through the difference in student achievement in the *tahfidz* al Quran between one another as well as the selection of models and strategies applied in the learning of *tahfidz* al Quran.

3. Research methodology

The study used systematic literature review[26]. The purpose of a systematic literature review is to provide answers to two questions that researchers have mentioned in the introduction.

In our systematic literature review, we include industry reports, websites, and books so that keywords in a study are not missed. Therefore, various academic databases, general search engines, such as Google Scholar and lens.org are used as a medium to

gather relevant sources. literature or materials collected with a timeline between 2015-2021, to obtain newly published literature or materials and work published early in field development. The methodology used in this study can be seen in Figure 1.

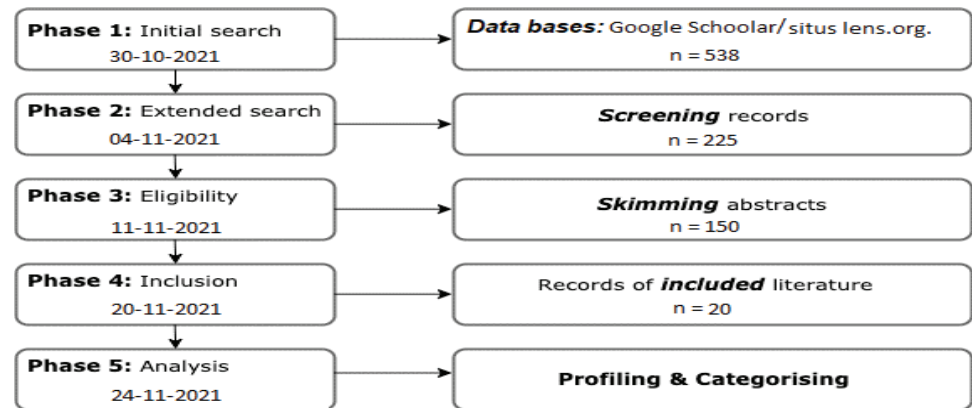


Figure 1: Research methodology .

The research methodology includes the following phases:

1. **Stage 1 (Identification):** 538 results are found by searching all databases using keywords: "application + interactive" and "application + learning".
2. **Stage 2 (Playback):** After initial screening, it was found that 313 literature from stage 1 were irrelevant because they were out of scope or context. Next, the search is more focused, then done using a combination of specific keywords "interactive application"+ memorization, "learning application" + quran.
3. **Stage 3 (Eligibility):** Result 538 is reduced to 225 by analyzing the abstract of the document. Only relevant studies are maintained.
4. **Stage 4 (Inclusion):** All remaining papers (150) are now recorded in a structured and systematic format. The papers have now been read, and the final screening process eliminates all but 20 papers.
5. **Stage 5 (Table):** profiling Profile creation Profile creation is created for 20 sources deemed relevant to the research topic and saved for detailed analysis.

4. Findings and focus of eradication

The first step in analyzing the development of interactive applications is to do a literature study. Facts in the development of interactive applications include software requirements [27] Good software and according to user needs will determine success in developing the required applications.

In addition to software requirements, there is also design, which is the stage of making interactive application designs for learning *tahfidz* al Quran. This design refers to the results of the needs analysis from the previous stage so that it will produce a more attractive interactive application display that can increase student learning interest.

The next step is Code Generation, that is, objects in the form of buttons or Movie Clips that have been previously created on the interface have not been able to perform any functions because at this stage it is to provide code to these objects so that they can function as desired. Code in Adobe Flash is also called ActionScript. In Madcoms[28]. ActionScript is a command used in making attractive Adobe Flash animations by providing ActionScript on an interface that has been previously created, in order to create a multimedia.

Another stage is testing, which is a test aimed at finding out that the objects in the multimedia that have been given the Action Script can function properly according to the design and what is expected in this software testing stage is done using black box testing techniques. According to Pressman [29] Black-box testing focuses on the functional requirements of the software. After arriving at the testing stage and obtaining the final results that are in accordance with the desired function, then the implementation can be carried out in the interactive learning media of *tahfidz* al-Quran. The articles reviewed in this study are listed in the table. 1.

Table 1. shows the data that the design requirements for developing interactive applications for *tahfidz* al-Quran learning are very important and occupy the most positions reviewed in journals, design points specifically explained as much as 85% in journals [2,3,4,5,6, 7,8,15,16,18,22,23,24,25,27,30]. Design requirements are design patterns that form the basis for making interactive applications as needed. Likewise, the need for Movie Clips cannot be separated from design and occupies the second highest order reviewed in journals, the need for Movie Clips is explained as much as 50% in journals [4,5,7,8,9,15,22,23,25,27]. Movie Clip makes the application look more attractive.

Likewise, testing needs occupy the same position as Movie Clip, testing needs are reviewed as much as 50%. in journals [2,3,4,5,9,16,18,23,27]. Needs testing is useful for evaluating whether the application can function as expected. Meanwhile, only 38% of the journals that discuss software requirements are reviewed in journals [2,3,6,7,8,18,24,29]. The small number of articles that review the needs of this software is an opportunity for further researchers to conduct further research.

TABLE 1: References Interactive Application Development Analysis.

Interactive Analysis	Application Development	software	design	Movie Clip	testing
Development of a mobile learning-based Quran memorization learning model[2]		√	√		√
Innovation in the teaching and learning process[3]			√		√
learning through mobile applications Arabic and the Quran[4]			√	√	√
Embedding repetition techniques (Takrir) in developing a mobile application for memorizing the Quran[5]			√	√	√
Implementing mobile augmented reality (AR) to Teach students[6]		√	√		
al Quran memorization application with android-based muraja'ah method[7]		√	√	√	
interactive animation-based Al-Qur'an learning media for children[8]		√	√	√	
Utilization of Media in Learning[9]				√	√
Learning English and mathematics for multimedia-based elementary schools[11]			√		√
Tahfidz Al Qur'an Management Program[15]			√	√	
Mudarris Tahfidz's Strategy in Improving Memorizing[16]			√		√
I-tasmik mobile platform[18]		√	√		√
Tahfiz Model Learning Strategy[22]			√	√	
Digital Learning To Grow Innovative Creativity[23]			√	√	√
Memorizing the Qur'an Using a Mobile Application[24]		√	√		
Innovative Ideas in Memorizing the Qur'an[25]			√	√	
Quran memorization tool design[27]			√	√	√
Software engineering[29]		√			
Memorizing the Qur'an is easy![30]			√		

5. Conclusion

Overall, the analysis of interactive application development was carried out to help improve learning of tahfidz al-quran. applications that have been designed and developed as a tool for learning tahfidz al-quran must be as needed [30]. interactive application development must also include software requirements, design, Movie Clips, testing so that it can be implemented in interesting interactive learning of tahfidz al Quran. The application also allows for self-exploration of learning without the help of a teacher. This

application may be suitable to be implemented in other domains which have similar practice to this research; However, further research needs to be done in-depth study.

The next stage of this research is that improvements in interactive application development must always be evaluated, including assessing efficiency, effectiveness, learning ability, acceptance, and user satisfaction with applications to help students learn tahfidz al-Quran.

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