

## Q-IBADAH MOBILE APPLICATION: A USABILITY PILOT TESTING

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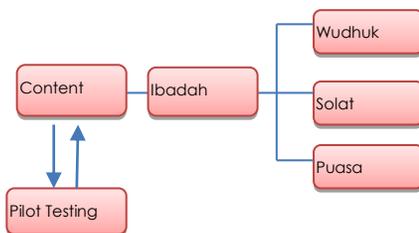
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### Graphical abstract



### Abstract

Q-Ibadah is a mobile application that aims to nurture KAFA students on their Islamic and religious knowledge. The lack of accessibility of digital and online KAFA subject resources have become the motivation in the development of this mobile app. Design and development of this application have followed the software development phases by iterating its design based on the results gathered during the usability pilot-testing phase. As a result, few alterations were suggested for the next development cycle. This research is aimed to provide more contemporary learning style for this important religious lesson for children in Malaysia.

*Keywords:* KAFA, Islamic application, mobile apps, innovative learning

### Abstrak

Q-Ibadah adalah aplikasi mudah alih yang bertujuan untuk memupuk pelajar KAFA pengetahuan mengenai Islam dan agama mereka. Kekurangan bahan-bahan subjek KAFA dalam bentuk digital dan atas talian yang boleh dicapai, menjadi motivasi dalam pembangunan aplikasi mudah alih ini. Reka bentuk dan pembangunan aplikasi ini telah mengikut fasa pembangunan perisian dengan reka bentuk ulangan berdasarkan keputusan dikumpul semasa fasa ujian kebolegunaan rintis. Hasilnya, beberapa perubahan telah dicadangkan untuk kitaran pembangunan yang seterusnya. Kajian ini adalah bertujuan untuk menyediakan gaya pembelajaran yang lebih kontemporari untuk ini pelajaran agama yang penting untuk kanak-kanak di Malaysia.

*Kata kunci:* KAFA, aplikasi Islam, aplikasi mudah alih, pembelajaran yang inovatif

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## 1.0 INTRODUCTION

An *Al-Quran and Fardu Ain* (KAFA) class is a program that provides Islamic education to the primary school children in Malaysia. This is an ongoing effort to educate and develop the Muslim students towards individual nature (Insan) in accordance with the re-

quirements of the Quran and Sunnah. The aim is to produce educated and trained human capital, starting from their early age about AL-Quran and AS-Sunnah, which has a strong faith in God, and appreciate good manners and way of life of Islam.

KAFA class is organized by *Jabatan Kemajuan Islam Malaysia (JAKIM)* for children of 7 to 11 years old.

Most KAFA classes are held in primary school after the school hour starting from 2.30 to 5.30pm. Alternatively, the program is also conducted in other places such as mosques, kindergartens, and other places which seems appropriate.

Most of KAFA classes are conducted by religious teachers using a traditional approach of chalk and board. The class is usually contained up to 40 pupils which make it too cramped and crowded. The learning time (at evening), and the traditional teaching methods would become the factors that decline the child's attention towards the KAFA subjects. Therefore, we have proposed an alternative learning method for KAFA students to embark into more innovative learning approach. We developed an application called Q-Ibadah, an innovative mobile application that suits for contemporary learning. The Q-Ibadah mobile apps can be used both during and after the class hours. Our study is mainly focused on the KAFA classes at the UUM Islamic Centre. Therefore, in this paper, we would explain our journey in two main sections of Q-Ibadah developments and testing respectively.

## 2.0 BACKGROUND

Nowadays, smartphones have already been used in many universities and school as a classroom tool as an extra medium of learning that enable to engage student in communication, collaboration and as supportive activities [1]. This contemporary learning environment has made teaching and learning easier, economical and more interesting. Additionally, the used of multimedia elements in this application would enhance the primary student's ability such as listening, learning experience, practicing for answering questions and focused on content. Furthermore, the mobile application environment can be seen as very advantageous in providing both the on-the-go and mobility medium that suits for today's education.

Islamic subjects has no longer alien to the modern teaching and learning approach. A research has also suggested that mobile technology has increased user interest [7]. The availability of the data and continuous interaction on the move would be the factors that engage user to the mobile apps. As the devices such as mobile phones or tablet are designed to allow users to use it even on the move, the mobility of the application will become the factor of deciding on the success or failure of the application developer [5]. Therefore, development of such application requires full attention for contents as well as the usability of the application.

Android mobile application development is based on Java language codes became an important platform to develop mobile application using the software provided in the Google Android SDK

[10]. The proposed KAFA mobile apps will be designed to run on android supporting mobile devices, because as stated "Most major mobile service providers carry an Android device. From Q2 of 2009 in the second quarter of 2010, Android's worldwide market share rose by 850% from 1.8% to 17.2%. On 15 November 2011, Android reached 52.5% of the global Smartphone market share" [3]. Consequently, several applications have gone beyond a communication tool, but also as a part of the people's daily life items. The development of the mobile application should focus more to the user's experience because user's are the person who going to use the applications [8]. With ubiquitous mobility, students can facilitate learning activity everywhere and connect to other peers by connecting to the network. Mobile technologies offer rich content of mobile learning and deliver information effectively for students during their learning activities.

The mobile app's features that aimed to encourage user engagement should consider particular cultural suits to its purposes. For example, Islamic religious mobile apps must considered Islamic culture and design to be embedded into the application to provide a distinctive perspective on the concept of creativity and innovation. This approach is necessary and crucial in the contemporary Islamic educational system, which provides tools for youngsters at the present age in the era of knowledge and innovation based science and technology [1]. Consequently, the KAFA mobile application would consider such elements to ensure Islamic innovation would flourish and beneficial to all.

## 3.0 Q-IBADAH

KAFA classes offer various subjects to fulfil the needs of students in their religious lesson. At the end of standard 5, each student will take an examination called *Ujian Penilaian Kelas Kafa* (UPKK) to mark their achievement and understanding of this religious subjects. Unfortunately, the availability of UPKK examination questions is limited to certain resources (mostly offline) and static books. Therefore, we decided to develop a mobile application focusing on Ibadah which concentrating on how the examination question of UPKK would be asked. The aim is to make the exam question available for practice everywhere and learning is in continuous mode.

### 3.1 Design and Development

*Architecture.* The content of Q-Ibadah is focusing on students of standard 3 to 5 that 3 topics of wudhu', solat and fasting. Each of these topics will be made available in question types form. At the beginning, there are 20 questions for each topic. Refer Figure 1

for the Q-Ibadah architecture.

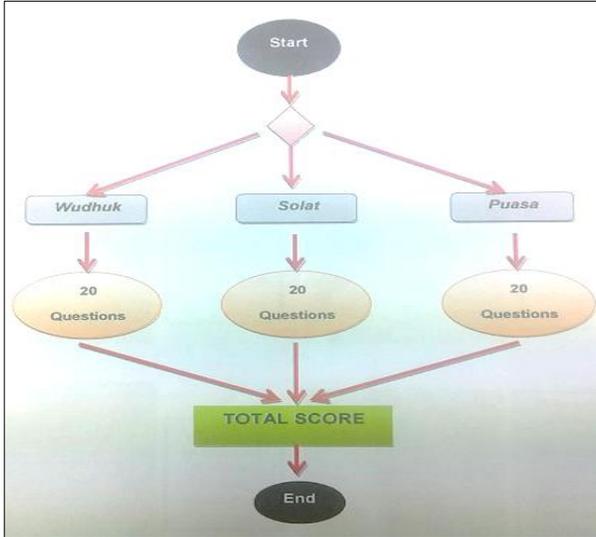


Figure 1 Q-Ibadah architecture

Contents. The lack of digital KAFA resources has motivated us to create this mobile application. This application is concentrated on enabling questions of Ibadah subjects to be practiced by students anywhere and anytime. Ultimately, the content also would become an alternative for KAFA student who will seat for UPKK examination. This exam is important, especially for those who wanted to further their studies in religious streams offered by both government funded and private secondary school.

The collection of questions was designed in multiple choices types of questions. Questions were ranked according to the different level of difficulties. This prototype contains 20 questions for each category.

When students answered the question, a pop-up window will appear to provide the answers of right or wrong.

In the next development phase the application will provided students with detail explanation of the answered question. More additional questions will also be made available for them.

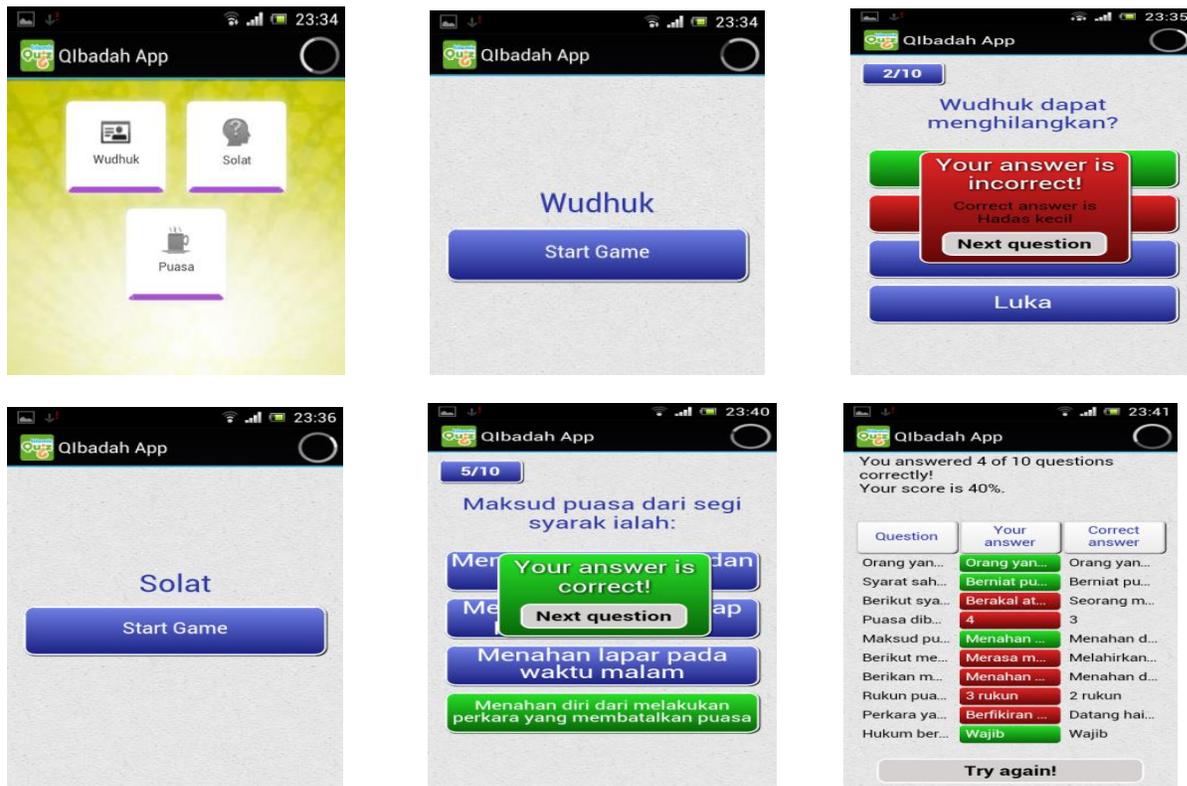


Figure 2 Screen shots of Q-Ibadah Interface

Q-Ibadah prototype was developed using **Ibuild** mobile apps free software. This application is chosen for its user-friendly aspects, thus speed up this prototype development. Furthermore, the availability of quiz type template has easy the development effort. To use this application, students are required to answer each of questions chosen in each section. A window of red alert will be pop upped for each wrong answered, whereas a green alert window will appear for each of right answered. This colour is specifically chosen for easy recognition purposes. Refer Figure 2 for the screen shots of Q-Ibadah interfaces.

### 3.2 Pilot Testing

Before further design and development of Q-Ibadah application is carried out, a pilot testing was conducted that aims to test on the usability issues pertaining to this application. This phase is very important to ensure that the mobile application development suits to the KAFA students. A session of pilot testing has been held at (Universiti Utara Malaysia) UUM Islamic Centre in order to understand some usability issues mentioned, and how to enhance of existing features to make this application usable and interesting.

*Participants.* The participants involved were among the students of standard 4 and 5 of KAFA classes. The teacher is also able to be the respondent to gain his insights.

*Instrument.* A simple questionnaire containing usability issues was used to guide the testing session. The questions were divided into 4 categories of interface, structure, navigation and content. Each section has several questions that can be rated using a Likert scale of 1 to 3 (1= not interesting, 2= not bad, 3= very interesting). This three-type scale was chosen to ease the children in measuring the mentioned usability issues.

*Procedures.* Each participant was given the Q-Ibadah mobile app prototype resides in researcher smartphone. They were exploring the applications and allow to ask any questions. Then, each of them were given 5 to 8 minutes to complete the task, before answering the questionnaire. Refer Figure 3 of some pilot testing activities.



Figure 3 Pilot Testing

*Results.* There are 10 students and a teacher have participated in this pilot test phase. These students age are 10 and 11 years old. They are all experienced the Q-Ibadah mobile application and handed back the questionnaires after answered all the questions. Refer to Table 1 for the pilot test demography.

Table 1 Demography

Gender	Role		Quantity
	Teacher	Student	
Female	-	8	8
Male	1	2	3
TOTAL			11

The result from the collected questionnaires shows that 73% of respondents were agreed that the application interface is suitable. Meanwhile, 91% of the respondents agreed that the structure of the application has helped them learn the KAFA lesson in more interesting manner. The navigation of the application was rated 73% and the content of the application has received 100% of the suitability and appropriateness. Refer to Table 2, for the overall results.

Table 2 Results

Elements	Percentages
Interface	73%
Structure	91%
Navigation	73%
Content	100%

Data of the pilot test, showed that the Q-Ibadah mobile application has received positive feedback with several usability issues that requires the researcher's attentions. Most of them have suggested that Q-Ibadah applications should have more multimedia element, such as animation, video, audio or at least image and not just a text only. Basically, this element are plan to be included in the next development cycle. Some other participants suggested that the applications would be better with many exercises and included more additional subjects. We were also observed that students were more engaged in learning using this mobile apps thus suggested that a mobile application could be one of effective teaching and learning aids. Additionally, a religious teacher who was also took part in the pilot test has proposed that the application should allow teachers to customize the questions for homework purposes. The input was also taken into consideration for the next design iteration cycle.

## 4.0 DISCUSSION

In the new era of technology, mobile learning is growing importance in education sector word widely. Therefore, this situation should be advantageous for Islamic learning as well. We believed by making KAFA subjects available in mobile platform, learning Islamic world become more interesting and easily understand.

Based on the data collected earlier, they are few alterations need to be made in the next iteration cycle.

i. *Interface*: The interface must be attractive enough to encourage user engagement to use the application. For example, the interface should use suitable background, colours, font and logo. Being rated by 73% indicated that further enhancement should be made to this application. Therefore, some additional suitable images will be used to address this issue.

ii. *Structure*: Although the structure of this application is quite obvious and easily understood, we would try to incorporate different colour coding for different topics. Therefore, it would allow students to understand the structure and division of the questions better.

iii. *Navigation*: Thus refers to the navigation in mobile application can link to the others and users enable to click without interruption.

iv. *Content*: the text type question will remain in the application, however, the additional of graphics, video and animation would be added to encourage better learning and engagement. The challenge of the content it to make it available in the small size application to allow faster loading time.

This amendment is planned to be implemented in the next cycle of development. We do hope to speed up the development process, so that the second cycle of development iteration can be done before school break.

## 5.0 CONCLUSION

As we are all aware, mobile applications have invaded our life from the way of living to the way of learning. Lots of learning resources that previously available online, has made into mobile to be enable in small gadget and can be accessed from everywhere. In line with this modernization, religious lesson should also improve its learning environment and enable their contents online and mobile. This would ensure that learning will be more effective and interesting.

Q-Ibadah is a humble attempt into making the Islamic religious lesson more accessible and attractive. The questions typed lesson will straight away triggers students' understanding of the topics, thus encourage further knowledge seeking. Additionally, the mobile form would improve learning experience. Our future works is to make sure that the suggested amendment can be embedded in the next development cycle. This iteration work is important to ensure that the objective of making KAFA mobile apps examination questions available to KAFA children in Malaysia.

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