Digital Self-Learning: Engaging Students in Studying Salat Al-Janazah (The Islamic Funeral Prayer) Based-on Digital Self-Learning

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Abstract. As a part of Muslim society, students have a responsibility in doing Salat Al-Janazah, the ritual of prayer if there is a Muslim died. The ability to perform Salat Al-Janazah is included as part of compulsory subjects in schools. Unfortunately, there are still many students who have difficulty learning this prayer. The difficulty is due to the difference between the Salat Al-Janazah and the obligatory prayers. In addition, the prayer is not performed every day, so it is possible students learn it when in need. This problem can be solved through the technological approach. This research aims to (1) develop a digital self-learning to help the student in learning Salat Al-Janazah by themselves; (2) Evaluate the quality of the media developed based on ISO/IEC 25010 on functional suitability, performance efficiency, compatibility, and usability aspects. In the media developed, the basic knowledge in learning Salat Al-Janazah will be transformed into digital-based material. By using digital self-learning, students can study in flexibility pattern and learn in comfortable rhythm according to their situation. Testing the quality of all aspects of ISO/IEC 25010 showing the media developed already eligible for use in learning Salat Al-Janazah.

1. Introduction
The Indonesian education curriculum contains Religion and Character Education as compulsory subjects. Islamic Education is one of the Religion and Character Education lessons in schools. In Islamic education, one of the competencies developed is the Salat Al-Janazah. Salat Al-Janazah (the Islamic funeral prayer) is one of the rituals of prayer by Muslims if there are other Muslim died. Unlike the obligatory prayer, this prayer is not performed every day. In society, a Muslim who dies becomes a collective obligation upon other Muslims in the organization of the funeral. It means if some Muslims take the responsibility of doing it, the obligation is fulfilled, but if no-one fulfills it, then all Muslims will be accountable. Salat Al-Janazah is one of the duties of Muslims associated with community responsibility. Therefore, Salat Al-Janazah becomes an important matter understood by the students as they are part of Muslims and society.

The basic competencies that must be achieved by students are basic knowledge of the Salat Al-Janazah and the implementation of the Salat Al-Janazah correctly according to the pillars and the legal
procedures. Basic knowledge in learning Salat Al-Janazah contains the meaning of Salat Al-Janazah, the law of Salat Al-Janazah, the pillars of Salat Al-Janazah, and the recitation of Salat Al-Janazah.

Although Salat Al-Janazah is part of a compulsory subject in schools, many students do not understand how to do this prayer. This is because the procedure for prayer is different from the obligatory prayers. Salat Al-Janazah also has a different recitation of the dua. The main difficulty experienced by students due to the long recitation of the surah. Learning Salat Al-Janazah currently cannot fully overcome this difficulty. The learning method still relies on books, text-based tutorials, the teacher gives an example of doing it, then students practice Salat Al-Janazah.

With the penetration of technology in education, conventional learning materials can be transformed into a digital-based material. In this situation, the learning strategy will change towards active learning. Student learning is more independent, where students have an environment that supports self-learning and practical training. Students can study in flexibility pattern and learn in comfortable rhythm according to their situation. The advanced technology makes it possible to make innovations in learning Salat Al-Janazah. The interactive learning media can be developed to overcome the problem of students' difficulties in learning Salat Al-Janazah.

The problem of learning difficulties can be solved through a technological approach. This approach is carried out with consideration of an increase in the number of cellular users in Indonesia. Based on the Indonesian Market Share Mobile Operating System (July 2018 - July 2019), the number of cellular users in Indonesia reached 265.3 million. Statistical data states that 93.69% of these are Android users [6]. This condition enables the development of instructional media through the use of mobile devices to overcome student learning difficulties.

The purposes of this study were to (1) develop a digital self-learning of Salat Al-Janazah to help the student in learning Salat Al-Janazah by themselves; (2) Evaluate the quality of the media developed based on ISO / IEC 25010 on functional suitability, performance efficiency, compatibility, and usability aspects. In the media developed, the basic knowledge in learning Salat Al-Janazah which contains the meaning of Salat Al-Janazah, the law of Salat Al-Janazah, the pillars of Salat Al-Janazah, and the recitation of Salat Al-Janazah dua will be transformed into digital-based material. By using digital self-learning, students can study in flexibility pattern and learn in comfortable rhythm according to their situation.

2. Research Method
This study developed a Digital Self-Learning based on Android that is used by students to learn Salat Al-Janazah. Using the Research and Development (R&D) method, this study uses a waterfall model with variations in the V-model [5] for software development. Figure 1 describes the V waterfall model. SMA N 1 Slahung was chosen as the location for testing the quality of learning media.
The data used for this study were collected by interview, observation, and questionnaire. The collection of data for quality testing of the media in this study used several research instruments. Quality testing on the usability aspect used the USE Questionnaire [3] [4] as an instrument for data collection. The functional suitability aspect used a test case to determine the quality of functions of the software developed. Quality testing for compatibility aspects carried out on various operating systems, device types, and coexistence software. Tests carried out directly on the Android devices and cloud-based testing using the tools of AWS Device Farm. The testing of performance efficiency is conducted to determine the performance of an application related to the use of resources in certain conditions. In [1] stated that performance testing on mobile-based applications is a type of testing that assesses resource utilization in memory, CPU resources, and time behavior. Performance testing is performed using an automation tool from AWS Device Farm.

3. **Result and Discussion**

3.1. **The Specification of Digital Self-Learning**

The *Digital Self-Learning* of Salat Al-Janazah contains learning material according to the syllabus. It provides an easy way for students to learn by text, motion, video, and audio. The animations help to visualize the sequence of steps in Salat Al-Janazah.

There are 3 aspects that are managed in the *Digital Self-Learning* developed, as follows:

1. **Tutorial.** Tutorial with interactive methods containing reading material, demonstration of how to pray, and the discovery of reading or experience that requires verbal and written responses and tests. This tutorial program as a guidance program, which aims to provide assistance to students in order to achieve optimal learning outcomes.

2. **Drill and Practices.** This feature provides training related to the subject matter that has been provided in the tutorial section. Through continuous practice, students will be able to perform Salat Al-Janazah correctly.

3. **Evaluation.** This feature presents problem-based tests according to students' ability levels. When students are working on a test, the system will respond based on the answers. If the answer is correct, the program presents the next material, and if the student answers incorrectly, the program provides the facility to repeat exercises that can be given partially or at the end of the whole test.
3.2. The Design of Digital Self-Learning
This section describes the design process of Digital Self-Learning. Design process translates software requirements into models so that they can be implemented into applications at the next stage. In order to explain the design of learning media, we use the Use Case Diagram to describe the business process and functionality specification (Figure 2). The design was elaborated from the functional specification, which is divided into 3 main functionality, namely Learning Material, Drill and Practices, and Evaluation.

![Use Case Diagram of Digital Self-Learning](image)

**Figure 2.** Use Case diagram of Digital Self-Learning

3.3. The Implementation of Digital Self-Learning
This section explains the implementation of learning media. This stage is carried out after the design process and will be implemented using a programming language. Aspects of the pre-defined functionality developed into program modules. Figure 3 shows some of the interfaces that represent the functionality of the learning media.

The stages of implementation include the following activities:
(1) Creating content Qur’an readings manually using the add-ins in Microsoft Word.
(2) Creating text-based material content with the flip view effect using the flip view library
(3) Creating the application layout using XML programming language and designer tools provided by android studio
(4) Creating a program /coding using Android Studio and Java as the programming logic.
(5) Debugging the application is one important step before the application is certified and released for widespread testing. The purpose of debugging is an internal test to find out that the application developed is running well.
3.4. The Quality of Digital Self-Learning
This section describes the results of media quality testing based on ISO/IEC 25010 on functional suitability, performance efficiency, compatibility, and usability aspects.

3.4.1. The Functional Suitability Aspect
The functional suitability of the application was tested by five experts from various professions who have software development competencies. Application testing aims to ensure that existing features can function correctly or not. Table 1 shows the results of functional suitability testing.

Table 1. Functional Suitability Testing

| No | Function     | Score | Total Score | Maximum Score |
|----|--------------|-------|-------------|---------------|
| 1  | Menu         | 1 1 1 1 1 | 5           | 5             |
| 2  | Materi       | 1 1 1 1 1 | 5           | 5             |
| 3  | Bacaan Shalat| 1 1 1 1 1 | 5           | 5             |
| 4  | Video        | 1 1 1 1 1 | 5           | 5             |
| 5  | Evaluasi     | 1 1 1 1 1 | 5           | 5             |
| 6  | Reward       | 1 1 1 1 1 | 5           | 5             |
| 7  | Bantuan      | 1 1 1 1 1 | 5           | 5             |
| 8  | Tentang      | 1 1 1 1 1 | 5           | 5             |
|    | Total        | 8 8 8 8 8 | 40          | 40            |

Based on Table 1, the percentage of eligibility is calculated using the following formula:

\[
\text{percentage of eligibility (\%) = \frac{\text{observer score} \times 100}{\text{maximum score}}}
\]
percentage of eligibility (\%) = \frac{40 \times 100\%}{40} = 100\%

Based on this result, the eligibility test (quality of media) states that Digital Self-Learning has a functional suitability value of 100\% (very eligible), meaning that the test results show all functions can be run properly.

3.4.2. The Performance Efficiency Aspect
Performance efficiency testing using the AWS Device Farm tool in automation. There are five devices used for this test. The test results are grouped into three categories, namely CPU usage, memory, and thread execution. The results of the performance efficiency test are as follows.

| No | Perangkat                  | Sistem Operasi | CPU (%) | Memory (MB) | Thread (/s) |
|----|----------------------------|----------------|---------|-------------|-------------|
| 1  | Google Pixel 2             | 8.0.0          | 2       | 104         | 17          |
| 2  | Google Pixel               | 7.1.2          | 3       | 136         | 18          |
| 3  | Huawei M8                  | 6.0            | 7       | 46          | 12          |
| 4  | Motorola Moto E – 2nd Gen | 5.1            | 11      | 43          | 15          |
| 5  | Samsung Galaxy S3 (Verizon)| 4.4.2          | 9       | 55          | 13          |

Average: 6.4, 76.8, 15
Max: 11, 136, 18
Min: 2, 43, 12

Table 2 illustrates application performance using various devices that have different operating systems, CPU speeds, memory capacity, and thread execution capabilities per second. It shows that the average CPU usage, the average memory usage, and thread execution per second. CPU Utilization is the activity of the device to use CPU resources when running the application within a certain timeframe. Based on Table 2, the average CPU usage was 6.4\%, where an 11\% maximum usage and minimum usage is 2\%. Memory utilization is the activity of the device in the use of memory resources when running applications. Table 2 shows that the average memory usage is 76.8 MB, where the maximum usage is 136 MB, and the minimum usage is 43 MB. Time behavior is the execution time of a thread in one second. Based on Table 2, the average number of threads processed is 15. Therefore the time behavior of applications learning media is 0.067 seconds / thread.

Based on performance efficiency testing, learning media applications are considered appropriate to use because there is no force closed / memory leak in the application operation.

3.4.3. The Compatibility Aspect
Compatibility testing conducted on coexistence, the suitability of the various operating systems and the suitability of the various types of devices. Coexistence testing is conducted by running the application simultaneously with other applications in one device.

The coexistence aspect (Table 3) shows the results of testing applications that run simultaneously with other applications in one device. Based on these tests, a percentage of eligibility obtained using formula (1) was 100\%. It can be concluded that the application can run simultaneously with other applications in one device without a crash. Therefore, the application of Salat Al-Janazah is considered very feasible to use.
### Table 3. Coexistence Testing

| No | Running Application | Success | Failed |
|----|----------------------|---------|--------|
| 1  | Learning Media of Salat Al-Janazah | Play Store | 1 | 0 |
| 2  | Learning Media of Salat Al-Janazah | Mobile Legends | 1 | 0 |
| 3  | Learning Media of Salat Al-Janazah | Google Chrome | 1 | 0 |
| 4  | Learning Media of Salat Al-Janazah | Facebook | 1 | 0 |
| 5  | Learning Media of Salat Al-Janazah | Maps | 1 | 0 |
| 6  | Learning Media of Salat Al-Janazah | Youtube | 1 | 0 |
| 7  | Learning Media of Salat Al-Janazah | Instagram | 1 | 0 |
| 8  | Learning Media of Salat Al-Janazah | Maps | 1 | 0 |
| 9  | Learning Media of Salat Al-Janazah | Whatsapp | 1 | 0 |
| 10 | Learning Media of Salat Al-Janazah | Camera | 1 | 0 |
| **TOTAL** | | | **10** | **0** |

### Table 4. Suitability Testing in Various Devices and OS

| No | Device | Setup Suite | Build-in Explorer Suite | Teardown Suite | Total |
|----|--------|-------------|--------------------------|----------------|-------|
| 1  | Google Pixel 2 (8.0.0) | 1 | 1 | 1 | 3 |
| 2  | Google Pixel (7.1.2) | 1 | 1 | 1 | 3 |
| 3  | Huawei M8 (6.0) | 1 | 1 | 1 | 3 |
| 4  | Motorola Moto E – 2nd Gen (5.1) | 1 | 1 | 1 | 3 |
| 5  | Samsung Galaxy S3 (Verizon) (4.4.2) | 1 | 1 | 1 | 3 |
| **TOTAL** | | **5** | **5** | **5** | **15** |

Compatibility testing on various devices and OS is done using the AWS Device Farm tool. The application of Al-Janazah Salat was tested using 36 android-based devices of various types and operating systems. Based on trials, 36 of these devices successfully run applications without errors.

Table 4 shows the results of testing learning media applications that are run in various operating systems and device types. The test is divided into three parts, namely the setup suite or the process when installing the application, the Build-in explorer suite or the process when running the application and the teardown suite or the process when removing the application. Based on Table 4, it can be obtained the percentage of eligibility using formula (1) of 100%.

### Table 5. Compatibility Testing

| No | Sub Compatibility | Score |
|----|--------------------|-------|
| 1  | Co-Existence | 100% |
| 2  | Various of OS | 100% |
| 3  | Various of Devices | 100% |

Based on the testing details (table 5) it can be concluded that the compatibility of learning media applications is 100%. These results are correlated with the score interpretation criteria and show that the compatibility of Al-Janazah Salat learning media is very feasible.

### 3.4.4. The Usability Aspect

Usability testing is carried out through the use of applications by 22 students SMA N 1 Slahung grade XI 2. Students try to use the application on each device for learning Salat Al-Janazah, and after that, students give their responses to a USE questionnaire. There are four aspects of usability that are tested, namely Usefulness, Satisfaction, Easy of Learning, and Easy of Use.
Using the formula (1) for Table 6, the usability score of the learning media application of Salat Al-Janazah is 89.42%. These results interpret the learning media of Salat Al-Janazah is very feasible to use.

This study has produced Digital Self-Learning Salat Al-Janazah for high school students. This media has features for learning the material of Salat Al-Janazah, Drill and Practices for reading recitation of Salat Al-Janazah that is equipped with reading indicators and videos, and Evaluation in the form of quizzes. Media development covers all phases of development, starting from communication, planning, modeling, construction, and delivery of software to users / customers (deployment).

4. Conclusion
To conclude the study, the Digital Self-Learning of Salat Al-Janazah has been developed to solve the difficulty of the students in learning Salat Al-Janazah. In general, quality testing showed that the developed media is feasible to use, with detailed testing of each aspect as follows: The eligibility test (quality of media) states that Digital Self-Learning has a functional suitability value of 100% (very eligible), meaning that the test results show all functions can be run properly. The compatibility testing indicates that the application of the Digital Self-Learning is very feasible with the eligibility percentage (co-existence) of 100%, it can run on various versions of the Android operating system and can run on different types of devices. Testing on the aspect of performance efficiency is categorized as feasible, where the application can run well without the occurrence of a memory leak that can cause the application to close suddenly (force close) with an average CPU usage of 6.4% and memory usage by an average of 76.8 MB. Testing on the usability aspect was categorized as very feasible with a percentage of eligibility of 89.42%; this result was tested on 22 respondents in the school where the study was conducted.

5. References
[1] David, A.B. 2011 Mobile application testing best practices to ensure quality (Amsdoc)
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[6] https://gs.statcounter.com/os-market-share/mobile/indonesia , last accessed on July 21, 2019

Table 6. Usability Testing

| Respondent | Total Score | Max Score |
|------------|-------------|-----------|
| 22         | 2951        | 3300      |

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