The Enhancement of First Aid Treatment for Medical Facilities

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Abstract. Accident or emergency can happen in anytime and anywhere in our daily life, not many people that can act spontaneously and if such situation happens right in front of them because lack of knowledge or skill to perform the first aid properly without worsening the condition. By taking the benefit of smartphone being carried by most people we developed a mobile application that provided the symptom of illness and list of treatment that can act as a guideline for the user to properly perform the first aid treatment. Therefore, in this paper proposed on 2D animation to help visualize the step and to boost the confidence level of the user by having the basic knowledge first aid treatment. Besides, the proposed mobile application also able to tell the location of the medical facilities as it is important to estimate the distance and the time taken for medical unit to apply the first aid treatment.

Keywords: First aid, mobile application, treatment, 2D animation

1. Introduction
Performing a first aid to the other is no simple task but it can be done with proper guidance and knowledge. First aid is medical attention that cover wide range of injury and illness that can occur in anytime in the daily life and it is usually administered in order to stabilizing the injured person until proper or specialized medical help arrives. According to [1] first aid is an act to keep the injured person in a stabilize situation until the medical service and treatment are available. It is important for first aid mobile application to be able to function outside of internet coverage, so people can face emergency anywhere. There has been a lot of death as the result from the delay from the medical unit or mistreat the injury due to the lack of knowledge [2].

Smartphone is a technology that has been used widely by people in their daily life as it served many functions according to the user interest [3]. Taking the advantage of the smartphone being used by many people, the practice of using the mobile application as learning medium and as a tool to communicate with medical expert is rising. Even though the personal healthcare is still being taken directly from the doctor or medical personal, the mobile application can provide basic info regarding people health issues [4].
In emergency situation, the individual that have the knowledge and the skill in performing the first aid treatment play a vital role in saving the victim and to communicate with the emergency facilities regarding the victim situation [5].

2. Literature Review

There has been a lot of research that involve in medical department. As for the first aid there has been a research that has created a mobile application that provide the user the navigation to the hospital in Thailand. Smartphone is a device that most of people carry around that affect their life in many different ways as it served many function according to the user interest [6]. One of the usage of smartphone is the use of many mobile applications that differ from each other which is then divide by the functionality and the service provided.

When emergency situation occurred, the main problem is especially for the ambulance is the time taken to reach the scene. According to [7] from simulating the real situation, by sharing the detail of situation in a live view with the medical unit, the witnesses are able to provide support or help in any way to the victim while waiting the medical unit arrival. This highlight the importance of having the first aid knowledge will definitely help others if such situation happened. It is important for the mobile application to be able to function outside of internet coverage so people are able to use the application when facing emergency situation anywhere.

By producing the method for people to learn through their smartphone, it will become easy for people to start learning and also become as a guidebook in case of emergency. The individual that have the knowledge and the skill in performing the first aid treatment play a vital role in communicate with the emergency facilities and the victims [8]. There are many technology that can be use during making a research. However, the best way is the research should use the appropriate technology software that suitable with the research field ad requirement. The next section will discuss on the technology used.

3. Methodology

The methodology used in developing the application is agile. Agile methodology is the best choice for this mobile app development due to it adaptability to the environment where the demand and the hardware kept changing. This method offers flexibility and low risk when developing the mobile application as there is no fixed stages and requirement that being focus through that provide spaces for any incremental changes in the development process [9].
The first step for the development of this project is planning as illustrated in Figure 1. In this phase, the idea is brainstormed to define out the objective, problem statement and the scope for the project so that the project can be developed with clear view. After the brainstorm session, the idea is presented in proposal form to get the project approved and to start toward the next phase, which is the design phase.

The design phase consists of creating the right function and design that match the ideas for the mobile application that have many aspects being consider such as the target audience, the improvement that it can bring to the market and how it helps people in their lives. The software that being used in creating the design was Adobe Illustrator. All the other item and material for the app is created digitally such as the storyboard, and the sitemap.

The next phase is the development phase, Adobe Animate CC has been chosen as the main software that handling the development for the mobile application and the progress of the development for the application was followed from the milestone that has been created on the earlier phases. Coding used for the application is the Action Script 3.0 which is one of the programming languages in Adobe Animate CC [13], [14]. The content of the application was fully created inside Adobe Illustrator and converted to make the files working in the Adobe Animate CC.

Once the main function of the application has been developed, the prototype will be tested to find any fault and error especially in the coding part. The test phase also was done to make sure the content of the application was accurate in being developed to follow the research study.

During the release phase, several prototype tests were conducted to check whether the user was able to understand the contents that has been created and to find if there were fault in the application design. The application might not be complete at the release phase, but the basic function and the development of the application was around 80% when the prototype was released as shown in Figure 2.
Five peoples become a first tester and all the feedback that gained from the testers was collected and discussed for the future improvement that can be made for the application. The application has mainly undergone a whole change in the design to make it more comfortable and easier for the user to use it. Based on prototype evaluation result, the enhancement of proposed work have been done as shown in Figure 3. The enhancement of proposed work have been evaluate and discuss more details in next section.
4. Result and Discussion

All the data that has been collected was run through the IBM SPSS to get the data analysis. The questionnaire was created using the google form which contain 16 close ended questions. Distribution for the questionnaire was handle by social medias such as WhatsApp, Facebook an email. Target user of this study was general, which requires the questionnaire that was created to be precise and easy to understand. The questionnaire was divided into 2 part which is section A, requesting for the respondent’s information and section B, to gain feedback for the application itself.

All the data gathered from the respondent were analyse and has been shown in the informative data tabulation. The questionnaire consists of 16 question and was distributed online using hyperlink. The total number of the respondents for the data that has been collected were 30 people.

Table 1. Sociodemographic data of the respondents

| Variables                          | Frequency (n) | Percentage (%) |
|------------------------------------|---------------|----------------|
| Gender                             |               |                |
| Male                               | 23            | 76.7%          |
| Female                             | 7             | 23.3%          |
| Age                                |               |                |
| 15-21                              | 2             | 6.7%           |
| 22-25                              | 19            | 63.3%          |
| 26-35                              | 6             | 20%            |
| Above 35                           | 3             | 10%            |
| Respondent current Employment      |               |                |
| Working                            | 14            | 46.7%          |
| Not working                        | 2             | 6.7%           |
| Students                           | 14            | 46.7%          |
| How much do you know about first aid|              |                |
| A little bit                        | 12            | 40%            |
| Nothing                            | 9             | 30%            |
| Moderate                           | 8             | 26.7%          |
| Plenty                             | 1             | 3.3%           |
| Experience in perform first aid to anyone else | 22 | 73.3% |
| Yes                                |               |                |
| No                                 | 8             | 26.7%          |

Based on table 1, 23 (76.7%) of the respondents were male and followed by 7(23.3%) which were female. From the age factor, 19 (76.7%) of the respondents was between 22-25 years old, 6 (20%) were from 26-35, above 35 was 3 (10%) and 2 (6.7%) was from the age of 15-21 years old. We can see that the lowest age range from the respondents was between the teenager and the elders. As for the respondent current employment, 14 (46.7%) were working, total of 14 (46.7%) were students and the rest 2 (6.7%) were not working. The results show that most of the respondent were students and have an occupation. The number of respondents that have knowledge about first aid was measured and the results was, 12 (40%) respondents has a little bit knowledge, 9 (30%) that has nothing, followed by moderate which were 8 (26.7%) and lastly 1 (3.3%) people that has plenty knowledge. The total number of respondents that has experience in performing first aid to the others was 22 (73.3%) and the respondents that never performing first aid were 8 (26.7%). More than half of the respondents has the knowledge regarding first aid and have the experience in performing the first aid.
5. Conclusions

For the conclusion, the first-Aid mobile application has been successfully created, tested, and met the objective. This mobile application surely will bring benefits to all people that use it. The idea of developing the prototype by combining multiple functions such as searching for hospitals, providing the step for treatment, teaching the item in the first aid box, and emergency calls come from the lack of currently available medical mobile applications. The app itself can serve as the learning tool and as a guide for the people that are in emergency without being restricted by needing any internet connection.

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