

# STUDY ON EFFECTIVENESS OF E-WARDEN SMARTPHONE APPLICATION FOR USE OF POLYTECHNIC MERLIMAU, MELAKA RESIDENTIAL COLLEGE

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## Abstract

**Purpose** – This study was conducted to solve the problem regarding that faced by warden and resident in Politeknik Merlimau Residential College. Before this, the notice board is used as a tool to convey information on safety and welfare in Politeknik Merlimau Melaka Residential College. The card system is used to monitor the movement of the resident. However, this method is not effective. The wardens faced difficulties in controlling the resident movement. While resident are having difficulty getting information on warden on duty in the event of an emergency. Based on this problem, this study was conducted.

**Methodology** – Through observations and interviews, it is found that using the app can help to solve this problem. The study was conducted to develop an app that would facilitate the wardens to monitor the movement of the resident and also facilitate the residents to obtain information on the task force in event of an emergency. Studies are also being conducted to see the effectiveness of using this app compared to existing methods. The MIT App Inventor software was used to develop this app. Some of the features of this app include warden related information such as organizational charts, warden duty schedules, emergency flow charts, disciplinary case management flow charts, general regulations and so on. Additionally, residents may contact the task force directly within this app. The app also comes with a student application for outing. This makes it easy for residents to apply for permission, the warden is also easy to monitor and parents will be kept informed as well.

**Findings** – Study on effectiveness of this app were conducted on 193 respondents consisting of wardens, parents and residents. The results showed that 72.6% of respondents thought this method was better than the existing method. 77.7% of respondents felt that e-warden app could help residential colleges monitor residents' movements better than card systems. 76.7% of respondents thought the e-warden app was easy to use. As many as 82.9% of respondents thought the e-warden app could help residents obtain information about residential college, contact the warden easily in case of emergency and so on. This e-warden app is also seen as facilitating residents' ability to apply for overnight leave. A total of 79.8% of respondents

agreed with this statement. In addition, this e-warden app also helps parents or guardians and wardens to know the status of their children. 81.9% of respondents agreed with this statement.

**Significance** – Overall, this app has made it easier for the wardens and residents of Kolej Kediaman Politeknik Merlimau, Melaka.

**Keywords:** warden; smartphone app; MIT App Inventor

## **Introduction**

Being a warden is challenging and has an extensive job. Among the duties of the wardens are managing student placement, caring for student welfare, maintaining student safety and security, building student self-esteem, student discipline and so on. The welfare of students living in residential colleges is taken care of by the wardens. Warden plays an important role in helping and keeping students' well-being in good and prosperous condition. Warden is considered a substitute for parents. Warden also serves as a facilitator, advisor and student mentor. The next role played by the warden is to enforce the rules. Students who fail to comply with residential college rules; wardens must act decisively and take appropriate action. Residential college wardens also serve as advisors to the Residential College Student Committee in planning and organizing residential college activities during each semester of study (Nik Mohd Haikal Bin Mohamed Hassan, 2018). In addition, one of the most challenging responsibilities of wardens is to safeguard the safety and security of students. Student safety is a priority for wardens. Parents also expect their children to be safe under the guardians' care. However, it is impossible to monitor all students. With the strength of 12 wardens to keep the safety of over 1000 students, it is difficult. Warden management introduced a card system to monitor student movement. Students will need to fill out the card and meet with the warden if they wish to leave. As a result, the wardens can monitor the movement of students to and from college. However, this system would not be successful if the student failed to fill out the card and meet with the warden for approval. Through observations and interviews with students, it was found that students were having difficulty and lazy to fill out the card because it was abusive in their eyes. What's more is to get a warden's signature every time you go out. College life can influence emotions and contribute to their individual well-being. The 2010 Narisa study identified three key factors contributing to the quality of life of college students in terms of facilities, safety and management factors in ensuring academic excellence as well as student satisfaction in residential college (Narisa Binti Mat, 2010). Hamdan's study found that the college's surveillance & security aspects accounted for 66.5% of its residents' satisfaction survey. However, security controls are still being conducted smoothly with the presence of a warden with regular patrol activities (Ahmad, 2010). As technology advances and the need for more sustainable control increases, there is a need for student control without compromising the privacy of both parties. The adaptation of the ADDIE model involves five phases of development using mobile applications. Jupri & Zainiah, 2016 stated that the teaching model of ADDIE model has a systematic process and facilitates the development of a material (Zainiah, 2015). Fatin & Masri, 2017 developed a patient tracking app in the Emergency Department using MIT App Inventor software. This agile methodology is able to more effectively connect staff and heirs with the information elements and locations of patients in the developed application (Ayob, 2017). According to Shaileen & Jose, 2013, MIT App Inventor is a drag-and-drop visual programming tool to design and build fully functional mobile applications for Android. App Inventor promotes a new era of personalized mobile computing where users are given the freedom to design, create, and use personalized mobile technology solutions that are meaningful to their everyday lives. In Malaysia, the situation is endless and

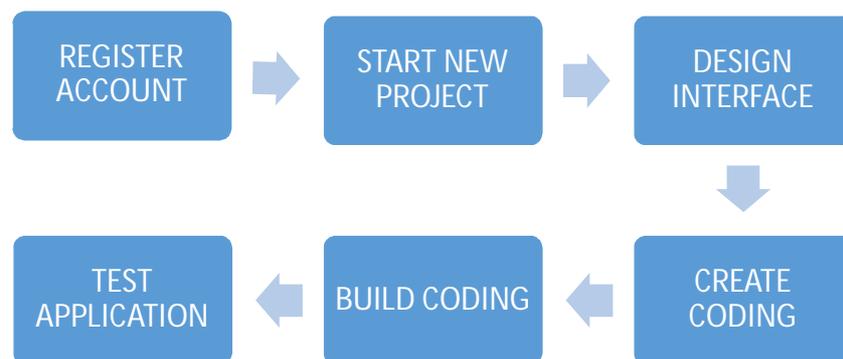
unique. App Inventor's intuitive programming metaphor and additional development capabilities allow developers to focus on logic for application programming rather than encoding language syntax, fostering digital literacy for everyone. As it was transferred from Google to MIT, several improvements have been added, and research projects are underway. This shows that MIT provides a great choice of applications for various uses. Among its features is its ability to be tested in real-time and can be improved over time. This is an incentive for users to test while building. Users are able to select specific function blocks and view immediate operating results (Veiga, 2019). MIT App Inventor is used by students, teachers, developers, fans, and entrepreneurs to develop applications for collaboration, productivity, personal use, recreation, learning, social good, and community activity.

As such, an e-warden application was developed to assist hostel residents at Polytechnic Merlimau, Melaka to search for information warden on duty and to make telephone calls in case of emergency. The use of this application is user-friendly and cost-effective at which students are not charged for installing the application on their respective android phones. Android user applications provide the space for users to perform activities such as dial-up calls by interacting with a window provided for each activity in which the user is organized. This application was developed using MIT App Inventor software.

## 1. Methodology

E-Warden application was developed by using online open source software, which is MIT App Inventor software. MIT App Inventor is a web application integrated development environment originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT). It allows newcomers to computer programming to create application software (apps) for two operating systems (OS): Android (operating system) Android, and iOS. Figure 1 show a flow chart to explain the steps involved in developing an E-warden application.

**Figure 1: Flow chart to develop an e-warden application**



The first step to build this application is the designer have to sign up an account by using a Gmail account into MIT App Inventor website. After having an account, user can create the application according to the required feature set.

**Figure 2: MIT Application Inventor Design Interface**

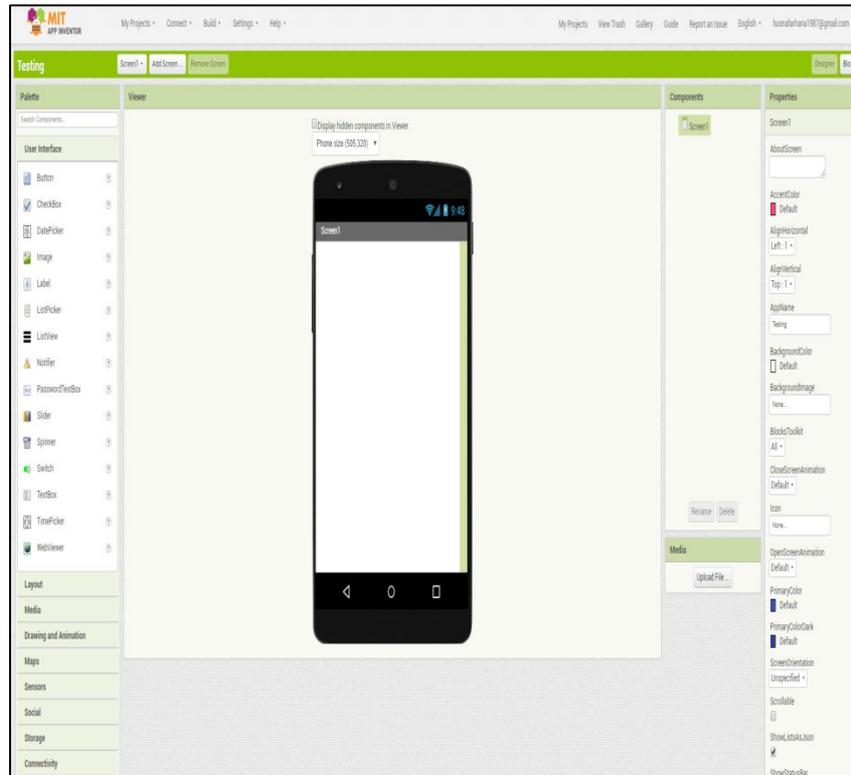


Figure 2 shows the MIT App Inventor design interface. To start designing an application, the designer simply needs to go to the *Start new project* then provide the file name for the new project. After finish interface design part, designer will go to another part which is coding blocks.

**Figure 3: Coding Block**

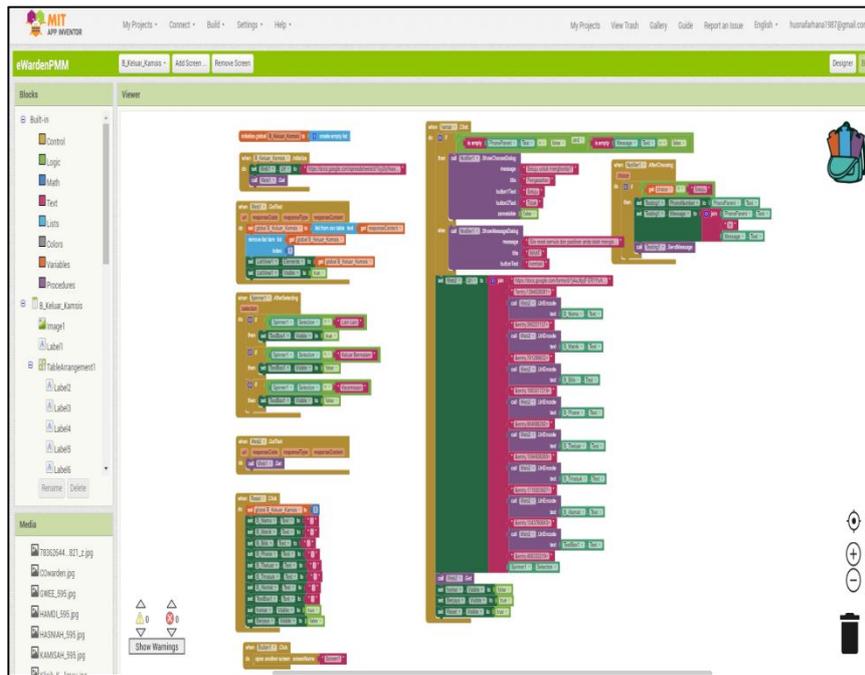


Figure 3 shows the coding blocks used to give instructions to the function of the E-warden application. Then after the designer successfully arranges the encoding blocks, the code will be generated in the form of a QR-code or .apk file to be installed in the user's smartphone.

**Figure 4: Main Screen E-Warden**



Figure 4 shows the design of the main screen interface of the E-warden application featuring the main menu buttons to guide the user to the next screen. Information display on the main menu screen are organization chart button, warden list button by block, warden task schedule button , permission button for the application to overnight stay outside and the button for College staff management list screen. The entire button will guide the user to another screen regarding to their function.

**Figure 5: Organization Chart**

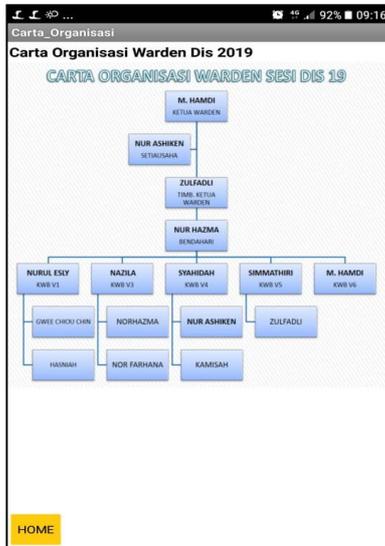


Figure 5 shows the main screen for the warden organization chart for the current session. In this screen view there is only 1 function button the user can access to the main menu. This screen only displays information about the warden by block.

**Figure 6: Permission Form to Overnight Stay Outside**

The form titled 'BORANG KELUAR MASUK KAMSIS' includes the following fields:

- Nama
- Matrik No
- No Blok / No Bilik
- No HandPhone
- Tarikh dan Masa Keluar
- Tarikh dan Masa Masuk
- Alamat Menginap
- Tujuan Keluar (with an 'add items...' dropdown menu)

A 'HANTAR' button is located at the bottom of the form.

Figure 6 shows the main screen permission form for residential to apply when their want to overnight stay outside. In this screen view there are a few details for the resident to fill up then submit. In this screen there have a few hidden button and only show when the form successfully submitted. The button is a HOME button and “BERJAYA DIHANTAR”.

**Figure 7: Warden Details**



Figure 7 shows the warden list and details for the current session. This warden information has been isolated on different screens according to the block duty. In this screen view there are only 2 function buttons that the user can use. The first button is the CALL button which is to call the warden in case of emergency. The second button is HOME button to return to the main menu view.

**Figure 8: Residential college staff**



Figure 8 shows the interface display of the list of residential college staff for the current session. In this screen view there are only 2 function buttons that the user can use. The first button is the CALL button which is to call the staff if necessary. While the HOME button used to return the main menu view.

**Figure 9: Work schedules table**



Figure 9 shows the work schedule table for wardens in current session. In this screen view there is only one function button that the user can use which is the HOME button to return to the main menu view.

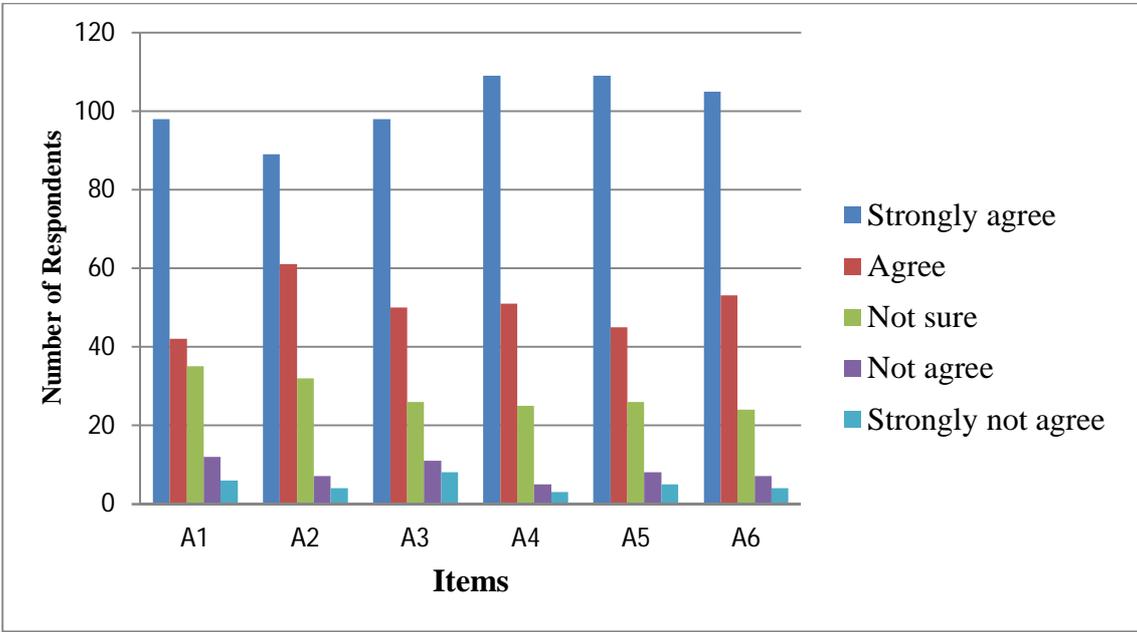
## 2. Result and Discussion

The questionnaire was conducted to 193 residents. Table 1.0 below shows the overall results of the questionnaire. Item A1 in Table 1.0 show that 72.6% of respondents think this e-warden application system is better than the inbound and outbound card system. Whereas item A2 shows that 77.7% of respondents felt that e-warden application systems could help residential colleges monitor residents' movements better than the card system. 76.7% of respondents found this e-warden system easy to use. This is evidenced by item A3. As many as 82.9% of respondents feel that this e-warden application system can help residents get information about residential college, can contact warden easily in case of emergency and so on. This is evidenced by item A4. This e-warden application system is also found to facilitate the occupants' ability to apply for overnight leave. A total of 79.8% of respondents agreed with this statement. This is evidenced in item A5. In addition, this e-warden application system also helps parents or guardians and wardens to know the status of their children. 81.9% of respondents agreed with this statement. This is evidenced by item A6. Figure 15 show the overview of the questionnaire results in bar chart.

**Table 1: Result of Survey Questionnaires**

item	Question	Strongly agree	Agree	Not sure	Not agree	Strongly not agree
A1	The e-warden Application System is better than the inbound and outgoing card system	98	42	35	12	6
A2	The e-warden Application System is able to help residential colleges better monitor the movement of their residents	89	61	32	7	4
A3	The e-warden Application System is easy for residents to use	98	50	26	11	8
A4	The e-warden Application System can help residents obtain information about residential colleges, contact warden in the event of an emergency and so on	109	51	25	5	3
A5	The e-warden Application System makes it easy for residents to apply for permission to stay overnight	109	45	26	8	5
A6	The e-warden Application System helps parents or guardians and wardens to know the status of their children	105	53	24	7	4

**Figure 10: Overview of the Questionnaire results in bar Chart**



Through this questionnaire, several views and comments were obtained. Most comments are positive and constructive. However, there are a few points to consider for improvement. Among them were respondents having difficulty using the new application. Previously, a briefing was conducted to explain the use of the application in large groups. To resolve this issue, a briefing of use will be conducted in accordance with the resident block. With a smaller group of listeners, it is hoped the residents will be able to understand the briefing. Residents are also not ashamed to ask if they do not understand. Some residents do not use this

application because they may not hear well during the briefing. In addition, this application is also recommended for iOS users. Currently, this application is only available for android users. This proposal will be implemented in the future.

## Conclutions

In conclusion, this study has proven that the application of the e-warden system successfully helped warden, parents and students compared to the card system used previously. The e-warden application also helps wardens and parents monitor the occupants' movements. It also makes it easier for residents to deal with warden in the event of an emergency or want to spend a night outside a residential college. However, there are some things that can be improved, that the system needs to be upgraded from time to time especially for iOS users.

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