

Development of the ISCOF-CARES Mobile Application

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KEYWORDS	ABSTRACT
Android awareness Covid-19 Mobile RAD	Covid-19 public health awareness is one of the most effective tools for reducing disease transmission among people by promoting preventative and protective measures. In this paper, we present ISCOF-CARES – an Android-based application designed to raise public awareness about Covid-19 among students, faculty, staff, and clients of the Iloilo State College of Fisheries. This project aims to contribute to providing citizens with relevant, reliable, and up-to-date information about Covid-19. Rapid Development Methodology (RAD) was used as a guide in the development of the application, and the development tools used were Android Studio IDE and SQLite database. The application runs in Android mobile devices with a minimum android operating system version of Lollipop (5.0). The application was tested and evaluated for usefulness and usability by the ISCOF students, faculty and staff, Health Workers, and IT experts. The results achieved an overall “Satisfactory” rating and indicated that the application could be an effective tool for raising public awareness about Covid-19. Some recommendations for future improvements, such as adding more questions and animations to the trivia game, were suggested to increase user interest in using the application.

1.0 Introduction

The Covid-19 pandemic is a public health emergency that has affected nearly every country in the world. Covid-19 is an acute respiratory disease caused by the Coronavirus SARS-Cov-2 that can be transmitted from person to person (WHO, 2020; CDC, 2020) and that first appeared in late December 2019 in Wuhan, China (Shereen et al., 2020). Companies, governments, universities, and colleges worldwide are collaborating to find a viable solution to reduce the risk of disease transmission (Garca-Pealvo et al., 2021; Margherita & Heikkil, 2021; Norton et al., 2020). In the Philippines, the government has attempted to contain the spread of the virus in various ways, including the wearing of facemasks in public, social distancing, nationwide lockdowns, community quarantines, and travel restrictions, among others (Rampal et al., 2020; Bawingan et al., 2020).

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Public health awareness about Covid-19 is also one of the most effective tools for mitigating this crisis, as it aids in reducing the severity of the escalation of the disease by providing preventative and protective measures to control it (Ali & Bhatti, 2020). Digital technologies have been useful as a platform for increasing public health awareness about Covid-19 (Budd et al., 2020; Schilir, 2020), with mobile phones being the most widely used digital technology, where approximately 5 billion people using them (The Mobile Economy 2020). As mobile phones have grown in popularity, several mobile apps have been created to be used as a tool for educating people about the virus (Drew et al., 2020; Salehinejad et al., 2020). Mobile apps are a powerful tool for raising public awareness of Covid-19 (Collado-Borrell et al., 2020).

In this paper, the researchers introduce the Iloilo State College of Fisheries - Covid-19 Advisories and Reliable Experiences for Safety (ISCOF-CARES) App. The ISCOF-CARES app is part of the Iloilo State College of Fisheries initiative to raise public awareness about Covid-19 among students, faculty, staff, and clients. For accuracy and reliability, the information and recommendations in this app are taken from the official websites of the World Health Organization and the Department of Health (Philippines).

This research aims to develop an android-based mobile application called "ISCOF-CARES App" that can be used to provide relevant, reliable, and up-to-date information about the Covid-19 situation worldwide and nationwide to be used by the students, faculties, staff, and clients of the Iloilo State College of Fisheries.

Specifically, this study aims to:

- develop an Android app that displays general information about COVID-19, as well as its prevention and symptoms
- develop an Android app that will display a variety of tips for the general public on how to deal with Covid-19 and the current pandemic situation
- develop an Android app that integrates access to the World Health Organization and the Department of Health (Philippines) official websites in order to display the most up-to-date statistics on the Covid-19 situation globally and nationally
- develop an Android app that incorporates a fact or bluff trivia game to assess the user's knowledge of Covid-19.
- evaluate the mobile app using usability and usefulness evaluation.

2.0 Methodology

The researchers used Rapid Application Development (RAD) as the software development methodology for this study because it is particularly well suited for (but not limited to) developing software that is driven by user interface requirements. RAD approaches to software development place less emphasis on planning and more emphasis on an adaptive process (Hirschberg, 1998). The RAD phases are depicted in Figure 1, including the analysis and quick design phase, prototype cycles (build, demonstrate, and refine processes), testing phase, and implementation phase.

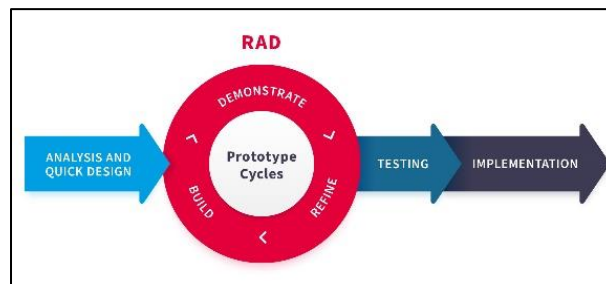


Figure 1: Rapid Application Development (RAD)

2.1 Application Design

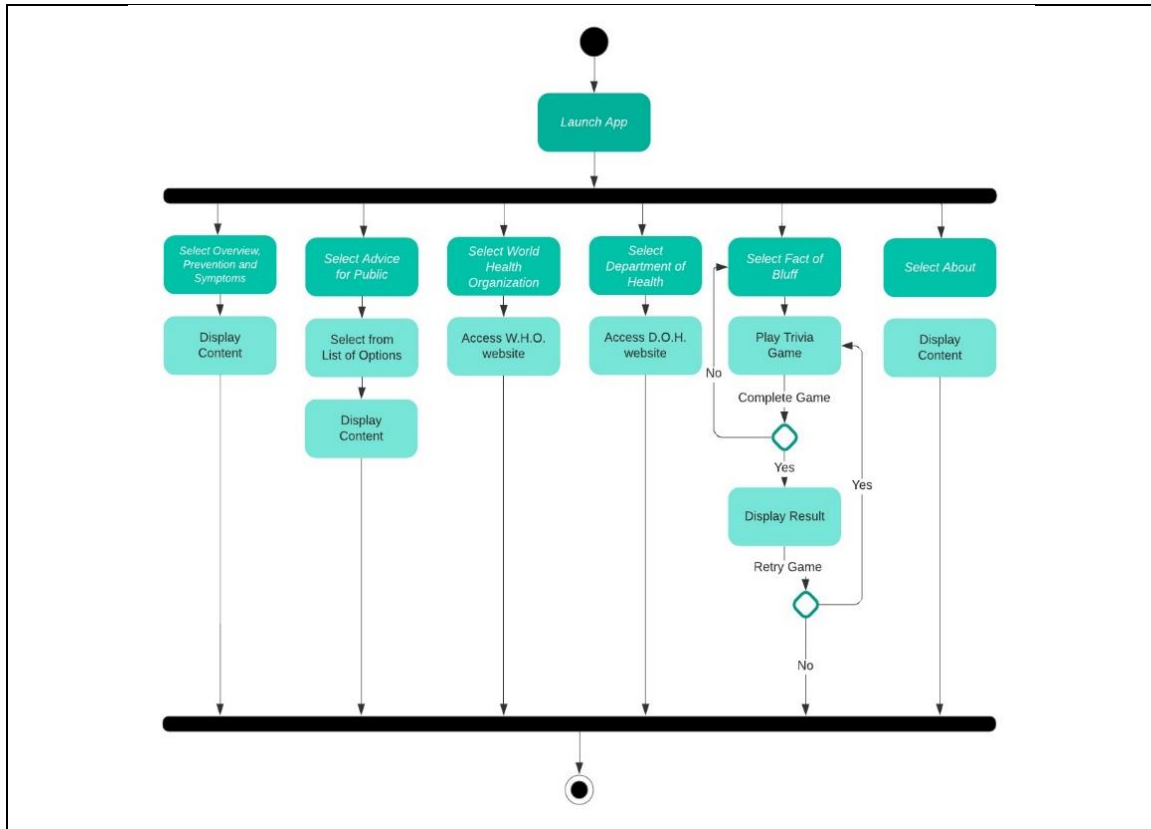


Figure 2: Activity Diagram of ISCOF-CARES

Figure 2 depicts the activity diagram for the ISCOF-CARES App. The main features of the app are Overview, Prevention, and Symptoms, Advice for Public, W.H.O. updates, D.O.H. updates, Fact or Bluff Trivia Game, and About the app. When the user selects the Overview, Prevention, and Symptoms option, the content pertaining to that specific feature is shown. When the user selects the Advice for Public option, a list of topics related to dealing with Covid-19 is displayed, and when the user clicks a specific topic, content related to that topic is displayed. The official website of the World Health Organization can be accessed via the W.H.O. option. This section displays the global Covid-19 situation. In addition, the D.O.H. option will provide access to the official website of the Department of Health (Philippines), which will provide updates on the Covid-19 situation in the Philippines. To access the websites, the user must have an Internet connection.

The Fact or Bluff section contains ten (10) random trivia statements about the Covid-19 disease, each of which must be responded as fact or bluff. Following the user's selection of a fact or bluff response, a complementary explanation of why the statement is a fact or bluff is displayed. When the user finishes the game, the total number of correct answers is displayed, along with the option to retry or exit the game. The About Us section contains information about the mobile application and email addresses to contact if any problems arise while using the app.

2.2 Application Development

The ISCOF-CARES app was developed using the Android Framework. This framework was chosen primarily due to the widespread popularity and low cost of Android devices. The researchers used Android Studio as the Integrated Development Environment (IDE), XML as the mark-up language for designing the user interface, and Java as the programming language for

developing the mobile application. SQLite was used as the local database to store the trivia statements and explanations. Some free vector icons were used to design the application's user interface. The mobile application is compatible with Android devices running the Lollipop operating system or higher (5.0).

2.3 Testing and Validation Tools

Unit tests were implemented to validate the accuracy of the mobile app's operations using the LogCat provided by Android Studio. In addition, a Usability and Usefulness evaluation was performed to determine the application's usability and usefulness to users.

2.4 Project Evaluation

The participants for the Usability and Usefulness evaluation were ten (10) students of ISCOF BN Campus, five (5) Health Workers, five (5) ISCOF faculties and staff, two (2) IT experts. The researchers used purposive sampling to select participants for the study. The evaluation took place at the Iloilo State College of Fisheries Barotac Nuevo Campus.

The application was installed on the participants' Android devices with their permission. Moreover, all participants were asked to run and test the application on their devices. After the application had been executed and tested, the participants rated it using a paper-based usability and usefulness evaluation tool questionnaire provided by the researchers. To interpret the scores, the following scales, from Poor to Very satisfactory, were used.

Table of Scale and Interpretation

1.00-1.5 – Poor
1.51-2.5 – Unsatisfactory
2.51-3.5 – Moderately Satisfactory
3.51-4.5 – Satisfactory
4.51-5.0 – Very satisfactory

The Statistical Package for Social Science (SPSS) software was used to perform all statistical computations.

3.0 Results and Discussion

3.1 ISCOF-CARES App

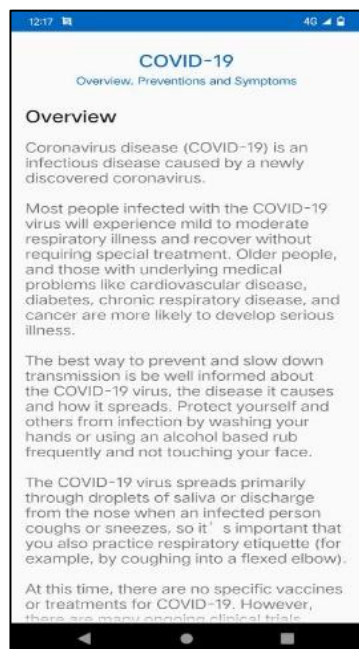


Figure 3: Splash Screen

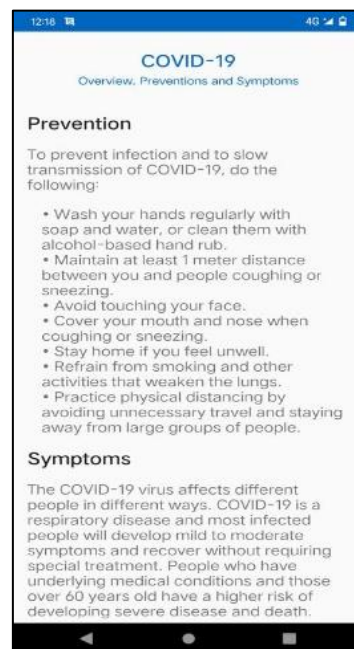


Figure 4: Main Screen

Figure 3 depicts the splash screen interface of the ISCOF-CARES app, which employs an animated feature with a free vector logo depicting the coronavirus. As shown in Figure 4, the app's main interface includes buttons for accessing detailed information on the defined topics. The app's main features are Overview, Public Advice, WHO updates, DOH updates, Fact or Bluff Trivia Game, and About the app. Below the main screen is the DOH Covid-19 hotline, which the user can call if they have any Covid-19-related issues.



A



B

Figure 5: Overview, Prevention and Symptoms

When the user clicks the *Overview, Prevention, and Symptoms* button on the main screen, relevant information about COVID 19 and how people can avoid acquiring it, as well as what possible symptoms a person may experience if infected by the virus, will be displayed in this section (Figures 5A-B).

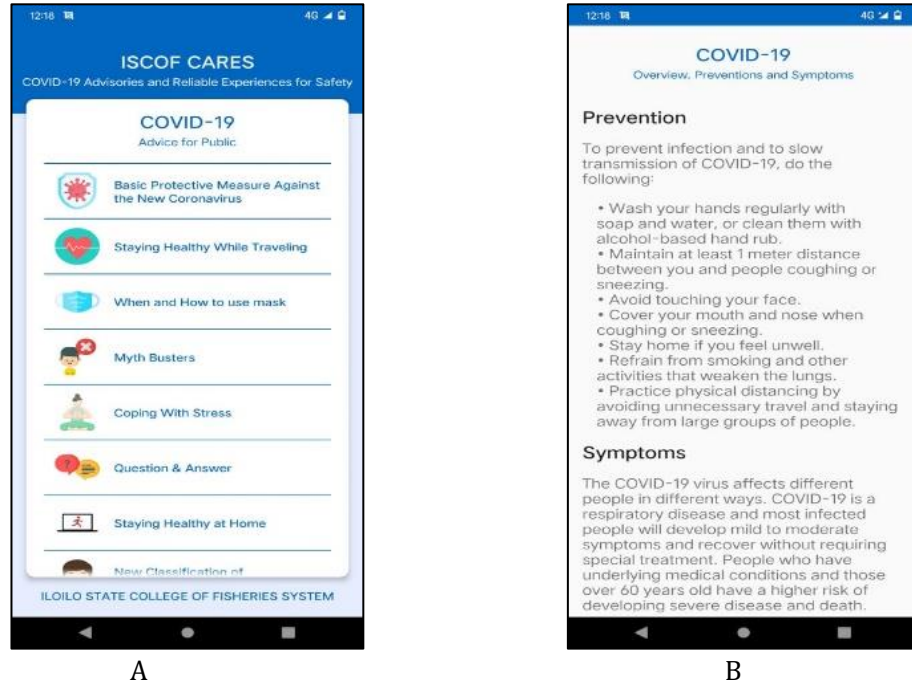


Figure 6: Advice for Public section

Figure 6A depicts the interface when the user clicks the *Advice for Public* button on the main screen. It contains lists of helpful information and advices, such as Basic Protective Measures Against the Virus, Staying Healthy While Traveling, Coping with Stress, and Staying Healthy at Home, among others, that the user can read in order to be informed on possible ways to deal with the current pandemic situation. Figure 6B shows an example of content from this section.



Fig. 7: W.H.O. official website

When the user clicks the *W.H.O.* button on the main screen, the user is redirected to the World Health Organization's official website (Figure 7), which displays comprehensive information and technical guidance on Covid-19 and the global outbreak situation. This section includes infographics of New Cases, Confirmed Cases, Deaths, and Vaccine Doses Administered in Specific Countries, Travel Advice, and Global Situation Reports. This section requires an internet connection to access the website.

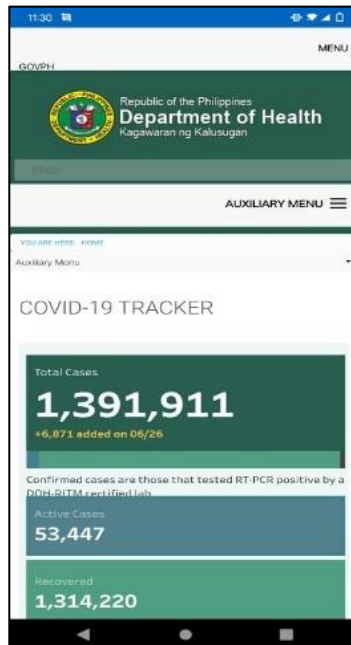


Fig. 8: D.O.H. (Phillippines) official website

When the user clicks the D.O.H. button on the main screen, the user is then redirected to the Department of Health's official website (Figure 8) to view the nationwide Cases, Recoveries and Deaths, Samples Tested, and Nationwide Facilities Data. This section requires an internet connection to access the website.

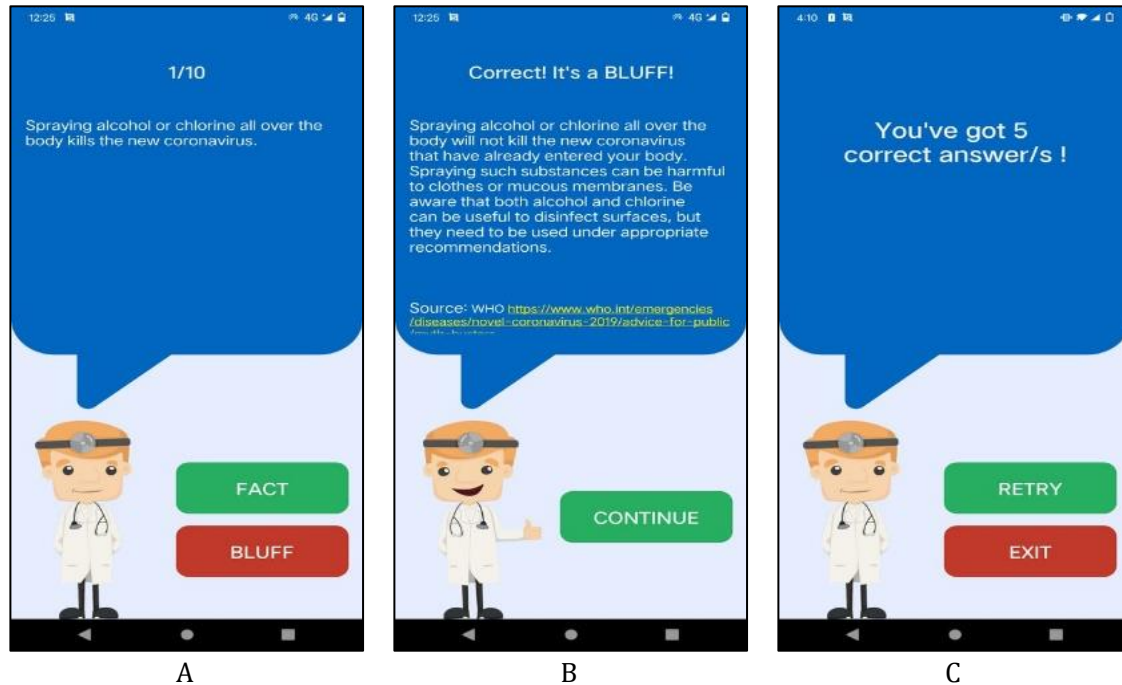


Figure 9: Fact or Bluff Trivia Game

The Fact or Bluff section of the application consists of ten (10) random trivia statements about the Covid-19 disease, each with a fact or bluff response and an explanation of why it is a fact or a bluff. Figure 9A shows a sample of a trivia statement from this section, and Figure 9B shows the explanation for that specific trivia statement. When a user completes the game, the total number of correct answers and the option to retry or exit the game appear (Figure 9C). This section does not require an internet connection to play the game.



Fig. 10: About Us section

When the user clicks the About Us button on the main screen, a description of the app and email addresses to which the user can send messages if any problems arise while using the app are displayed (Fig. 10).

3.2 Evaluation Results

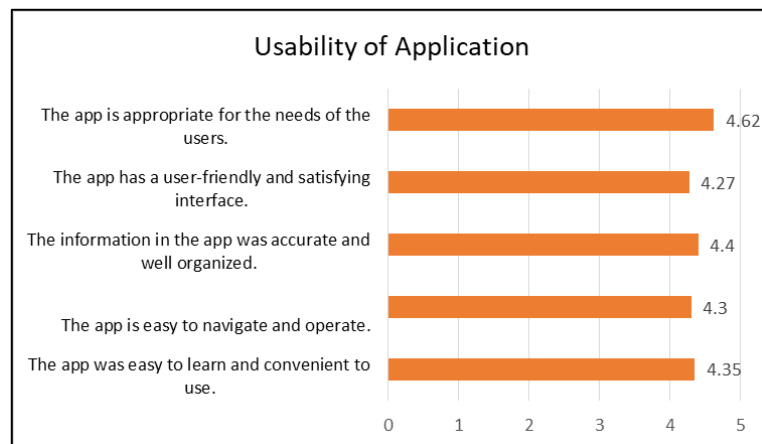


Figure 11: Usability Evaluation Result

The Likert scale value of 4.62, or "Very Satisfactory," for the first criterion, which is the app is appropriate for the needs of the users, as shown in Figure 11, indicates that the majority of participants agreed that the ISCOF-CARES app meets the user's need to find useful information about Covid-19 disease. The mean value of 4.27 ("Satisfactory") in the second criterion indicates that participants agreed that the mobile app has a user-friendly and satisfying user interface, in addition, the mean value of 4.4 ("Satisfactory") in the third criterion indicates that participants believed the app displays accurate and well-organized information. Participants also agree that

the app was easy to navigate and operate, with a score of 4.3 ("Satisfactory"), and that it was simple to learn and use, with a score of 4.35 ("Satisfactory").

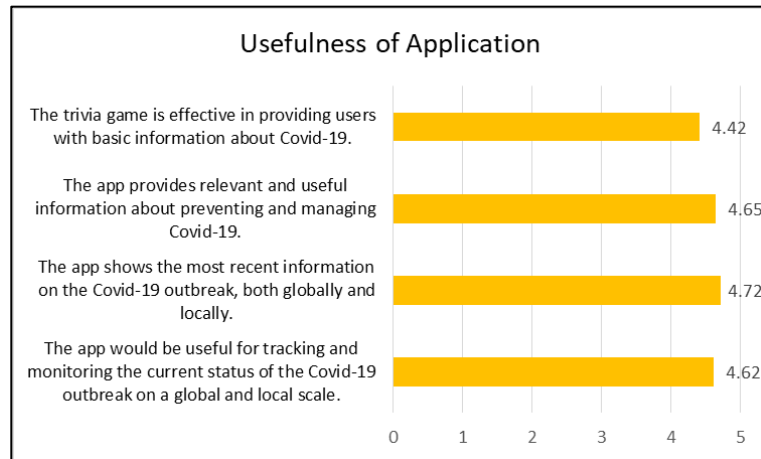


Figure 12: Usefulness Evaluation Result

The usefulness evaluation result is shown in Figure 12, indicating that the mobile app was indeed useful for providing updates on the current Covid-19 situation (4.72 or "Very Satisfactory"), as well as tracking and monitoring new Covid-19 cases (4.62 or "Very Satisfactory"), both globally and nationally. Participants also agree that the app provides relevant and useful information about preventing and managing Covid-19 (4.65 or "Very Satisfactory"), and that the trivia game included in the mobile app is effective in providing users with basic information about Covid-19 and assessing their basic knowledge about it (4.42 or "Satisfactory").

The results show that participants agree that the application can be a useful and effective tool for providing information, updates, and recommendations about Covid-19 and the current pandemic situation.

4.0 Conclusion

Mobile applications have proven to be an effective tool for raising public awareness about containing and limiting the spread of the Covid-19 disease. The ISCOF-CARES Android app can be used to educate and inform students, faculty, staff, and clients at Iloilo State College of Fisheries about the Covid-19 and provide updates on the current pandemic situation worldwide and nationwide. The application provides general information about the Covid-19, its prevention and symptoms, several recommendations for the public for dealing with the virus, trivia game as well as access to the official websites of the World Health Organization and the Department of Health (Philippines) that show real-time statistics of the Covid-19 outbreak. Future enhancements to the application, such as adding more trivia questions and animations to the game, are suggested to increase user interest in using the application. Overall, our project was able to accomplish its objectives based on the result of the evaluation.

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