

Development of Online Counseling Appointment System for Guidance Office of the Office of Student Affairs and Services at Cavite State University-Main

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Abstract: Every guidance counselor finds remote appointments an important tool for managing appointments since it allows them to establish a list of available time slots, see student information, and make appointments without ever leaving their office. This online counseling appointment application provides students with media-related mental health activities and stress-coping skills that are relevant to the university's counseling services. Specifically, it has the following features: (a) provides information to the students related to some guidance on how to cope with stress; (b) generates reports to be used by a guidance counselor in providing insights they need to effectively counsel so many students; and (c) helps the guidance counselor extend their counseling service to the student. The descriptive research approach was used with JavaScript as the scripting programming language and MySQL as the database. The prototyping software approach was also used, allowing the researcher to come up with additional ideas rapidly, improve on them quickly, and show users the features and overall design concept before implementation. The evaluation findings show that the system was "excellent" in both evaluations using modified ISO 9126 software product quality standards, showing that the developed application met all of the required requirements of the software quality test from respondents. The mean and standard deviation were used to tabulate, analyze, and statistically treat the results. Overall, the results and feedback indicate a good impact on the needs of guidance counselors.

Keywords: Managing appointments, Counseling, Services, Stress-coping, Application

1. Introduction

Mental health illness is third among the most frequent disabilities in the Philippines. It has the third-highest incidence of mental health issues in the Western Pacific area, with approximately 6 million

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Filipinos suffering from depression and/or anxiety [1]. In 2019, the worldwide prevalence of common mental illnesses, including depression and anxiety disorders, is expected to reach 5.5% and 3.6%, respectively, while suicide is a global phenomenon; in fact, 77% of suicides occurred in low- and middle-income countries [2]. Suicide accounted for 1.3% of all deaths worldwide, making it the 17th leading cause of death [3].

In the Philippines, suicide incidents increased by 25.7% to 3,529 in 2020, compared to 2,808 deaths in 2019. Suicide is now the 27th highest cause of death in the country [4]. College students can be quite stressful due to the numerous types of progression experienced during this period. They spend most of their time at school and have regular interaction with instructors, classmates, and peers [5-8]. The pandemic has worsened the problem, as the students moved from traditional face-to-face classes to online learning, they experienced increased isolation and anxiety [9-11]. With less personal interaction, social media, smartphone applications, and an online support platform that streamlines the complete support request process for stakeholder concerns can provide a comprehensive picture of all information in one place, increasing the university's efficiency in service delivery. They are being used more to deliver amusement to users [12-13]. Moreover, various mental health applications are being created to aid individuals in taking care of their mental health, ranging from early examinations to education and self-management [14][15]. The idea of the application is to break the stigma and make students realize that mental health is something that should be taken care of and something that needs to be checked on a daily or weekly basis [16][17].

This paper deals with the development of an online counseling appointment application that provides students with media-related mental health activities and stress-coping skills that are relevant to the university's counseling services for CvSU college students' mental health and well-being. It is designed for the guidance office of the Office of Student Affairs and Services at Cavite State University-Main Campus (CvSU). The application's features include register, login, assessment, information, SMS notification, scheduling, and report, which assist the counseling unit in improving the quality of services provided to CvSU students. Specifically, to: (1) provide an information that gives the students a useful tips and guides on how to cope with stress or anxiety, where students to realize that mental health is something that should be taken care of and something that needs to check even on a daily or weekly basis; (2) create a report module that generates and gathers reports to be used by the guidance counselor like summaries based on all of the students' responses, since the CvSU Counseling Unit is the one who monitor the activities and assess the mental status of the students; (3) develop an application that helps the guidance counselor to extend their counseling service to the students; and (4) test and evaluate the application system's functionality using modified ISO 9126 [18].

2. The Proposed Online Counseling Appointment System

Since CvSU does not currently have a monitoring system in place to check the mental health condition of the students who are recognized to be vulnerable, the application is a one-stop-shop that has been developed and localized to the university, which will benefit the counseling unit of the Office of Student Affairs and Services (OSAS) without the students approaching the counselor for an appointment.

The CvSU Guidance Counseling Office has several needs, which can greatly affect its services and even students who need counseling. An interview was conducted online with the guidance counselor at CvSU, which helped the researchers gain knowledge about the mental issues that the CvSU students have encountered. The gathered information was used to identify and analyze the existing problems, such as: (1) Since the pandemic and face-to-face consultations were not allowed, some students are not aware of the online counseling services offered by the guidance unit of the university, and the guidance

counselor is having a hard time determining if an email that they receive with a subject about mental health counseling really comes from a student enrolled at the university; (2) The guidance counselor still uses a pen and paper counseling form to record the student's information, present issues, and the result of the student's evaluation of mental health concerns. This makes it difficult for the guidance unit to generate a report in which they are unable to assist with the student's present status, especially with the issues that are troubling the student; and (3) Due to the current circumstances in which the pandemic has impacted all over the world and most educational institutions have embraced remote learning methodologies, the guidance unit is finding it difficult to provide counseling services to students. The number of students who requested an OSAS consultation had decreased because some students were unaware that the OSAS guidance unit was still in operation to provide counseling services, despite the availability of tele-counseling via virtual meeting applications such as Zoom and Google Meet.

The OSAS underlined that mental health information is for everyone, not only those with professionally diagnosed conditions. Additionally, this developed application helps assess the students' stress-coping skills pertinent to the counseling services of Cavite State University (CvSU), as well as identify stressors associated with the COVID-19 pandemic effects on CvSU college students' mental health and well-being.

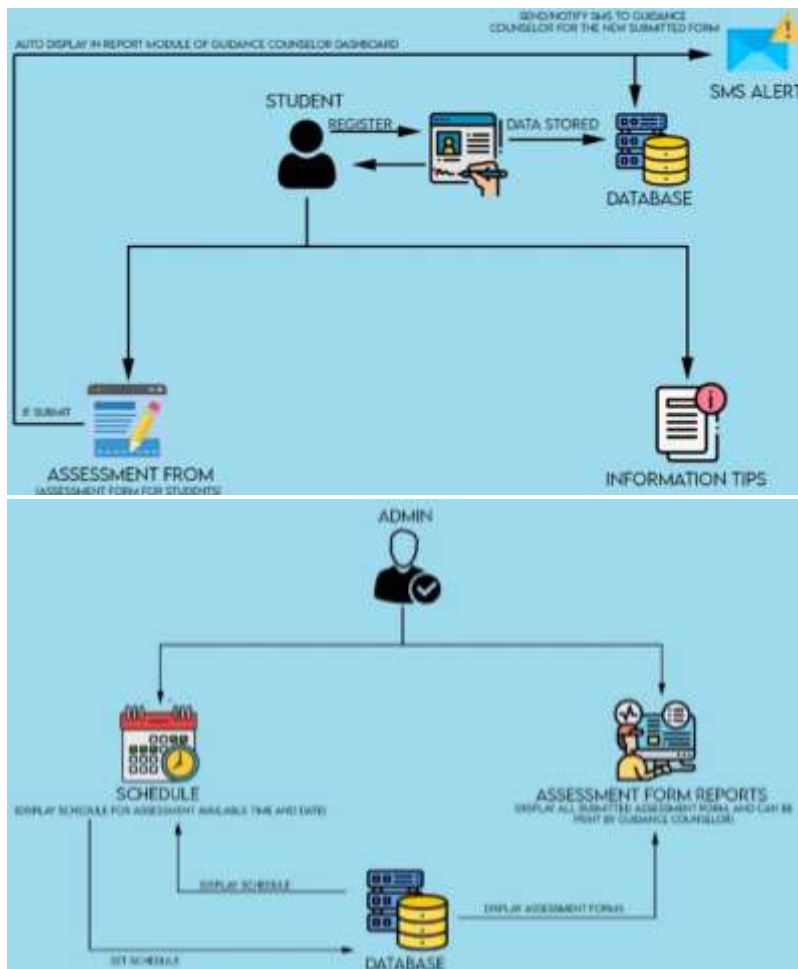


Figure 1. System Architecture

The system architecture is used to design the system's architectural design. It's all about debating the features of each module that fulfill the challenge stated in a system requirement [19]. Figure 1 depicts the system's structural architecture that connects to the database where all of the data is stored, as well

as the application's accessibility and portability for the user. The application's target users are CvSU students, the guidance counselor, and the administration, and it must have Internet connectivity to utilize the application.

Figure 1 shows how the students' users use the application and how the guidance counselor can manage and control the application.

Registration. This allows the user to sign up for the application. The user must create an account by providing a username, a strong password, an email address, and their contact number for an authentication code or link confirmation to be registered. The user needs to fill up their last name, first name, middle name, and student number. This takes place in user credential records. Once a user registers, an authentication code or link confirmation will be sent. Users must thoroughly check any inputted information for legitimate data.

Account Management. This is the authentication that users can access from the mobile app. It can be used by CvSU guidance counselor and students. To open the user account, the user should enter login information, such as a valid user ID and password. After entering the login information, the application checks whether the entered login ID and password are valid or not. If it is valid, then it will direct the user to the user account page. If the user is new to the application or doesn't have a user account, then the user needs to register. After logging in, it will proceed to assessment. Also, upon logging in, there will be a note where the user can see the available time of the guidance counselor.

Students Assessment. This module contains guidance and counseling interview questions. Questions are used by the CvSU guidance counselor when interviewing the student or conducting the pre-assessment from a face-to-face perspective. The discussed answer by the students lets the guidance counselor determine the student's mental present issues and goals related to helping students. After the user submits the form, the guidance counselor will be notified via SMS.

Mental Health Information. This provides some tips from an internet reliable site. After the user answers the assessment form, they can read a tip on how to cope with stress and anxiety. Instead of seeing simple, plain text, the tips that will be given have an animation so that the user will not be bored while reading.

SMS Notification. An SMS notification is automatically sent directly to the guidance counselor after the user submits the form for the assessment.

Scheduling. A calendar where the guidance counselor can set an appointment with the students.

Reports. The users' information, present issues, and counselors' notes can only be seen by the CvSU guidance counselor. The guidance counselor can also generate a report at the end of the week, month, and year. The generated report that will be printed by the guidance counselor will be a generated code instead of the information of the user for the student's confidentiality.

3. Materials and Methods

Different tools were used to develop the application such as JavaScript for the scripting language, Vue.js, React-Native, Node.js for framework and coding, MySQL for the database, and Adobe Photoshop CS6 in creating the application logo with a laptop with the following specifications: an AMD Ryzen 5 3500u with Radeon Vega Mobile GFX, 12 GB of RAM, and an additional AMD Radeon 540x Graphic Card. Also, an Android mobile phone was used to improve the testing process.

A special approach was employed to achieve the desired design of the application in the built online counseling appointment for the Guidance Office of the Office of Student Affairs and Services - Cavite

State University-Main Campus. An interview with the guidance counselor was done to gain information about the processes that began with the students' concerns and how the guidance unit provided services. The information gathered was used as a basis for the researchers to analyze the problems they experienced during their current process, and it was carefully examined to specify the specifications and solutions for particular difficulties as the process of developing mobile applications to address the same problems progressed.

3.1 Research and System Design

In this study, the descriptive research method was used, which provides a detailed and accurate image of a single target user's characteristics and activities. Descriptive research assists researchers in gaining a deeper understanding of a topic by verifying and collecting data about it, as well as providing important insights that may be utilized to impact future studies [20].

In designing the app, the prototyping model was employed to create a rapid and rough version of a desired system or its components [21].

3.2 Population and Sampling

The functionality of each of the following modules was tested: (1) registration; (2) login; (3) information; (4) assessment; (5) notification; and (6) report module. Buttons, media displays, navigations, and information were tested to see if they were displayed and working properly. After the unit and integration testing, the overall result of the developed application passed the functionality, accuracy, and compatibility of each module [22][23].

The developed application was evaluated using the evaluation form based on ISO 9126 with the following criteria: functionality, reliability, usability, and user-friendliness. The non-technical features of the mobile application were evaluated by one hundred and one (101) random students from the CvSU - Main Campus and five (5) personnel from OSAS, where the guidance unit found. Eight (6) IT professors from the Department of Information Technology (DIT) in the College of Engineering and Information Technology (CEIT) at the university were selected for technical system evaluation.

Table 1 indicates the demographics of those who assessed the online and mobile applications: 88.6% are students, 4.39% are OSAS employees, and the remaining 7.01% are IT professionals. The respondents were chosen for convenience of sampling, which does not require a random selection of participants based on any set of criteria such as demographic factors; instead, the researchers subjectively select them at random who are willing to be approached and participate [24].

Table 1. Breakdown of Respondents

Respondents	Quantity	Percentage
College students (non-technical)	101	88.6%
OSAS personnels (nontechnical)	5	4.39%
IT experts (technical)	8	7.01%
Total	114	100%

After evaluation, the responses were tabulated and interpreted using mean and standard deviation formulas [25-27]. The numerical rating used for the evaluation was 5 as the highest (Excellent) and 1 as the lowest (Poor). The results were interpreted using a one-way statistical analysis of variance to compare the means of a group of measurement data.

The formula used for the mean is depicted in Equation 1.

$$\mu = \sqrt{\frac{\sum Xi}{N}} \quad (1)$$

Where:

μ = mean

X_i = initial observation of respondents

N = total number of population

The formula for solving the standard deviation is depicted in Equation 2.

$$SD = \sqrt{\frac{\sum f(x-\bar{x})^2}{n-1}} \quad (2)$$

Where:

SD = standard deviation;

x = individual observation of respondents;

f = frequency of the sample;

\bar{x} = mean of the observation

n = number of respondents

4. Results and Discussion

In this study, the online counseling appointment system provided a helpful and informative mobile application for students and contributed to the advancement of the guidance office at CvSU Main Campus.

The online interview conducted with the guidance counselor at CvSU helped the researchers gain knowledge about the mental issues that the CvSU students have encountered. The gathered information was used to identify and analyze the existing problems, such as the difficulty for a guidance counselor to determine its client, the difficulty in generating reports, and the difficulty for the OSAS to extend counseling services to students during the pandemic. Activities such as outline proposals, software development, and documentation were performed from January 2021 to January 2022. Different software applications were used as references to design and develop the system. The methodology that was used was the prototyping model in system development. It contains different phases such as requirement analysis, design, building, prototyping and refining prototypes, evaluation by the client, and final product.

During unit and integration testing, the researchers ensured that all of the developed software modules were functioning properly. Unit testing seems to be a kind of system testing that involves examining the software's various components individually throughout the first phase, specifically in testing the functionality, accuracy, and compatibility of each module. Each module was identified, detected, and fixed for system errors utilizing this type during the initial point of the software development lifecycle. Integration testing is conducted after unit testing and is done each time a new module is added to the software, specifically to test the accuracy and completeness of the data stored. In this part, the functionality of each module was tested including the registration module, login module, information module, assessment module, notification module, and report module. It also tested if the buttons, media displays, navigations, and information were displayed and working properly. After the unit and integration testing, the overall result of the developed software passed the functionality, accuracy, and compatibility of each module.

For the system evaluation, each respondent received an evaluation form that asked about the system's functionality, dependability, efficiency, maintainability, portability, and usability in accordance with ISO 9126 international software standards. The non-technical features of the mobile application were evaluated by one hundred and one (101) random students from the CvSU - Main Campus and five (5) OSAS personnel. Eight (8) IT professors from the Department of Information Technology were selected for technical system evaluation. The results showed that the study's overall mean and standard deviation indicate that the application fully met and achieved all of the researcher's objectives.

5. Conclusion and Recommendations

The online counseling appointment system assists the guidance office at CvSU Main Campus in enhancing how it provides counseling services to students.

Currently, the guidance counselor encounters many problems in the current system, such as difficulty determining if the students who emailed them are currently enrolled students, difficulty in generating the quarterly report, time-consuming when setting an online appointment, difficulties to extend counseling services to students during the pandemic resulting in dissatisfaction from the students to get an online appointment, and because of the current processes for performing these services, the guidance office is unable to help the students with their mental health, especially during the time of the pandemic.

Now, using the developed application, students at CvSU Main can reach out to the guidance counselor. This application helps the guidance counselor extend their services to the students of CvSU Main by: (1) using tips or information guides on how to cope with stress or anxiety; (2) reporting features for monitoring the student's mental health information and concerns; (3) knowing if there is a student who wants to consult through an SMS notification; and (4) setting an appointment schedule for the students in an organized manner. This was assessed based on its functionality, dependability, usefulness, efficiency, maintainability, portability, and user-friendliness, with an average of 4.54, all of which indicate that it can be used effectively.

On the other hand, future researchers may benefit from this study as a tool for future studies. The approach to creating and designing an application may be useful to those interested in the field of mobile and web applications because the user interface was well structured and the panels could be fully customized. Therefore, the researchers concluded that the developed application addressed the user's needs and demonstrated that the objectives were met based on the evaluation findings. The creation of this mobile and web application has a strong chance of being used for its intended purpose of helping students with their mental health information.

Furthermore, to further improve the developed software, the following features are recommended:

1. Syncing the guidance counselor's scheduled appointments with Google Calendar;
2. Adding an automatic reminder function for both students and guidance counselors to save and alleviate the overflow of their to-do lists;
3. Include a live chat option that allows users to get real-time feedback on an appointment schedule; and
4. Adding a feature allowing users to request changes or cancellations to their appointments.

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