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ChatTalkCGC: A Responsive Platform for Guidance and Counselling of Academic and Non-Academic Matters in MCM

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Abstract. Education through schools has been around throughout history. Today, schools not only have been educating but have also been helping address students' problems through guidance centers. However, addressing student concerns, particularly academic and non-academic-related concerns has become more difficult due to the pandemic. With this in mind, the proponents have thought of a way to help the students suffering from this fear to voice out their thoughts and problems openly without having to face the anxiety and consequences that come with the help of technology. Thus, the proponents created ChatTalkCGC, a web-based communication website, for students to seek guidance consultation from the Malayan Colleges Mindanao (MCM) Center for Guidance and Counselling (CGC) on academic and non-academic matters and address the students' problems through consultation while upholding information assurance primarily through the anonymity feature. The research follows the descriptive quantitative research method. Moreover, a survey based on ISO9126 was created to determine whether the application achieves its goal in addressing the students' concerns through Guidance Consultation. Purposive sampling was used to determine the research's respondents. The result of the data gathering shows that the ChatTalkCGC web application is strongly acceptable in terms of the ISO9126 and it achieved the paper's goal.

Keywords. Guidance and Student Consultation, Communication, Application Development, Information Assurance

I. INTRODUCTION

Throughout history, schools were made to create a learning environment under the teacher's guidance [1].

Today, schools not only have been educating but have also been helping address students' problems through guidance centers but this process backfires to the students because of fear of being judged, fear from authorities which may lead to expulsion, fear from peer pressure, fear from not being understood by the guidance center and not being able to open up fully about the problem the students have which can affect the guidance consultation efficiency in helping the students' situation. With this in mind, the proponents have thought of a way to help the students suffering from this fear to voice out their thoughts and problems without having to suffer the consequences.

With the help of technology, pre-existing knowledge on application development, and the experience of the academic life as a student, the proponents aim to use the application as a tool for students to seek guidance consultation from the Malayan Colleges Mindanao (MCM) Center for Guidance and Counselling (CGC) on academic and non-academic matters, and for the CGC to address the students' problems through advising while upholding information assurance. Descriptive quantitative research was used along with purposive sampling. Moreover, a survey was created to determine whether the application achieves its goal of addressing the students' concerns.

A software that runs on a computer is called an application [2]. A cybercounseling-like application may help students become more open when undergoing guidance consultation. The proponents believe this is so due to the results of the related works, which will be discussed in the next chapter. Although to discuss it shortly, cybercounseling does lessen anxiety and that is a contribution to help people undergoing academic and non-academic stress. The significance of the paper is that the application not only ChatTalkCGC helps with improving the learning environment a student has but also addresses the social and emotional health of a student through guidance consultation. However, it should be noted that the application does not aim to provide psychological treatment or relief to its users.

By acknowledging the significance of applications to students and their wellbeing, the proponents proposed the idea of having an online guidance consultation application for the MCM CGC, and students to use. The proponents also introduced a feature in the application where the students may seek guidance consultation anonymously to ensure the students' safety and, at the same time, to enforce honesty while upholding information assurance.

In creating the application, HTML, CSS, and JavaScript were used with Visual Studio Code as its Integrated Development Environment (IDE). Node.JS will be used as its server environment hosted in Heroku.com for its testing and initial deployment.

The research and application development took place in the respective houses of the proponents in Davao City, Philippines. The application and survey questionnaires were distributed to the respondents online for the initial testing and surveying.

In terms of limitations, the application cannot be used offline and can only be used when the user has access to the internet.

II. RELATED WORKS

When conducting a study of an alternative method to counseling, the common question raised is how the alternative method is better compared to the common method. In terms of comparing cybercounseling and face-to-face counseling, Cohen and Kerr conducted a study that tests the level of anxiety after a session of cybercounseling and face-to-face counseling [3]. As a result, lessening of anxiety was done successfully by both methods. However, in terms of which method is superior in lessening anxiety, the method of counseling does not significantly affect the level of anxiety.

As for which counseling method is better in all aspects for the youth in Hong Kong, there were three methods that were tested [4]. The following methods that were tested were online, offline, and integrated counseling. When choosing between offline or online counseling, sessions coming from online counseling were better than offline counseling sessions. Some reasons mentioned were online counseling fits the youth's lifestyle as they are tech-savvy and the youths are comfortable with written communication. Although, when choosing between online, offline, and integrated counseling, integrated counseling creates a better counseling session outcome.

Although the method of counseling does not significantly affect the anxiety level of the person, based on the first reference of the related works, cybercounseling is still significant in the field of counseling. Thus, according to Lee, it is important for counselors to make cybercounseling accessible for all, in spite of social and economic status [5]. Lee's study also provides the four guidelines that will make cybercounseling accessible to everyone. The first step is

analyzing the community whether there are any members of the community who have difficulty utilizing technology or if there are members in the community who do not have any digital devices to be able to attend any cybercounseling session. The next step is for the counselors to form partnerships with the leaders of the community for their members to have access to digital devices. After having access to the digital devices, learning to use them is the next step. Lastly, making cybercounseling known to the government is necessary for it to be accessible to more people.

Cybercounseling is seemingly significant, however there are limitations when creating a platform to conduct cybercounseling. One of the limitations that is highlighted in the paper done by Hussin, Ahmad, and Othman is that cybercounseling should not occur when the client is in a perilous situation since they are not physically reachable [6]. An example of this scenario is when a client is in a cybercounseling session while having or discussing suicidal thoughts. Another limitation to point out is that the client must feel comfortable talking to the counselor. In that way, the client will feel more expressive in sharing their concerns. Without the client feeling comfortable to express their thoughts, the cybercounseling session will not be as effective as it is supposed to be.

In terms of finding a platform to conduct cybercounseling, Barrio-Garcia, Arquero, and Romero-Frias stated in their study about e-learning satisfaction that student engagement increases when utilizing Web 2.0 [7]. Based on the results, it is a possibility that cybercounseling may help clients become more engaging with their counselors when it is done through the web.

For papers that are similar to the one the proponents are proposing, which is an application to conduct the sessions, there are two studies that propose a similar approach. The first paper introduces an Academic Instant Messaging Engine (AIME) [8]. AIME and ChatTalkCGC are similar in that they both have instant messaging for people within the institution. However, one difference between AIME and ChatTalkCGC is that AIME is a social networking application, while ChatTalkCGC is focused on being a messaging application. Moreover, the interaction made using the AIME is student-to-student casual interaction instead of student-to-counselor interaction that involves academic and non-academic matters, which is the goal of ChatTalkCGC.

Another study focuses on a website where students can learn and exchange experiences in relation to mental health [9]. A website was made to upload mental health content as it is timely, which will cater more to the students of today rather than paper booklets and newspapers. The stated website is similar to that of ChatTalkCGC in a way that they are both accessible through the web and also students can talk to people. The difference between the two are that the stated website uploads mental health content and student-to-student or student-to-teacher interactions are made on the platform. On the other hand, ChatTalkCGC is strictly a messaging application for students and guidance counselors to discuss issues regarding academic and non-academic matters.

In relation to cybercounseling, Reimer-Reiss' research about vocational rehabilitation counseling talks about telecounseling [10]. The goal of telecounseling is to supply mental health counseling. One advantage of telecounseling is cost-effectiveness. As for its disadvantages, some deal with technical difficulties such as limited access to digital devices. In spite of its advantages and disadvantages, the paper highlights that telecounseling cannot replace face-to-face counseling.

Based on the following literature, it can be concluded that the two methods of counseling which are cybercounseling and face-to-face counseling both help lessen anxiety among people. Although choosing one method of counseling over the other does not significantly lessen anxiety, cybercounseling is still important and that it is advisable for it to be implemented in communities. As long as the members of the community are given digital access and are taught on how to properly use the digital devices, having a cybercounseling session is possible. Moreover, it is learned that although cybercounseling is deemed significant, it also has its limitations. Their limitations are not using it when the client is under a perilous situation and ensuring comfortability of the client when conducting cybercounseling sessions. With the said limitations, the proponents decided to make ChatTalkCGC only dwell on academic and non-academic matters. Also, an anonymity feature is created to make the client feel more comfortable when talking to their counselor. It has been stated that using Web 2.0 will help improve social engagement. As a result, the proponents decided to deploy their cybercounseling application on the web. As for the

papers focusing on applications similar to ChatTalkCGC, there are Academic Instant Messaging Engine (AIME) and a website about mental health that can let students and teachers interact with one another.

III. MATERIALS AND METHODS

3.1 Research Design

This paper adapted the quantitative descriptive research design as it focuses more on the what of a topic than the why or how of it [11]. Furthermore, survey questionnaires were used to gather primary data from the respondents which were evaluated using ISO9126. The ISO9126 comprises the criteria in determining the software quality wherein the functionality, reliability, usability, efficiency, maintainability, and portability are assessed.

The purposive sampling technique was used in identifying the respondents for the research. Acknowledging the characteristics of a person whether they are a potential respondent for the research is the goal of the purposive sampling technique [12]. How the purposive sampling technique will be utilized in the research is that the respondents of the research are limited to the MCM students and staff with the participation of the guidance facilitators of the Center for Guidance and Counseling.

For gathering the data, Google forms will be used. There will be 3 questions to gain data per criteria stated in the ISO9126. Once the data has been gathered, each question will be averaged per 3 questions, then it will be averaged once more to find the mean per criteria. Determining whether the ChatTalkCGC website is acceptable for the ISO9126 will be possible through a Likert scale.

To describe the step-by-step procedure on how the study was carried out by the proponents, the entire project was done in 3 months. The development of the application took almost 2 months to finish. The 3 weeks of the last month were spent conducting meetings with the CGC and applying the necessary changes to fit their needs and recommendations. The last week focused on the deployment, gathering of data, and the finalization of the study.

3.2 System Analysis

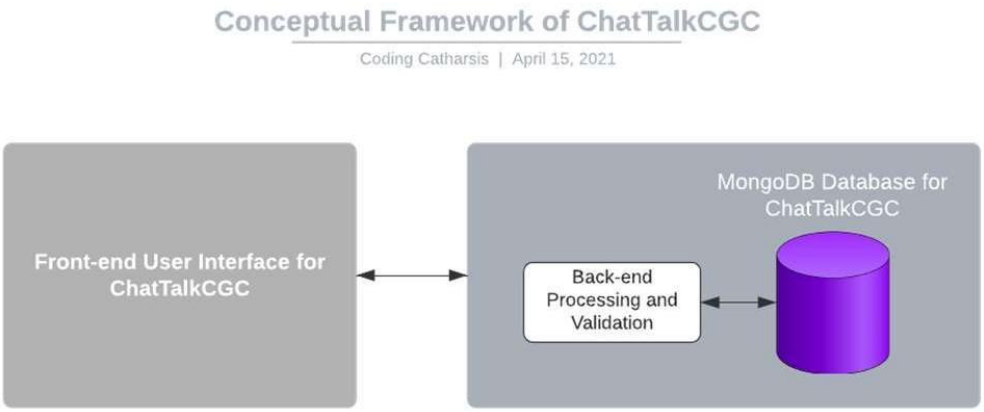

FIGURE 1. Conceptual Framework of ChatTalkCGC

Figure 1 describes the simple conceptual framework of the website. The user is presented with the front-end interface. They will be interacting solely with this. For every action the user commits, the front-end sends it back to the back-end for processing and validation. Valid actions will be stored in the MongoDB database for future and consistent use.

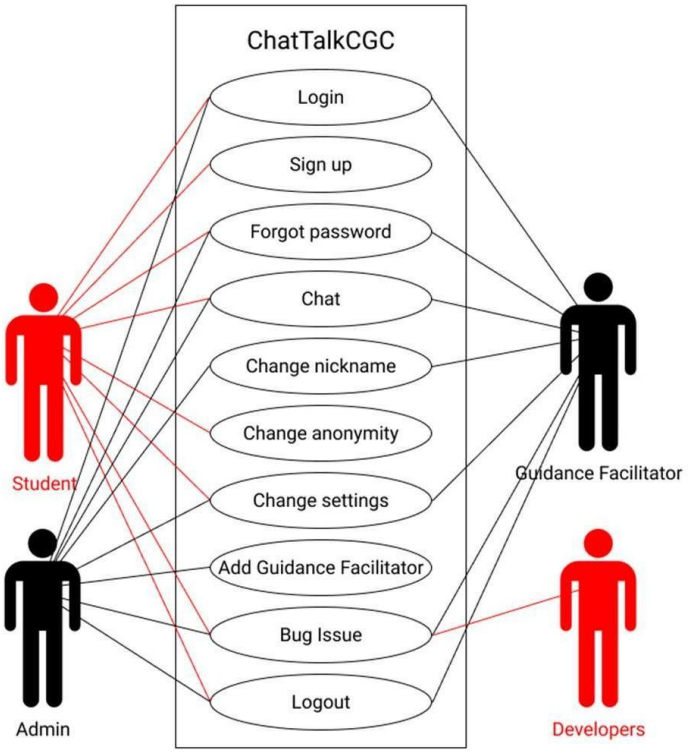

FIGURE 2. Use Case Diagram of ChatTalkCGC

The Use Case Diagram of ChatTalkCGC as presented in Figure 2 shows the Use Case Descriptions login, sign up, forgot password, chat, change nickname, change anonymity, change settings, add guidance facilitator, bug issue, and logout.

The role of the developers is to interact with the user if ever there are any bugs in the website. As for the student, they can login, sign up, interact with the forgot password, chat, change anonymity, change settings, report a bug, and logout. As for both the admin and guidance facilitator, they can login, interact with forgot password, chat, change nickname, change settings, report a bug, and logout. Lastly, a Use Case Description that an admin can only do is to add a Guidance Facilitator.

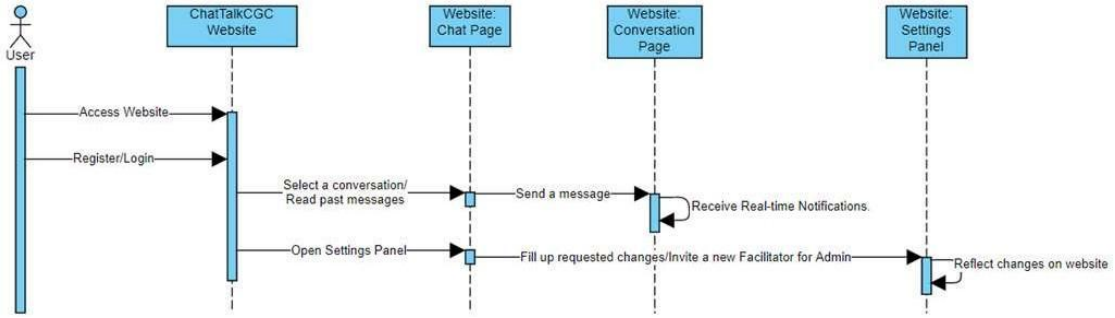

FIGURE 3. Sequence Diagram of ChatTalkCGC

Figure 3 shows the website's sequence of actions in the form of a diagram. The diagram focuses on the main actions the user will be doing. The user starts by accessing the website and registering or logging in. Next, the user can choose a conversation to read and send messages to or open the settings panel to customize their experience. If the user chooses to open a conversation, they are then able to read any past messages and send new messages. They will receive in-website notifications. Facilitators will receive email notifications on the initialization of any conversations. As for the settings panel, after filling up the changes, the website will then verify if the changes are set and will reflect those changes on future use.

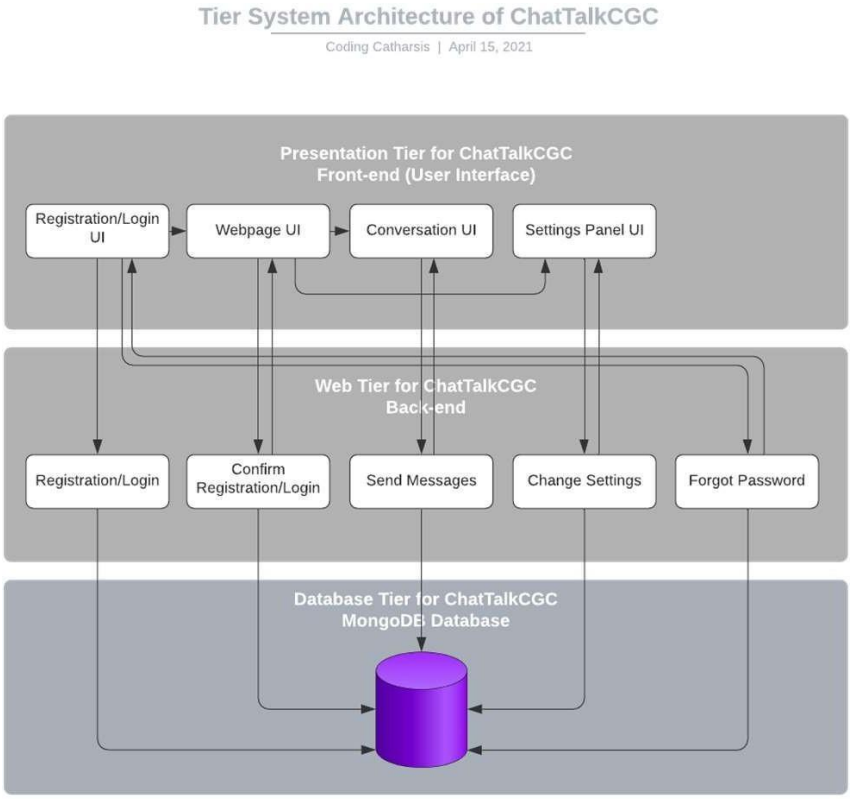

FIGURE 4. Presentation Tier of ChatTalk CGC

Figure 4 shows the website's Tier System Architecture that is divided into three. The first tier manages and focuses on the front-end implementation and this is what will be utilized by the user to avail the services of ChatTalkCGC. Starting from the registration/login UI down to the settings panel UI. The next tier describes the implementation of the back-end. It is in charge of processing and validating data before passing it to the last tier, the Database Tier, for storage and long-term use. It should be noted that the Database Tier makes use of MongoDB as its structure.

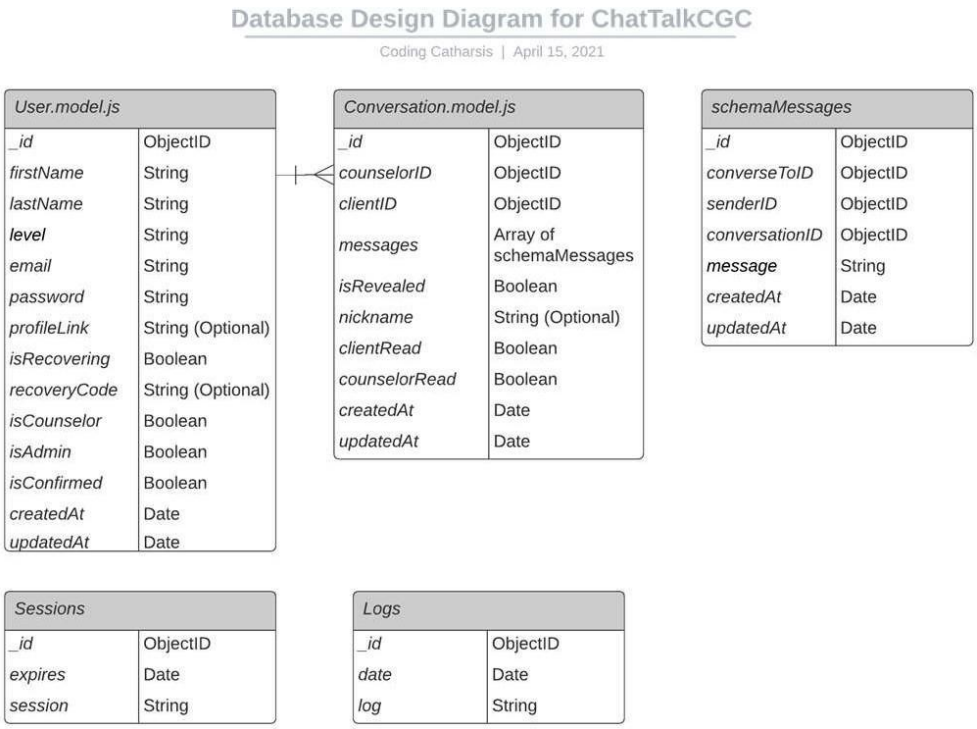

FIGURE 5. Class Diagram of ChatTalkCGC

The Class Diagram of ChatTalkCGC is shown in Figure 5. ChatTalkCGC makes use of MongoDB, a document-based database that stores information in JSON-life documents. In the website's database structure, 4 collections are enforced. The following are the collection names: tbl_users, tbl_conversations, tbl_logs, and tbl_sessions.

The collection tbl_users houses the data for each user registered in the system. Boolean fields are added to determine the permission levels of each user. The firstName, lastName, and level fields indicate user description. The user can set this through the settings panel. The profileLink stores an image link which will reflect the profile's display picture. The fields isRecovering and recoveryCode is used as data for the user to access their accounts in cases where they forget their login credentials. The collection tbl_conversations store the data for each conversation. Each conversation only houses a maximum of 150 messages. Older messages will be deleted as new messages are pushed in. This is done to reduce data needed to store conversations and also increase the privacy rate of the website.

The collection tbl_logs record the action for each action done on the website. This is implemented to track and possibly find malicious actions that aim to attack the website. NPM Mongoose Morgan and Morgan are imported to automate this feature. All HTTP requests are stored except "GET" requests. The collection tbl_sessions track the sessions of each user based on the browser they are using. This is implemented so that when the user closes his/her browser, he/she is not required to log in again. Each session has a lifespan of 14 days. Each session usage renews the session lifespan. NPM Mongo Store is used to automate the handling of sessions.

IV. USER INTERFACE DESIGN AND TESTING

The screens to be displayed are the main screens of the ChatTalkCGC website. The other screens that are not presented are the sign up, forget password, page not found, home, and change password screens.

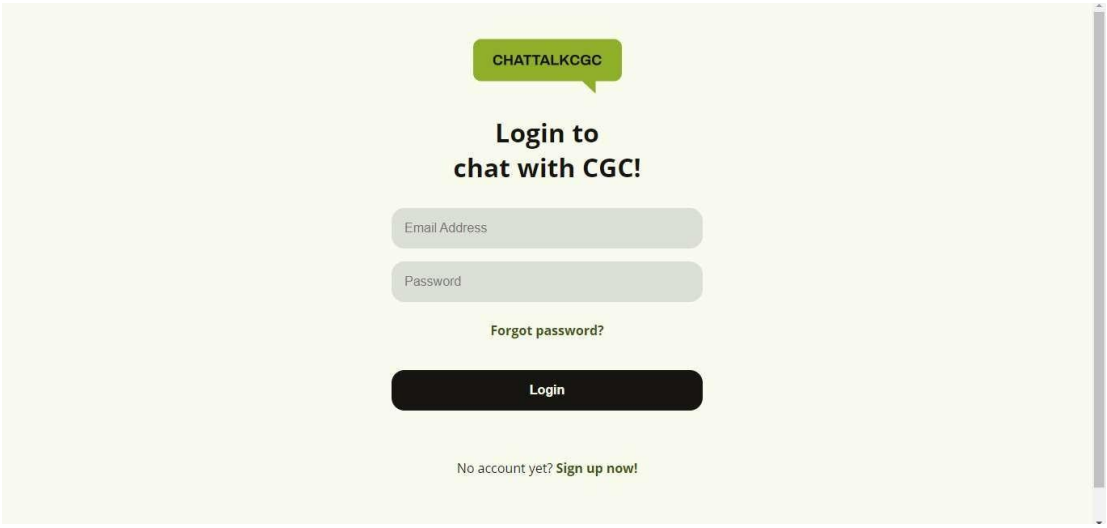

FIGURE 6. Login Screen of ChatTalkCGC

The first screen the user will see when entering the ChatTalkCGC domain is the login screen which is shown in Figure 6. The login screen comprises interactable elements which are the email address, password, and the login button. Once the user has entered the matching information from the database and has clicked the login button, the user will be directed to the home screen. The screen looks similar to the empty conversation screen, as seen in Figure 7, but without the specific conversation opened.

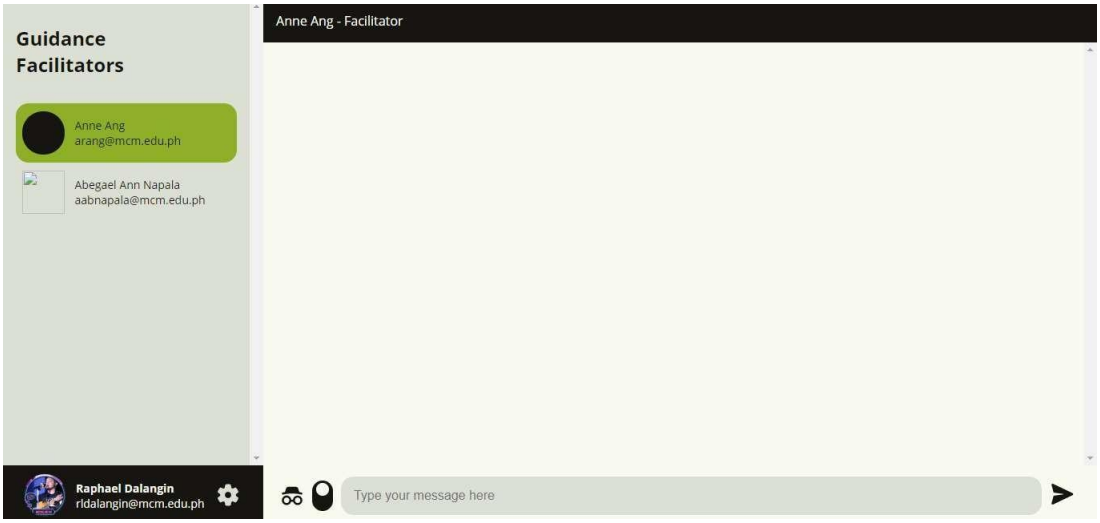

FIGURE 7. Empty Conversation Screen of ChatTalkCGC

Figure 7 illustrates an empty conversation screen of the ChatTalkCGC website. It is on the screen where the student can chat with any guidance facilitator listed about academic and/or non-academic matters. The student is able to do so by entering a text message under the "Type message here" textbox. Once the student wants to send a message, they may click the arrow button which signifies a send icon.

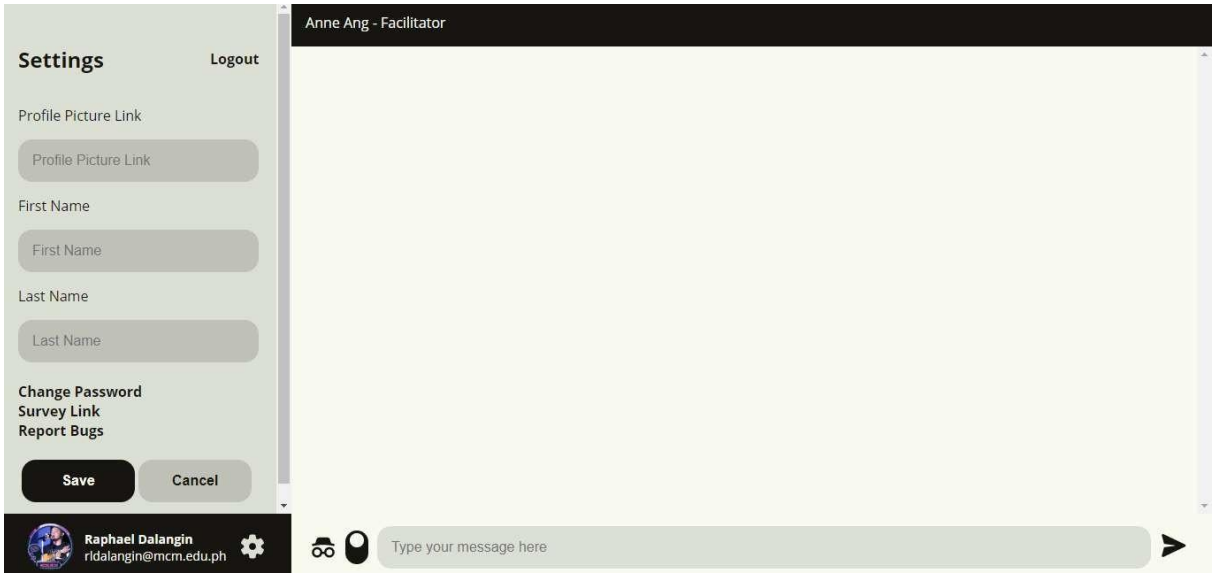

FIGURE 8. Setting Screen of ChatTalkCGC

It is in the settings screen, as seen in Figure 8, where the user can change their information on the website. They may change their profile picture, and first and last name. In terms of changing their password, they will be needing to access another interface in order to do so. They may access the change password screen by clicking the "Change Password" text which is a link to redirect them to the said interface.

Tested Options	Average Mean	Result
Functionality	4.4	Strongly Acceptable
Reliability	4.1	Acceptable
Usability	4.4	Strongly Acceptable
Efficiency	4.0	Acceptable
Maintainability	4.5	Strongly Acceptable
Portability	3.8	Acceptable

TABLE 1. User Acceptance Testing Result

Part of the goal of the research is to ensure that the ChatTalkCGC website has met ISO9126's standards. Due to the time constraints, the proponents were only able to gather 6 respondents. Nevertheless, based on the data gathered from the respondents, Table 1 has shown that ChatTalkCGC is acceptable when it comes to following the ISO9126. Specifically, the criteria of functionality, usability, and maintainability have a "Strongly Acceptable" mark. Whereas

the criteria of reliability, efficiency, and portability are marked as “Acceptable”. Overall, the website achieved a strong acceptable result.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Through the introduction, it was shown how creating a platform to air out academic and non-academic matters is important. Acknowledging how a website application may help students have a consultation with the guidance facilitators without face-to-face interaction, the proponents decided to create ChatTalkCGC for the students and staff of Malayan Colleges Mindanao. After the creation of the prototype, ChatTalkCGC was tested on the students and staff of MCM with the guidance of the facilitators from the Center for Guidance and Counseling. The results have shown that half of the criteria from the ISO9126 has received a strongly acceptable mark, while the other half received an acceptable mark. The said results have shown the quality of the website is strongly acceptable and the website has achieved its goal.

5.2 Recommendations

Based on the User Acceptance Testing Result, the portability tested option has the lowest score. The reasoning behind this may be because the website is not responsive for mobile devices. Thus, one of the recommendations, if given the opportunity to improve the current website application, is to make the website cater to mobile devices. In that way, ChatTalkCGC may be useful for MCM students, staff, and guidance facilitators who are on the go.

Moreover, the second lowest score in the User Acceptance Testing Result is the efficiency tested option. The result shows that ChatTalkCGC may be slow for other users. Hence, the proponents may find a way to make the website run faster by using more efficient code compared to the code that is currently written to make the website work.

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