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STUDENT COUNSELING APPOINTMENT SYSTEM IN BUNGO NATIONAL HIGH SCHOOL

A Software Engineering 1 presented to the faculty of
Department of Computing and Informatics of the City College of Calamba
Calamba City, Laguna

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

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CHAPTER I

INTRODUCTION

The Student Counseling Appointment System is a software application that is designed to streamline the counseling appointment booking process for students. The system is typically used by the Bunggo National High School to enable students to schedule appointments with a counselor easily. The system is typically accessible via an online portal and allows students to choose the type of counseling appointment they need, select a suitable date and time, and book the appointment with the counselor of their choice. This can help alleviate appointment congestion and enable students to get the support they need when they need it. In addition, the Student Counseling Appointment System can also be used to manage administrative tasks like record keeping, and automated reminders, which can help improve the efficiency of the Bunggo National High School's counseling services.

According to [1] L. Tennyson, online scheduling software, also known as web-based appointment systems, is a type of digital solution that allows citizens to book, schedule, or cancel their appointments through web-based systems. The Student Counseling Appointment System is an important tool for Bunggo National High School to prioritize the mental health and wellbeing of its students. The system is typically designed to meet the specific needs of the students at Bunggo National High School that are using it. This means that the features and functionality of the system may vary based on the institution's unique requirements. Another key benefit of the system is that it can enable counselors to manage their appointments more efficiently. Overall, the



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Student Counseling Appointment System is an essential tool for Bunggo National High School, which wants to provide high-quality counseling services to their students. By streamlining the appointment booking process and improving administrative tasks, the system can help support students' mental health and wellbeing while also improving the efficiency of their counseling services.

Theoretical Framework

The researcher considers Humanistic Theory and Person-Centered Theory as the fundamental frameworks for their study. According to [2] C. Rogers, the purpose of humanistic theory is to emphasize the importance of personal growth, self-awareness, and self-actualization. This theory suggests that the system should prioritize the individual needs of students, provide a supportive and empathetic environment, and facilitate their personal development and well-being.



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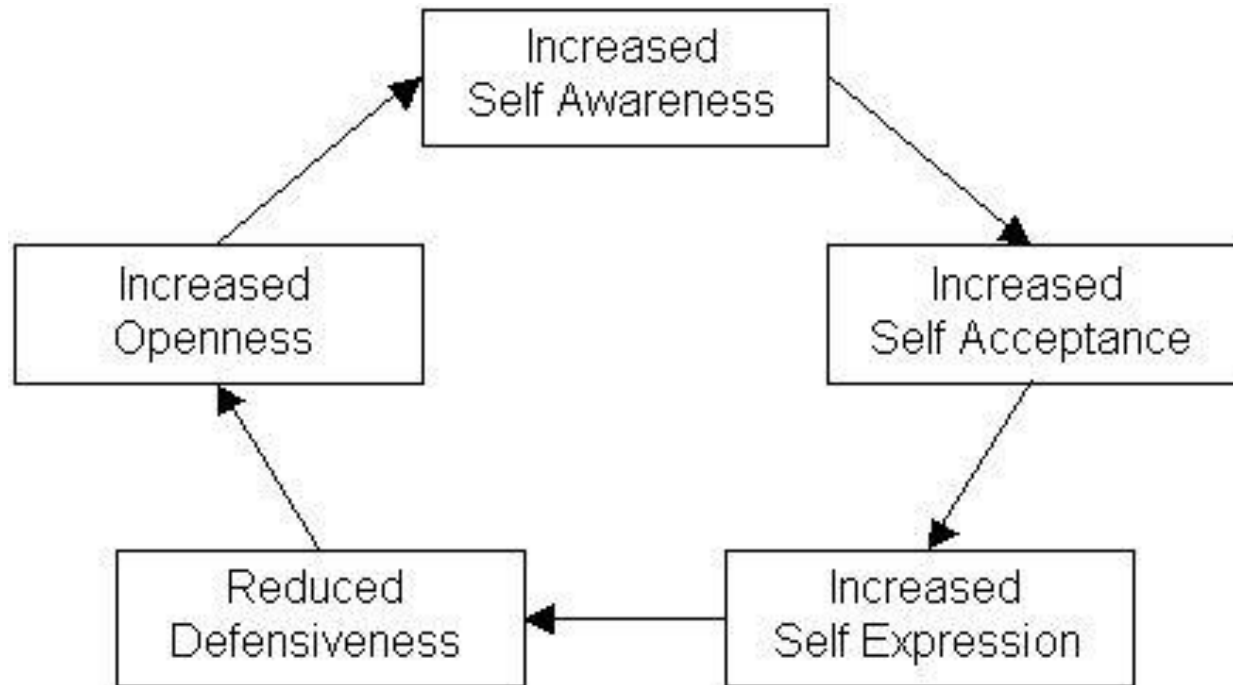


Figure 1.1: Theoretical Framework

Figure 1.2: [2] C. Rogers believed people are trustworthy and have vast potential for understanding themselves and resolving their own problems, and that they are capable of self-directed growth if they are involved in a respectful and trusting therapeutic relationship.



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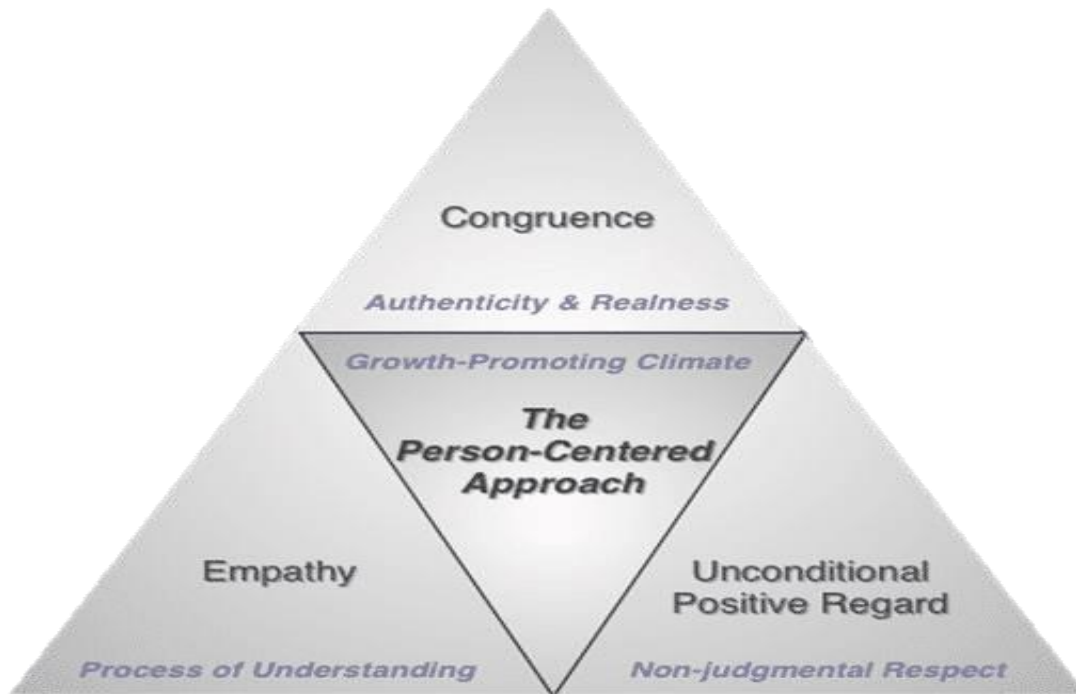


Figure 1.2: Theoretical Framework

Person-centered therapy focuses on the person, not on the person's presenting problem. Goal is to assist clients in their growth so they are better able to cope with both today's problems and future problems.

With this, the Humanistic and Person-Centered Theory offers a valuable framework used in the researchers' proposed system. By emphasizing the importance of building a supportive and empathetic therapeutic relationship, this approach provides a solid foundation for facilitating personal growth and self-actualization.



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Conceptual Framework

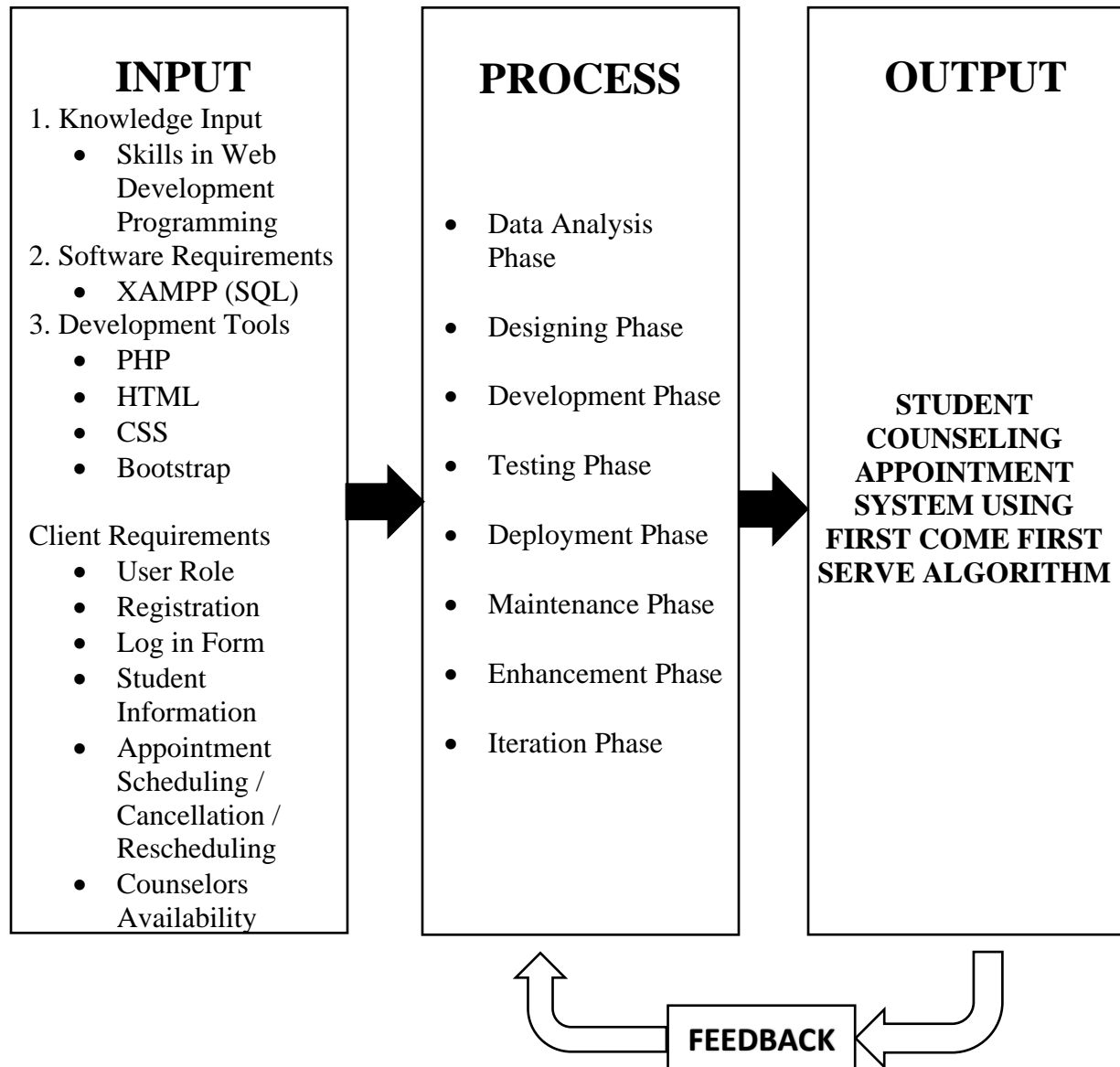


Figure 2.1: The paradigm of the process of the proposed system



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The conceptual framework for the student counseling appointment system has three components: input, process, and outcome. The input-process-output (IPO) model was used by the researchers. The IPO model is used to understand and analyze how systems operate. It provides a structured approach to examining the flow of information and resources within a system. The diagram shows that the system involves three main components: input, processing, and output. First, the input stage involves essential requisites for system development and implementation, including skills in web development programming, necessary software such as XAMPP (SQL), and development tools such as HTML, PHP, CSS, and Bootstrap. Additionally, client requirements play a role in the system's functionalities and features, including user roles, registration, a log-in form, appointment scheduling (cancellation and rescheduling), and counselor availability. The process component includes the system development life cycle, serving as the foundational framework throughout the development process. This life cycle has various phases, including analysis, design, development, testing, deployment, maintenance, enhancement, and iteration. Each phase contributes to a methodical and well-structured approach, ensuring the overall systematic development of the students' counseling appointment system. The outcome of this framework is the student counseling appointment system, specifically developed for Bunggo National High School. Using the input components and following the process outlined in the system development life cycle, the researchers' objective is to create an efficient and user-friendly system that streamlines the appointment scheduling process within Bunggo National High School. This outcome serves as a tangible manifestation of the research and development efforts, providing schools with a digital platform to effectively manage appointments, access counselor information,



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facilitate student registration, and handle appointment cancellations or rescheduling. Further, the framework incorporates a feedback process that establishes a feedback loop bridging the outcome component back to the process component. This feedback loop enables continuous improvement and enhancement of the system. User feedback allows us to discover areas for improvement and iterate upon the existing system to suit changing user demands and expectations, system performance analysis, and a continual review of the system's effectiveness. Due to the iterative nature of the process, the student counseling appointment system is kept flexible and sensitive to the needs and preferences of Bunggo National High School and its users. Overall, the student counseling appointment system aims to streamline the process, optimize counselor-student matching, and enhance the effectiveness of counseling services, ultimately supporting students' academic and personal well-being.

Statement of the Problem

The study aims to make the counseling appointment booking process easier for students.

The following questions could be problems that should be addressed with this research:

1. How can the researchers develop an efficient and user-friendly student counseling appointment system?
2. How could it be helpful to students to have a student counseling appointment system?
3. How could it be helpful to counselors to have a student counseling appointment system?



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Objectives of the Study

The objectives of this study aim to develop a student counseling appointment system for Bungo National High School. The research aims to accomplish the following objectives:

- To create a user-friendly student counseling appointment system.
- To create a system that will help students promote well-being by addressing concerns, discussing personal issues, and providing guidance on academic, social, and emotional matters.
- To develop a system that will help the counselors manage their time more efficiently and contribute to a positive and supportive campus environment.

Significance of the Study

This study will benefit the following:

- **To the students.** Students will be able to conveniently schedule appointments with their counselors without having to undergo the hassle of waiting in long lines. The system can allow students to book appointments with counselors at their preferred time.
- **To the teachers.** Teachers often find it challenging to manage student issues while dealing with their teaching responsibilities. With a counseling appointment system, teachers can rely on dedicated professionals to address student concerns, relieving some of their stress and allowing them to focus on their core teaching duties.



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- **To the counselors.** Counselors would have a more streamlined process for managing their appointments, and they could easily access their schedules. The counselor can also receive reminders and notifications about their upcoming appointments, which enables them to prepare for sessions more effectively.
- **To the school.** By understanding the demand for counseling services, schools can plan and allocate an appropriate number of counselors and support staff to meet students' needs. The schools can generate data and insights about student concerns, trends, and outcomes. This data can help inform decision-making processes, shape interventions, and create targeted support programs.
- **To the researchers.** This study will help the researchers by making their work more efficient, effective, and impactful.
- **To the future researchers.** This study will benefit future researchers by providing them with high-quality data, enhancing collaboration, increasing efficiency and productivity, and enabling better decision-making.



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Scope and Limitations

This study focused on the development of a student counseling appointment system, with the researchers aiming to have a user-friendly system for both counselors and students to book and manage appointments in a more convenient and easy way. The counselors will also have access to monitor those who make appointments. The main purpose of this system is to make it easier for students to make an appointment. It will also help reduce the time and effort required to make an appointment. The system will offer benefits such as improved communication, simplified scheduling, and easy access to resources.

The system offers numerous advantages, but it also has some limitations that should be taken into account. These will include the fact that this system will only be used in school. The system can only be used for counseling appointments, and it is unable to be used for any other kind of school service, like the registrar's office. Additionally, the system has limitations due to its dependence on technology, lack of real-time communication, and associated costs like licenses, maintenance, and support. It requires careful evaluation and budgeting to manage expectations and address potential challenges. Real-time video conferencing and teleconferencing are not available.



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Definition of terms

Automated. Operated by automatic equipment

Counseling Services. A talking therapy that involves a trained therapist listening to you and helping you find ways to deal with emotional issues.

Counselor. A person trained to give guidance on personal, social, or psychological problems.

Software. A computer program that is designed to run a computer's hardware and application program.

Streamline. The improvement of the efficiency of a certain process within an organization.

System. A general term for a computer or other piece of technology and all of its dependencies.



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CHAPTER 2

REVIEWS OF RELATED LITERATURE AND STUDIES

This chapter provides a comprehensive understanding of the topic being investigated by examining the existing literature and studies related to it. This chapter also includes the synthesis of the reviewed literature and studies which is essential for establishing the conceptual framework that the study will be grounded upon.

Related Literature

Foreign

According to [3] Fahlevi, R. Emotional intelligence is a highly necessary aspect that covers students' ability to use their emotion effectively in the learning process. Good Emotional Intelligence provides the students with appropriate ability which can help them make the best decision for their future. The lack of Emotional Intelligence often makes students feel stressed and depressed. It leads the students to destructive behaviors such as uncontrollable anger, lack of decision-making ability, and despair. Therefore, the students need to be trained to recognize, control, and develop their Emotional Intelligence in a positive way. Based on the research, it has been determined that schools are crucial in helping adolescents develop their emotional intelligence by offering access to qualified counselors. One method the counselor should use to help students enhance their emotional intelligence is the humanistic and existential approach. This



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method addresses fundamental ideas that students need to understand who they are as people and what potentials they have. A school counselor may teach pupils more about effectively managing and controlling their emotions by using this method.

As stated by [4] S. Sakakibara, S. Saiki, M. Nakamura, and K. Yasuda, dementia counseling is dementia care that cures physiologically unstable situations of a person with dementia, through receptive and attentive conversations. A person with dementia should receive counseling as often as possible. However, it is difficult for a limited number of caregivers to spare sufficient time and effort. This motivated us to exploit the virtual agent technology we are developing, for implementing a daily dementia counseling system at home. However, our previous system relies on static dialogue scripts. Therefore, it is difficult to realize person-centered conversations that are essential to dementia counseling. In this paper, we propose a method that dynamically generates personalized dialogues for individual people with dementia. The proposed method extensively uses life history and linked open data (LOD). More specifically, we obtain the life history of a user based on The Center Method, then the system chooses appropriate conversation considering the history. During the conversation, the system finds new information in LOD relevant to the response and uses it to develop further conversation. We also implement a prototype to show practical feasibility of the proposed method.

In the education system, the students may find counselors, but the student-to-counselor ratio is higher, which forces us to implement an automated system for the guidance of the students. Career counseling can be useful for students to evaluate their careers and select the best direction



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for the future. The study aims to explore, develop, and implement the effective means of analyzing student career counseling, guidelines, and decision making. The authors have developed a realistic dataset from a different mindset of students. The research starts once the student provides the machine input about the individual choices about taking admission for matriculation, intermediate, and or short courses. The machine learning algorithms like logistic model tree, naïve Bayes, J48, and random forest are used to predict career options. In evaluated results, they found the best algorithm based on the accuracy of kappa statistics, mean absolute error, and correctly classified or incorrectly classified for career-related problems (Latif, R.M., Ferzund, J., Farhan, M., Jhanjhi, N.Z., & Umer, M., 2021) [5].

The study aims to change students' negative perceptions of teacher guidance and counseling. This research method uses this literature review by looking for relevant literature that is done using databases such as Google Scholar. The findings of the Systematic Literature Review (SLR) study are that there are various strategies on the implementation of guidance and counseling programs in schools, the role of guidance and counseling teachers and collaboration between other parties related to the implementation of guidance and counseling programs in an effort to achieve the goals of comprehensive guidance and counseling itself. In the implementation of guidance and counseling programs there is optimal system support in the implementation of guidance and counseling programs because as an optimization on guidance and counseling program services provided to students (Islahuddin, M., 2021) [6].



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[7] S. Srinivas and A. R. Ravindran, said that even though several clinics serve patients in more than one stage (e.g., visit nurse and then visit doctor) and employ multiple providers in each stage, most of the previous work on appointment system design considers a simplified single-stage single-server clinic. Motivated by a real-life clinic setting, this paper aims to determine the schedule configuration of a hybrid appointment system (i.e., the number of pre-booking and same-day time slots reserved for a physician along with their positions in the schedule) for a two-stage multi-server clinic. A stochastic optimization model is developed to obtain a schedule configuration that minimizes the expected total cost - a weighted sum of excessive patient waiting time, resource idle time, resource overtime, and denied appointment requests. Owing to its computational complexity, we estimate the expected total cost using the sample average approximation method. The proposed model is verified and validated using small test instances and subject matter experts. A case study of a family medicine clinic in Pennsylvania is used to illustrate the proposed approach. The schedule generated by the proposed model results in a significantly lower expected cost compared to the approximated single-stage system's best schedule configuration and clinic's existing configuration. Further, sensitivity analysis is conducted to assess the impacts of no-show rate, service time variation, and cost ratios on the schedule configuration. Our findings demonstrate that the schedule configuration is sensitive to changes in the average no-show rate and cost ratios but is not significantly impacted by service time variation. Several managerial insights are also drawn from our analysis. Finally, we provide directions for future research that also highlights the potential to use the revenue management approach to address the problem under study.



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Local

The Mental Health Mobile Application for the Office of Guidance and Counseling was developed to provide an online counseling for the students that will protect their privacy and confidentiality and will address the stigma attach to mental health. This application was designed to utilize the transmission of messages between the students and guidance counselor. Moreover, it also provides useful information about mental health. It also offers online scheduling appointment where the students can request for consultation. Thus, the admin/guidance counselor will use the web-based system to access student's information, provide articles, videos and activities and perform counseling for the students. The researchers used Kotlin for the development of the mobile application, PHP for web development and MySQL for the database. Then the developed application was tested and improved using debugging, compatibility and monkey tests. The performance of the application and web-based system was evaluated by ten (10) experts including guidance counselor, psychometrician and IT programmers, and ten (10) possible end-users including students of BatStateU. It was evaluated using the ISO 9126 model with the following criteria: security, maintainability, functionality, usability and portability. The developed mobile application gained an overall mean score of 4.69 with a descriptive rating of Excellent signifying that the mobile application met its objectives and that the evaluators were satisfied of the outcome and capabilities of the Mental Health Mobile Application for the Office of Guidance and Counseling (Geneta, P.D., Coloma, R.C., Garcia, R.A., & Rosales, J.C., 2022) [8].



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According to [9] G. Yandug and C. A. S. Santos, transportation is one of the necessities in our life today. Along with the increase in the number of cars and roads being made is the increase in the demand for driver's licenses. With the numerous land transportation offices, few issue new driver's licenses and therefore has to serve many applicants who exert a lot of time and effort to complete the application process which normally takes more than four hours to be completed. Time, being a very important factor in our daily decisions, is the concern of this study. This study aims to lessen the total time to complete the process and so is the minimum waiting time of 46% by designing an appointment system developed and tested using simulation and system improvement. Sensitivity Analysis was used to see how waiting time and running time was affected under various realistic circumstances. Results have shown a decrease in waiting time to 9%. To further improve the results of the study, research on the factors affecting and degree of punctuality of license applicants and change in the utilization employees after the application can be made.

According to [10] V. Salosagcol et al., quay cranes are the most expensive and important handling machine in container port operations, as the efficiency of the container terminals depends on it. This study aims to optimize the berth scheduling quay crane service and waiting times by the application of integer programming and queueing theory in identifying the actual waiting time and service time of an international container terminal in the Philippines. The paper utilizes ProModel simulation and Lindo Optimization software to evaluate the berth operation and the scheduling of quay cranes for the container terminal. Results show that the utilization of the berth operation is at 44.44% with an average waiting time of 58.18 hours per week which signifies that



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there is no congestion with low berth occupancy. Recommendations of the study is a process that optimized the berth and quay crane scheduling applicable to the allocation of quay crane's workload per berthing position as the berth operation process and quay crane scheduling is optimized from 5.62 hours per day to 5.59 hours which saves 0.03 hours daily.

According to [11] A. Amos, patients who miss appointments have poorer health outcomes and increase costs for medical care. The purpose of this quality improvement study was to evaluate the effects of missed appointments on patients' outcomes for diabetes mellitus, and resulting financial losses to a private primary care practice. Method: A quality improvement initiative with a retrospective review of patients over a six-month period in 2018 (before) and 2019 (after a missed appointment fee was implemented). All adult patients, aged 18-92 years, were included. For those with diabetes, a HbA1c for each patient who kept or missed their appointment was recorded. Results: Of all scheduled appointments (N=8,535), there were 439 missed appointments (5.1%). There were 495 (n=495) appointments and a diagnosis of diabetes. The HbA1c and age had a very strong inverse relationship, indicating as age increased, HbA1c decreased ($p=.000$). Those who completed their appointment had significantly lower HbA1c values by 0.7 mmol/mol than those who missed appointments. Unemployed females with private insurance and employed males with Medicare were more likely to have a lower HgA1c value ($p=.005$). Males kept an appointment more frequently than females ($\chi^2=.703$, $df=1$). There was minimal lost revenue between the two cohorts (\$1,280). Implications for Practice: Diabetic patients who kept their appointments had lower HbA1c values, however, a missed appointment fee may not influence a patient's reason for missing the appointment.



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This study aimed to develop a web-based course scheduling system for College of Computer Studies under FEU institute of Technology, Manila Philippines. The developed system make used of Greedy Algorithm for managing schedules on courses and assigning to faculty. The method of this research was research and development (R&D). The researcher also discusses the scheduling process which is attributed to the Scheduling Module of the system that follows the principle of the Greedy Algorithm. The system has been tested and evaluated using criteria for which includes functionality, usability, reliability, portability and supportability (FURPS). Results and recommendation have been discussed on the last part of this paper. (Legaspi, J.B., Angel, R.M., Lagman, A.C., & Ortega, J.H.) [12]

Related Studies

Foreign

The purpose of this study was to describe collaborative strategies in creating inclusive school-based guidance and counseling services. According to [13] S. Maullasari, strengthening Inclusive Education required the role of all parties in educational institutions, including guidance and counseling. This study used the library research method. This literature study was related to the object of writing, which was inclusive guidance and counseling services. Every individual with special needs, both permanent and temporary, has different learning barriers and needs. School counselors were uniquely positioned to collaborate with stakeholders and identify each student's critical resources and support systems to achieve academic and socio-emotional success.



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Collaboration was the basis between the school and parents, and other experts to systematically, consistently, and sustainably.

As stated by these authors, [14] B. A. Jnr, G. Maureen, and A. M. Mazlina, institutions of higher learning such as universities have been positively influenced by the internet which has facilitated learning and teaching. Likewise, this same internet can also support student lecturer appointments, but currently students and lecturers are faced with issues such as finding free time-slots, difficulty of students to meet supervisors and issues related to managing appointment operations. Therefore, this paper develops a multi-agent architecture and a web-based agent appointment scheduling system to support students and lectures in managing appointment scheduling in universities. The agent-based appointment scheduling system was implemented as a web system integrated by multi-agents to facilitate students in finding free time-slots, resolving difficulty of students to meet supervisors and also addressing the difficulty of managing scheduled appointment records by lecturers. The applicability of the agent-based appointment scheduling system was evaluated by collecting data using questionnaires from randomly selected 102 students and lectures in Malaysia universities. Furthermore, Statistical Package for the Social Science (SPSS) was employed to analyze the questionnaire data using descriptive and exploratory factor analysis. Findings from this study reveal that the developed agent-based appointment scheduling system is applicable in supporting student lecturer appointment scheduling in universities.

The present study was designed to investigate adolescent's perception of their adjustment problems and school counselling services. The study was conducted on 100 students of VIII



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standard randomly selected from 10 schools of Chandigarh. [15] J. Kaur and A. Malhotra, stated that student problem checklist, prepared by Department of Educational Psychology and Foundation of Education, National Council of Educational Research and Training. New Delhi, and a self-prepared questionnaire was used. The results revealed that school going adolescent's perceived low adjustment in the domains of studies, occupation and health. They perceived high adjustment in domains related to economic status, family, anxiety, religion and social areas. The girls showed a higher level of maladjustment for health domain in comparison to the boys. The boys showed a higher level of maladjustment in the occupation and school domains. All the respondents emphasized the need of counseling, however, very few had actually approached any professional for counseling and were not very clear about the role of counselors in schools. The study revealed that adolescents approached teachers for counseling in the absence of professional counselors in the school set up. This study highlights the need for orienting and educating adolescents on the need and importance of seeking professional counseling at the time of any problem and for making good adjustments in life.

This research is a type of descriptive analytic study, which explains and analyzes the collaboration of counseling teachers and parents in distance learning during the Covid-19 pandemic. During distance learning the bk teacher should consider increasing communication interaction with parents as well as collaborating with parents and trying to develop positive perceptions about students in terms of student success during distance learning. [16] R. H. Rio, said that collaboration is an activity where there is cooperation between various parties in realizing educational goals, both parties from within and from outside educational institutions.



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Collaboration in guidance and counseling is a collaborative activity between counseling teachers and a number of related parties in order to achieve the objectives of the guidance and counseling service program, therefore there is a need for a good collaborative strategy between counselors and parents, especially in terms of developing student study success. The involvement of parents in question can be in the form of inviting parents as members of the school committee, providing opportunities for parents to become tutors in an instructional program, involvement of parents in funding a broader school program and also strengthening the understanding and skills of parents regarding child and adult development.

According to [17] J. L. Parzych, M. Generali, and O. Yavuz, this study examined student, parent, and faculty perceptions of academic development needs and related comprehensive school counseling program services from four urban middle and high schools. Participants ($n = 1,032$) completed a survey designed to assist schools in planning and evaluating their career and college readiness programs, and exploring perceived student support needs. Statistically significant differences were observed in stakeholder perceptions among 12 identified interventions that support improved academic development, through factorial analysis of variance (ANOVA) and pairwise comparisons analysis. Findings provide valuable information about prioritizing student academic counseling services strategically and effectively, to meet program needs of students in high-poverty schools.



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[18] M. A. M. D. Fuente et al., stated that this study aimed to design, develop, and assess a cross-platform scheduling and appointment reservation system for clinics. The software development life cycle (SDLC) was used to guide the development of the system, which included planning, defining requirements, design and prototyping, development, testing, and operations and maintenance. A developmental expert's research design was employed, and the technical features of the system were assessed by IT following the ISO 25010 standards, while end-users evaluated the quality of using the system based on selected ISO 25010 standards. The results showed that the SDLC was appropriate in developing the system, and both IT experts and end-users found the system to be of high quality. Based on the results, the researchers drew conclusions and provided recommendations for future studies. The study revealed that a cross-platform scheduling and appointment reservation system for clinics can be developed using the SDLC with the involvement of IT experts and end-users in the assessment process. It is crucial to incorporate the ISO 25010 standards to ensure that the system is of high quality and meets the needs of the end-users

This study aimed to design, develop, and assess an Ob-gyn Clinic Online Scheduling System using the stages of the software development life cycle. The respondents were IT experts and end-users who were purposely sampled from the Science City of Munoz, Nueva Ecija, Philippines. [19] J. M. T. Reguyal et al., stated that the system was evaluated using the International Organization for Standardization (ISO) 25010 software standards. The results indicated that the SDLC model was effective in designing and developing such a system. The IT



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experts and end-users assessed the technical features and quality of using the system and gave favorable and acceptable ratings. The developed system was intended to help hospitals in accommodating their outpatients, particularly pregnant women or people with uterus problems, by making it easier for them to schedule their available time, date, or days and reducing their time spent waiting for their turn. Based on the assessment, the researchers recommended that this study could serve as a first step for gynecologists in developing the easiest way to schedule. Future researchers were encouraged to investigate the benefits and drawbacks of the system and its effects on patients and gynecologists. Understanding this research could assist future researchers in developing better systems

This study is entitled Advise Mobile: A Web and Mobile Based Guidance Consultation System. The study was conducted by the proponent at Carlos Hilado Memorial State College – Alijis Campus. Since institutions nowadays have adapted to the technology era that makes everyday living easier, the proponent came up with this study. [20] Q. Carton, E.R. stated that the proponent interviewed with the Guidance Counselor about how the office conducted counseling or consultation and found out that the main problem of the office was the paper works to be compiled and kept confidential. This study aided the manual process of consultation to make it a computerized and automated system. This study provided the students with a system that allows them to request an appointment schedule for counseling, receives an SMS notification for the schedule, modifies their accounts and makes a video conference with the Guidance Counselor. The Guidance Counselor was also provided with the same concept except for setting the schedule of the requested appointment for counseling or consultation. While for the Administrator, the system



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provided graphical reports and the statuses of the counseling of the Guidance Counselor and the students. The system is web and mobile-based and the internet is essential to access the system.

[21] According to J. Navarro, J. Borges, N. Rodriguez, and M. Jimenez course selection is one of the most important processes for students each academic period. This process is sometimes negatively affected by factors like counselors' workload and students lack of knowledge about course requirements and the curriculum. In this work, the authors constructed a platform to develop electronic academic counselors. The platform is curriculum independent and does not require programming skills, allowing counselors and faculty to develop the electronic counselors. Tests among potential users show that the application reduces the time required to assist each student, increasing the number of students they can help. Students may also use the application by themselves as a "virtual" counselor.

The developed web-based information management system is designed to improve the quality of maternal health care services and working conditions in a maternity clinic. Most of the maternity clinics in the Philippines still follow manual processes and utilize paper-based records. In Robles Maternity Clinic, the clinic encounters several problems like file duplication, file misplacement, unanswered inquiries, long process of appointment scheduling, unused and expired medicines. The researchers utilized Agile Scrum methodology for the development of the system. The researchers used mixed methods research to incorporate user feedback into the built solution. The data were collected through survey questionnaires which are distributed to IT professionals, College of Information and Communications Technology faculty, patients, and Robles Maternity



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Clinic staff and from semi-structured video interviews with a Robles Maternity Clinic representative. The findings of the study showed that the system is fully functioning and suitable to implement for a maternity clinic. The integrated functionalities in the system answer the problems that a maternity clinic encounters in its daily operation. prescriptions, and pending appointments. Batoon, J.A., Flores, G.G., Lorenzo, M.J., Nino, F.J., Samson, K.N., & Angeles, J.A.) [22]

SYNTHESIS

Counseling appointment systems are digital platforms designed to facilitate the scheduling and management of counseling sessions. These systems aim to streamline the process of booking appointments between counselors and clients while enhancing overall efficiency, accessibility, and effectiveness of counseling services. Counseling appointment systems typically offer various features to support the appointment management process. These features include online scheduling, automated reminders, client information storage, secure communication channels, and calendar integration. Some systems may also provide additional functionalities, such as progress tracking, session notes, and outcome assessments. Research highlights several benefits of counseling appointment systems. Firstly, these systems improve accessibility by allowing clients to schedule appointments at their convenience, reducing the need for phone calls or in-person visits. Secondly, automated reminders minimize no-show rates, ensuring better resource utilization and continuity of care. Additionally, these systems enhance client satisfaction and engagement due



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to the ease of use and reduced administrative burden. Lastly, they enable efficient documentation and data collection, supporting evidence-based practices and informed decision-making.

Despite their benefits, counseling appointment systems also encounter challenges. One key challenge is ensuring data security and privacy to protect sensitive client information. The systems must comply with relevant legal and ethical standards, like data encryption and secure storage. Additionally, technological limitations and lack of user-friendly interfaces can impede system adoption and user satisfaction. Integration with existing electronic health record systems and interoperability with other platforms can also pose challenges. Studies indicate positive effects of counseling appointment systems on both clients and counselors. Clients appreciate the convenience and autonomy offered by online scheduling, resulting in increased engagement with counseling services. The automated reminders improve attendance rates and decrease last-minute cancellations or rescheduling. This, in turn, contributes to more efficient and effective use of counselors' time. Overall, these systems enhance the therapeutic alliance by facilitating seamless and timely communication between clients and counselors.

Counseling appointment systems play a crucial role in improving the efficiency and accessibility of counseling services. They offer features that streamline the appointment management process, benefiting both clients and counselors. However, challenges related to data security, technical limitations, and integration need to be addressed for optimal system implementation. Further research is necessary to explore the long-term impact of these systems on client outcomes and counselor workload.



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CHAPTER 3

RESEARCH METHODOLOGY

In this chapter, we will focus into the research methodology employed in our study. The purpose of this chapter is to explain the procedure, strategy, and methods employed in data collection and analysis. In order to ensure the validity and dependability of our findings, this chapter will provide readers a thorough summary of our research methodology. This will help readers understand how the researchers approached the study.

Research Design

The researchers carefully analyzed and explained the data required using descriptive methods and developmental research. Descriptive research defines certain behaviors or occurrences without altering the environment, providing insights into "what" is happening while ignoring the underlying causes of these characteristics. This quantitative research approach enabled data collecting without influencing participants, resulting in useful insights into the topic of interest. [23] Developmental research in instructional technology entailed rigorous studies of educational programs and products to fulfill internal consistency and effectiveness standards. There are three types of developmental research: researching product development processes, evaluating the influence on learners or organizations, and doing general studies of design development or evaluation techniques. This qualitative method made a substantial contribution to the growth and theoretical breakthroughs of the area.



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To gather insights into the counseling appointment procedure, a quantitative technique will be used to interpret the statistical data collected. The researchers will employ a survey questionnaire with convenience sampling for the administration and employees of Bunggo National High School and conduct interviews primarily with the administration. These will give a thorough grasp of the problem and context, making it easier to apply the study's recommended solution.

Research Locale



Figure 3.1: The Research Locale of the Study

The study was conducted at Bunggo National High School. The school was personally chosen by the researchers to be able to distinguish the efficiency of the study among the students in Bunggo National High School. The researchers conducted this study to provide a user-friendly system that will help the students make an appointment schedule in their school counseling. Our online counseling appointment system will help students, counselors, and the school in avoiding conflicts between appointments.



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Population of the Study

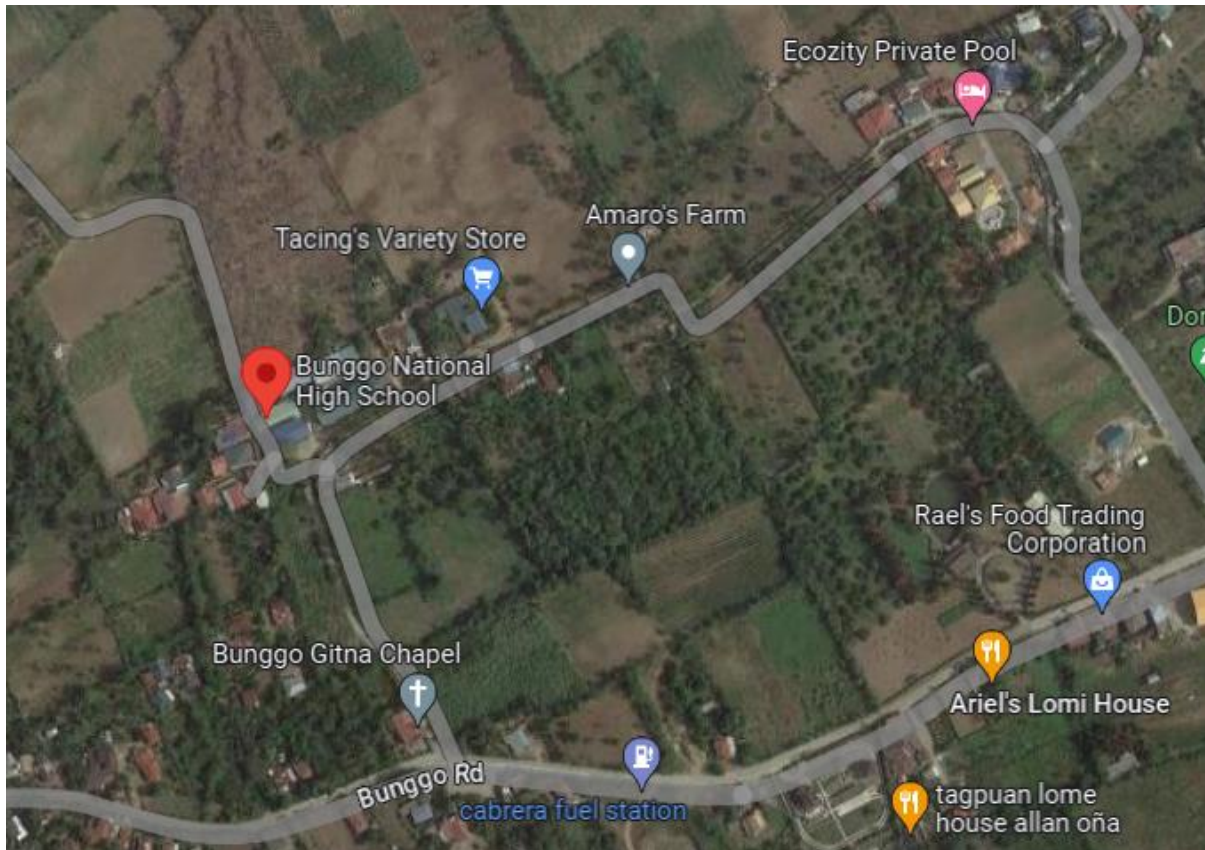


Figure 3.2: Circuit Map of Bunggo National High School

The study was conducted at Bunggo National High School, a DepED Managed urban Secondary Public School located in City of Calamba, Laguna. The target population of this study is the counselor in Bunggo National High School. There are approximately 300-350 students in the said school. The respondents of this study are the students of the said school. One of the teachers in the said school was interviewed to discuss the implementation of the system and how beneficial it can be to the students, teachers, counselors and especially the school. Additionally, the researchers will use purposive sampling method for selecting the study's participants.



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Sampling Design

The researchers used purposive sampling method for selecting the study's participants. [24] S. McCombes stated that purposive sampling, also known as judgement sampling, involves the researcher using their expertise to select a sample that is most useful to the purposes of the research. It is often used in qualitative research, where the researcher wants to gain detailed knowledge about a specific phenomenon rather than make statistical inferences, or where the population is very small and specific.

Bunggo National High School has a small population of students studying so it will be easy to choose the proper respondent in the said study. This sampling method will be used by the researchers to select specific students who have direct experience with the manual scheduling system in Bunggo National High School.

Data Analysis Plan

- **Five-Point Likert Scale**

A 5-point Likert scale was used as the primary approach for evaluating the data gathered from the questionnaires answered by the respondents in this research study particularly to the students. The likert scale is a commonly used valuable instrument in social sciences and market research, allowing participants' attitudes, views, and perceptions to be quantified. The respondents were asked to rate their level of agreement or disagreement with a series of statements or questions on



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a scale ranging from "Strongly Disagree" to "Strongly Agree." The response options provide a balanced and complex framework, allowing respondents to express varying degrees of opinions. The use of this scale provides a valuable layer to the study, encouraging an in-depth understanding of the participants' viewpoints and contributing to the study's reliability. The outcomes of the data gathering are going to be interpreted based on the following Likert Scale.

Interpretation	Value	Range
Strongly Disagree	1	1.0 - 1.80
Disagree	2	1.81 - 2.60
Neutral	3	2.61 - 3.40
Agree	4	3.41 - 4.20
Strongly Agree	5	4.21 - 5.00

Table 3.1: 5-point Likert Scale

Mean

The mean or average was chosen as the major approach in this research study to determine the findings of the data collection process from the respondents' responses on the 5-point Likert scale. The researchers expected to get significant insights into the central tendency of participants' opinions and perceptions on the topic or question of interest provided by computing the mean.



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Although the data from the Likert scale is ordinal in nature, converting it to a numerical scale and computing the mean allowed quantitative representations of the participants' overall sentiment. It is important to take note that using the mean with ordinal data has significant limitations because it assumes equal gaps between response categories. In this case, however, the mean was considered a suitable technique to summarize and analyze the data, offering an overview of the overall viewpoint stated by the respondents throughout the study.

Formula:

$$\bar{x} = \frac{\sum x}{n}$$

in which \bar{x} = mean

$\sum x$ = sum of all students

N, n = number of all students

Figure 3.2: Equation



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Data Gathering Tools

The researchers prepared some questionnaires for the school counselor. The set of questions only involves the main challenges or issues they encounter while doing the manual scheduling and by not having a counseling appointment system. These are the various data-gathering tools to compile the information needed:

Interview - In a question-and-answer session known as an interview, one person asks questions, while the other person responds. There may be more than one interviewer and more than one participant, or it may be a one-on-one, two-way dialogue.

Observation - A method that allows researchers to gather rich and detailed data about behavior, actions, and interactions that may not be easily captured through other research methods. It provides an in-depth understanding of social, cultural, and contextual factors influencing individuals or groups. By directly observing behavior, researchers can record data in real-time, capturing subtle nuances, non-verbal cues, and spontaneous interactions that may be missed through interviews or questionnaires. It involves unobtrusive observation, where participants are not aware they are being observed. This minimizes the risk of self-presentation bias or distortion of behavior that may occur in self-report methods.



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Data Gathering Procedure

To enhance the student counseling appointment system, we followed a systematic data gathering procedure, incorporating two key methods: interviews and observations. Firstly, we conducted interviews with experienced counselors to gain valuable insights into the counseling process and understand how students seek help for behavioral, mental, and physical challenges, with a focus on issues like anxiety and depression. These interviews provided us with essential prior knowledge to inform the system's design and functionalities. Secondly, we carried out observational studies to further enrich our understanding of the counseling process. By observing counseling sessions and interactions between students and counselors, we obtained real-world insights, allowing us to visualize how the system should function when implemented. Combining these two data gathering methods, we have gathered precise and concise information to guide the development and implementation of the student counseling appointment system effectively. This approach ensures that the system is well-informed, addressing the specific needs of students and counselors, and fostering a supportive environment for mental health and well-being.



Software Development Methodology

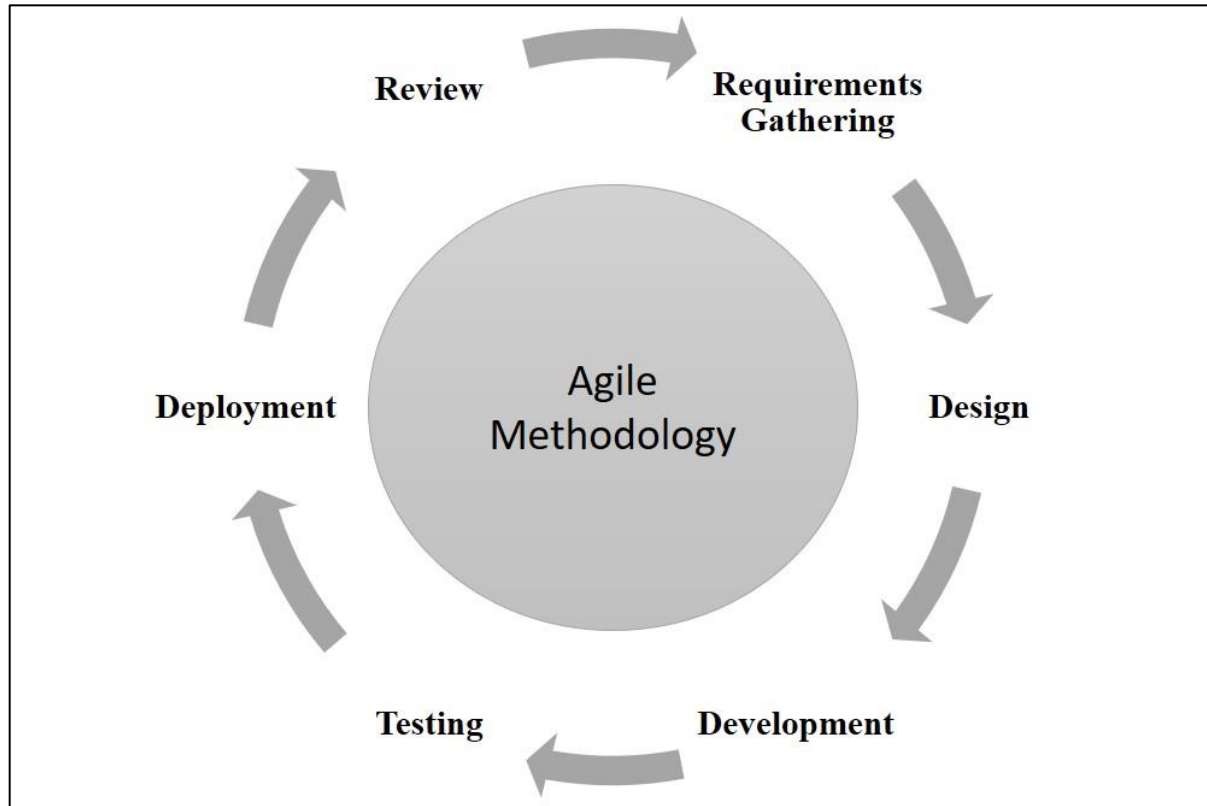


Figure 3.3: Software Development Methodology of the Study

Agile methodology is an approach that prioritizes cross-functional collaboration and continuous improvement. It divides projects into smaller phases and guides teams through cycles of planning, execution, and evaluation. (Wrike) [25]

Figure 3.3: demonstrates the Agile Methodology cycle which was completed in constructing the system. This framework was used in the system's planning, development, design, and evaluation. And the researchers used this approach since it is brief, adaptable, and allows for



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changes as necessary. This also acts as a guide for creating the system they will use to better effectively and efficiently organize and handle each of the mentioned phases.

Phase 1: Requirements Gathering - The system begins by acknowledging and understanding the requirement needed, as well as by determining the objectives. The researchers begin to communicate with the respective clients in order to accurately identify, discuss, and explain the plans and important system components they need. During the system development phase, each development that will take place during this procedure must be recorded. The researchers use the internet, interviews, and online research to gather information and specifications for the system. In order for the system to operate successfully and the project to be successful, it is necessary for the researchers to be prepared for pursuing their system development.

Phase 2: Design - After the planning stage, the requirements are transformed into full and exact system design specifications during this step. After the researcher and the client have discussed the project and the system software and hardware requirements have been established, the development team will start the development phase. The Student Counseling Appointment helps the students to easily make their schedules to have a council.

Phase 3: Development - The duration of the development process is the longest because it involves coding, figuring out what is required to construct the system, and making sure that it runs as intended in accordance with the program. In this stage, the researcher must construct or finish the system in accordance with the plans made by their team to fulfill the system's requirements. In



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developing the system, the researchers say that the developed system will benefit the following customers to have a faster transaction.

Phase 4: Testing – At this phase, when the system is complete, the researchers will test it to ensure that it works and to see if there are errors that must be corrected as quickly as possible before moving on to the following stage.

Phase 5: Deployment – At this phase, the researchers will give the system to the respective owner.

In summary, the agile methodology for developing a student counseling appointment system includes the phases of requirement gathering, design, development, testing, deployment and review. Each phase plays a crucial role in ensuring that the system meets the specified requirements, is well-designed, properly implemented, thoroughly tested, and successfully deployed for real-world usage in a counseling settings.



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Technical Background

The table provided below contains details about the system, software, and hardware requirements used during the development process.

Hardware Requirements	
Specification	Description
Processor	Intel Core vPro 8 th Gen
RAM	8.00 GB
Storage	256 GB
Network Interface	Wi-Fi internet, Mobile data
Monitor	12 inches
Input Devices	Keyboard, and touch pad, external mouse

Table 3.1: Table for the Hardware Requirements and Specification

On the table 3.1 it shows the required hardware to operate the student counseling appointment system. The processor needed is Intel Core vPro 8thGen, while the required RAM is 8GB and 256GB on the storage for storing applications and data. The required network interface are Wi-Fi and Mobile Data, the minimum requirement for monitor is 12inches for comfortable viewing. The system can also require input devices such as keyboard, touchpad and external mouse for user interaction.



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Software Requirements	
Component	Specification
Operating System	Microsoft Windows 10 Pro 64-bit.
Development IDE (Integrated Development Environment)	Sublime Text Editor
Web Server	XAMPP
Front-end Languages / Development Tool	HTML, CSS
Back-end Languages	PHP, SQL
Internet Browser	Google Chrome

Table 3.2: Table for the Software Requirements and Specification

The researchers used the following technology tools in developing a student counseling appointment system. The operating system model utilized during development is Microsoft Windows 10 Pro 64-bit. Through the usage of XAMPP for managing the data in database.CSS (Cascading Style Sheet) for designing the system.HTML (Hypertext Markup Language) for creating a web pages. Furthermore, PHP, SQL was used to develop the student counseling appointment system back end. The researchers designed the system fundamental feature using the PHP (Hypertext Processor). It supported the researchers by giving the developers a workspace and real-time program code updates. Through the usage of SQL (Structured Query Language) the researchers will find it easier to retrieve data and create records of the user data as a result. To ensure broad compatibility the client environment is designed to support Google Chrome web browsers.



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DEPARTMENT OF COMPUTING AND INFORMATICS
Bachelor of Science in Computer Science

44

References:

- [1] N. Tennyson, "The Advantages of Using Online Scheduling Software for Government Offices," *QLess*, Nov. 11, 2021. <https://qlless.com/the-advantages-of-using-online-scheduling-software-for-government-offices/>
- [2] "Humanistic Psychology, Person-Centered Psychotherapy (Rogers)," Primary Goals. https://primarygoals.com/teams/models/rogers/?fbclid=IwAR2TsYjN51I48CKzvRbp64S99_17a_ojYPYMflZajLxwnFdPLhYPnXgOcA (accessed Jul. 26, 2023).
- [3] R. Fahlevi, "The Human and Existential Approach to Improve Students' Emotional Intelligence in School Counseling Program," *Konselor*, vol. 9, no. 1, Jan. 2020, doi: <https://doi.org/10.24036/0202091105961-0-00>.
- [4] S. Sakakibara, S. Saiki, M. Nakamura, and K. Yasuda, "Generating Personalized Dialogue Towards Daily Counseling System for Home Dementia Care," *Semantic Scholar*, 2017. <https://www.semanticscholar.org/paper/Generating-Personalized-Dialogue-Towards-Daily-for-Sakakibara-Saiki/5d38738f269c18b8c1353935e545a7ccf3eeab87>
- [5] R. M. A. Latif, J. Ferzund, M. Farhan, N. Z. Jhanjhi, and M. Umer, "A Case Study of Career Counseling for ICT", *Semantic Scholar*, 2021. <https://www.semanticscholar.org/paper/A-Case-Study-of-Career-Counseling-for-ICT-Latif-Ferzund/cd2c51fd1e1337f85354ee1909d0712c814c6c2f>



CITY COLLEGE OF CALAMBA

DEPARTMENT OF COMPUTING AND INFORMATICS
Bachelor of Science in Computer Science

45

[6] M. Islahuddin, "STRATEGIES TO CHANGE STUDENTS' NEGATIVE PERCEPTIONS ABOUT GUIDANCE AND COUNSELING TEACHER," TRANSFORMATIONAL LANGUAGE, LITERATURE, AND TECHNOLOGY OVERVIEW IN LEARNING

(TRANSTOOL), vol. 1, no. 1, pp. 9–18, Nov. 2021, doi:

<https://doi.org/10.55047/transtool.v1i1.103>.

[7] S. Srinivas and A. R. Ravindran, "Designing schedule configuration of a hybrid appointment system for a two-stage outpatient clinic with multiple servers," Health Care Management

Science, Feb. 2020, doi: <https://doi.org/10.1007/s10729-019-09501-4>.

[8] P.D. Geneta, R.C. Coloma, R.A Garcia, & J.C. Rosales (2022). "Development of Mental Health Mobile Application for the Office of Guidance and Counseling,"

https://www.researchgate.net/publication/349526019_The_Development_of_Mobile-based_Application_for_Mental_Health_Counseling_during_the_COVID-19_Pandemic

[9] G. Yandug and C. a. S. Santos, "Simulation Driven Appointment System Model for a License Processing Office in the Philippines," www.semanticscholar.org, 2020.

<https://www.semanticscholar.org/paper/Simulation-Driven-Appointment-System-Model-for-a-in-Yandug-Santos/68327593ec1fc2a1218715129b3012dd1cb88c95>

[10] V. Salosagcol et al., "Quay Crane Scheduling Based Problem: A Process Optimization for an International Container Terminal in the Philippines," 2020. Available:

<http://www.ieomsociety.org/detroit2020/papers/311.pdf>



CITY COLLEGE OF CALAMBA

DEPARTMENT OF COMPUTING AND INFORMATICS
Bachelor of Science in Computer Science

46

[11] "A Quality Improvement Study on Missed Appointment Management in Primary Care - ProQuest," www.proquest.com.

<https://www.proquest.com/openview/d780fdecc696b9a7c1c948e2381e414f/1?pq-origsite=gscholar&cbl=18750&diss=y> (accessed Jul. 28, 2023).

[12] J. B. C. Legaspi, R. M. De Angel, A. Lagman, and J. H. J. Ortega, "Web Based Course Scheduling System Using Greedy Algorithm," International journal of simulation: systems, science & technology, Jul. 2019, doi: <https://doi.org/10.5013/ijssst.a.20.s2.14>.

[13] Sri Maullasari, "Collaborative strategy: Creating inclusive school-based guidance and counseling services," SMARATUNGGA: JURNAL OF EDUCATION AND BUDDHIST STUDIES, vol. 1, no. 2, pp. 12–21, Dec. 2021, doi: <https://doi.org/10.53417/sjeb.v1i2.56>.

[14] A. Bokolo, G. Peremoboere Maureen, & M. Abdul Majid (2021). "A Web Deployed Multi-Agent Based Approach for Student-Lecturer Appointment Scheduling in Institutions of Higher Learning," Journal of Physics: Conference Series, 1830.

<https://iopscience.iop.org/article/10.1088/1742-6596/1830/1/012007>

[15] J. Kaur and A. Malhotra, "Adolescents' Perception of Adjustment Problems and School Counseling Services," Semantic Scholar, 2015.

<https://www.semanticscholar.org/paper/Adolescents%E2%80%99-Perception-of-Adjustment-Problems-and-Kaur-Malhotra/e1b0c65d3554b29e122ad45cd5066fd5d4cb72d4>



CITY COLLEGE OF CALAMBA

DEPARTMENT OF COMPUTING AND INFORMATICS
Bachelor of Science in Computer Science

47

- [16] R. H. Rio, "Collaboration of Counseling Teachers and Parents in Distance Learning During The Covid-19 Pandemic," *International Journal of Applied Guidance and Counseling*, vol. 2, no. 1, pp. 1–6, Feb. 2021, doi: <https://doi.org/10.26486/ijagc.v2i1.1406>.
- [17] J. L. Parzych, M. Generali, and O. Yavuz, "School Counseling Programs Identifying Academic Development Needs," *Journal of Education*, vol. 203, no. 1, p. 002205742110164, May 2021, doi: <https://doi.org/10.1177/00220574211016433>.
- [18] M. A. M. D. Fuente et al., "Project Clinic: A Cross-Platform Scheduling and Appointment Reservation System," *Formosa Journal of Computer and Information Science*, vol. 2, no. 1, pp. 13–24, May 2023, doi: <https://doi.org/10.55927/fjcis.v2i1.4077>.
- [19] J. M. T. Reguyal et al., "Ob-Gyn Clinic Online Scheduling System," *Formosa Journal of Computer and Information Science*, vol. 2, no. 1, pp. 25–36, May 2023, doi: <https://doi.org/10.55927/fjcis.v2i1.4076>.
- [20] Q. Carton, E.R. (2022). ADVISE MOBILE: A WEB AND MOBILE-BASED GUIDANCE CONSULTATION SYSTEM. *International Journal of Computer Science and Mobile Computing*.
- [21] J. Navarro, J. Borges, N. Rodriguez, and M. Jimenez, "Electronic academic counseling system," *IEEE Xplore*, Nov. 01, 2002. <https://ieeexplore.ieee.org/abstract/document/1158235/> (accessed Jul. 28, 2023).



CITY COLLEGE OF CALAMBA

DEPARTMENT OF COMPUTING AND INFORMATICS
Bachelor of Science in Computer Science

48

[22] J.A. Batoon,, G.G. Flores, M.J. Lorenzo, F.J. Nino, K.N Samson, & J.A Angeles, (2022).

“Development of a Maternity Clinic Information Management System,” – WARSE

<https://www.warse.org/IJATCSE/static/pdf/file/ijatcse061122022.pdf>

[23] R. C. Richey, “Developmental Research: The Definition and Scope,” ERIC, 1994.

<https://eric.ed.gov/?id=ED373753&fbclid=IwAR34L1k0MW7phsY5X5UsFtJrALCmWUN5Vie>

[JMKHVDG SE3xe-D5wW52ONtg](#) (accessed Jul. 30, 2023).

[24] S. McCombes, “Sampling Methods | Types and Techniques Explained,” Scribbr, 2019.

<https://www.scribbr.com/methodology/sampling-methods/>

[25] Wrike, “What is Agile Methodology in Project Management?,” Wrike, 2022.

<https://www.wrike.com/project-management-guide/faq/what-is-agile-methodology-in-project-management/>