**KUMUSTA KA APP: A MENTAL HEALTH MONITORING SYSTEM FOR JUNIOR HIGH SCHOOL STUDENTS.**

**A CAPSTONE PROJECT**

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**Chapter 1**

**Introduction**

**Project Context**

Mental health issues among students have become increasingly prevalent, impacting their emotional well-being and academic performance. The Kumusta Ka App is designed to address this issue by providing a digital platform where junior high school students can monitor and track their mental health on a daily basis. The app allows students to fill out surveys and make private journal entries, providing them a safe space to reflect on their mental state. The app will have a discussion forum where teachers and students can engage in meaningful mental health topics. Teachers will have access to an overview of aggregated mental health data, helping them identify trends in the class, but without accessing individual students' details. The primary user of the analytic dashboard will be the guidance counselor, who will have full access to the detailed mental health trends and can take appropriate actions based on the data.

This study focuses on junior high school students as the main beneficiaries of the Kumusta Ka App, while teachers and guidance counselors will use the system to support students. The objective of the study is to develop a tool that allows students to self-monitor their mental health while maintaining privacy. Teachers will have a general overview of mental health trends in the class, while guidance counselors will have access to more detailed analytics to provide targeted support and interventions.

The scope of this study involves the development and implementation of the app in selected schools, focusing on key features such as mental health surveys, journaling, and the teacher's overview dashboard. The guidance counselors will be able to use the detailed dashboard to monitor students' emotional well-being and intervene when necessary. The system is cloud-based, accessible through web browsers, and compatible with various devices.

The limitations of the study include the voluntary nature of participation, which may result in incomplete data. Additionally, the app is intended to help monitor and raise awareness about mental health, but it does not replace professional mental health counseling. Furthermore, the study will be limited to a select group of junior high schools, and the effectiveness of the system beyond the pilot phase will not be fully evaluated.

This project aims to contribute to the understanding of how technology can be utilized to support student mental health and facilitate early intervention in a school setting.

**Purpose and Description**

The purpose of the *Kumusta Ka App* is to provide an effective, accessible, and private digital platform for monitoring and improving the mental well-being of junior high school students. The app is designed to empower students to track their mental health through regular surveys and wellness journaling, while providing guidance counselors with in-depth access to mental health data and trends to enable early intervention. Teachers will have overview access to aggregated data, helping them stay informed about general trends within their class, but without infringing on individual privacy. In addition to daily self-assessments, journaling, and guidance counselor analytics, the app includes a discussion forum feature where teachers can initiate discussions on mental health and wellness. This forum provides a safe space for students to express their thoughts, ask questions, and gain insights from their educators and peers. It enhances engagement and awareness, promoting mental health literacy within the school environment.

The beneficiaries of the app include students, teachers, and guidance counselors. Students will benefit from a secure space to monitor their mood, reflect on their mental health, and access resources like relaxation techniques, meditation videos, and mindfulness exercises. They can also set goals for their well-being, track progress through a mood tracker, and receive personalized self-assessment tools at the start of the app usage. Teachers will benefit from an overview of class-wide trends, enabling them to identify students who may need further attention. Guidance counselors will have access to detailed analytics and will be able to intervene with personalized support plans, which will be logged in the app. They will also be able to maintain direct communication with students and teachers through an integrated communication tool.

The content of the project includes the following key features:

* Guidance Counselor Module: A dedicated section where guidance counselors can review detailed analytics, create intervention plans, and track student progress.
* Wellness Journal: A private journal feature where students can reflect on their emotions and experiences.
* Pre-Self-Assessment Tool: A one-time test that students take upon registration to assess their baseline mental health.
* Interactive Quizzes: Quizzes that students can take to assess and understand their mental health.
* Mood Tracker: Allows students to monitor their mood regularly and identify patterns in their emotional well-being.
* Resource Library: Videos and resources related to relaxation, mindfulness, meditation, and breathing techniques.
* Communication Tools: A system for students to directly message their teachers or guidance counselors for support.
* Privacy and Consent Section: Ensures students and guardians understand and consent to the data collection, with clear privacy policies.
* Emergency Contacts: A feature to list emergency contacts for quick access in case of immediate help needed.

These features aim to create a comprehensive mental health monitoring system that supports students' emotional well-being, provides teachers with useful insights, and enables guidance counselors to provide targeted, effective interventions. The app is designed to foster a supportive environment in schools, where mental health can be discussed openly and students can feel supported in their emotional journeys.

**Objectives of the Study**

The general objective of the study is to develop the Kumusta Ka App, a mental health monitoring web-based platform that allows students to track their emotional well-being, while providing guidance counselors with in-depth data for early intervention and teachers with aggregated insights for supporting students.

**Specific Objectives:**

1. To design a mental health monitoring system with the following features:
   * a. Student Wellness Journal – A private space for students to reflect on their emotions and experiences.
   * b. Daily Mental Health Surveys – Regular surveys to assess students' emotional well-being and track changes over time.
   * c. Mood Tracker – A tool that allows students to monitor their mood and identify patterns in their emotional states.
   * d. Pre-Self-Assessment Tool – A one-time test for students to assess their mental health at the time of registration.
   * e. Guidance Counselor Dashboard – A system that allows guidance counselors to review detailed analytics on student mental health trends and track intervention plans.
   * f. Communication Tool – A feature that enables direct communication between students, teachers, and guidance counselors for support and inquiries.
   * g. Interactive Quizzes – Quizzes for students to engage with and assess their mental health knowledge.
   * h. Resource Library – Videos and materials on meditation, relaxation, mindfulness, and stress management.
   * i. Goal Setting for Students – A feature that allows students to set personal mental health goals and track their progress.
   * j. Emergency Contact Information – A section where students can list emergency contacts for quick access in case of crisis situations.
   * k. Privacy and Consent Section – A module that ensures the collection of consent and explains the app's privacy policies to users.
   * l. Discussion forum - Where teachers can post mental health-related topics and students can engage in constructive conversations by commenting.
2. To construct the proposed system as designed by developing the front-end user interface, back-end services, and integrating the necessary features to ensure functionality, security, and user-friendliness.
3. To test and improve the proposed system through alpha and beta tests, involving end-users (students, teachers, and guidance counselors), ensuring the app meets its objectives and addressing any issues based on feedback.
4. To evaluate the performance of the proposed system using the ISO 25010:2011 standards to assess its quality, including functionality, performance, security, usability, and maintainability**.**

**Scope and Limitations**

**Scope:**

The scope of this study focuses on the development and implementation of the *Kumusta Ka App*, a mental health monitoring web-based platform designed for junior high school students. The system allows students to track their emotional well-being by completing daily surveys, journaling, and utilizing mood trackers. Teachers will have overview access to aggregated mental health data to monitor overall class trends, while guidance counselors will have full access to detailed analytics, enabling them to intervene and provide targeted support. The system includes features such as wellness journaling, pre-self-assessment tools, interactive quizzes, a communication tool between students and teachers, a resource library for mindfulness and relaxation, and goal-setting functionalities. The app is cloud-based, ensuring that it is accessible on various devices (e.g., computers, tablets, and smartphones) through a secure web interface.

**Limitations:**

This study does not include the provision of direct mental health care or counseling services. While the *Kumusta Ka App* aims to monitor and raise awareness about mental health, it does not serve as a substitute for professional mental health treatment. The system is limited to tracking and reporting data related to student mental health within a school setting. The participation of students in the platform is voluntary, meaning that data collected may not represent all students in the study area. Additionally, the study will only focus on the initial deployment and testing within selected junior high schools, so it does not evaluate long-term impacts or scalability across different educational institutions. The app does not provide diagnostic tools or replace existing mental health services within schools but rather serves as an additional tool for early intervention and support.

**CHAPTER 2**

**REVIEW OF RELATED LITERATURE AND STUDIES**

**Technical Background**

The **KumustaKa** mental health monitoring system is a web-based platform designed to support the emotional well-being of junior high school students by collecting and analyzing relevant data on their mental state. The choice to make it a web application allows students and teachers to access the platform from any device with an internet connection, offering flexibility and accessibility. This ensures that students can consistently update their mental health status, while educators can monitor real-time trends, making it easier to provide timely support. The web-based nature also makes the system scalable, allowing for future feature enhancements and updates to meet evolving needs.

From a technical perspective, **KumustaKa** is built using reliable and modern tools. The front-end is developed using HTML, CSS, and JavaScript, with ReactJS providing a flexible framework for building user-friendly interfaces. This framework is designed for scalability, meaning new features can be added with minimal disruption to the existing system. The backend, powered by Node.js, efficiently handles real-time data processing, ensuring smooth communication between users and the server. PostgreSQL is used to store student data securely, supporting complex data queries and encryption methods to protect sensitive information like journal entries and survey responses. The platform's user interface will be designed with a focus on simplicity and ease of navigation, using Bootstrap to ensure a responsive and mobile-friendly layout. Bootstrap’s grid system and pre-designed components will allow for a consistent and user-friendly experience across different devices, making it accessible for students, teachers, and guidance councilors. For data analytics, technologies like Chart.js will be integrated into the guidance councilor's dashboard to visualize mental health trends and scores in clear, interactive charts. Additionally, Pandas, a powerful data manipulation library, will be used on the backend for processing and analyzing the collected data, ensuring accurate and timely insights for better decision-making.

However, the reliance on internet connectivity presents a limitation. Since **KumustaKa** is a web-based platform, students and teachers in areas with limited or unreliable internet access may find it challenging to use the system consistently. This could hinder the real-time tracking of student data and delay interventions by educators when students are struggling. Ensuring stable internet access is essential for the system to function as intended, which may limit its effectiveness in regions where connectivity is a concern.

**Review of Related Studies**

The Review of Related Studies provides a comprehensive examination of existing research, theories, and findings relevant to the development of the KumustaKa mental health monitoring system. This section aims to explore previous studies on mental health challenges faced by junior high school students, stigma on mental health, the use of technology in mental health interventions, and the role of data analytics in early detection of mental health issues. By reviewing these sources, this study seeks to identify gaps in traditional methods of mental health monitoring, particularly in educational settings. Additionally, it will highlight the cultural context in the Philippines, where mental health stigma remains a significant barrier to open discussion and early intervention. The findings from this studies review will establish a foundation for the proposed web-based solution, justifying the need for a proactive, data-driven approach to support students' emotional well-being.

**Stigma and Mental Health Reporting**

Stigma surrounding mental health continues to be a significant barrier to seeking help and reporting mental health issues, especially among students. Fear of judgment, discrimination, and social exclusion often prevent individuals from openly discussing their mental health struggles, leading to underreporting and untreated conditions. For junior high school students, the pressure to conform to societal norms and avoid being labeled as "different" can exacerbate this problem, making it even more difficult to address mental health concerns. Understanding the impact of stigma and developing strategies to encourage open, supportive communication are essential in creating environments where students feel safe to report and seek help for their mental health needs.

Digital solutions in psychiatry offer the potential to alleviate some of the barriers associated with disclosing mental health challenges, such as shyness, discomfort, and concerns over stigma and discrimination [10]. A crucial aspect of stigma in public health is its ability to prevent individuals from seeking proper care. Research shows that stigma-related concerns significantly influence whether people pursue mental health treatment [13]. In Filipino culture, specific barriers include self-stigma, marked by a fear of negative judgment, shame, embarrassment, and the perception of being a disgrace. Individuals may also fear being labeled as "crazy," along with self-blame and concerns about losing face. Social stigma further complicates this, as it risks harming a family’s reputation or negatively impacting one's cultural group [14]. For some students, mental health stigma remains a challenge, with around 5% of both males and females expressing hesitation to seek help due to worries about others’ opinions and the potential embarrassment it may cause [15].

Mental health stigma can be broadly categorized into public stigma and self-stigma. Public stigma involves stereotypes, prejudices, and discrimination directed at those with mental health conditions by society. Self-stigma occurs when individuals internalize these societal attitudes, leading to diminished self-esteem and self-worth [16]. Globally, approximately one in five young adults experiences poor mental health each year, but many are reluctant to seek help. Poor mental health in young people is linked to reduced academic performance, social dysfunction, risky sexual behaviors, and physical health problems [17]. Stigma not only causes direct harm to those facing mental health issues but also represents a significant obstacle in advancing the treatment and prevention of mental illnesses [18].

**Educational Technology and Mental Health**

The integration of educational technology into mental health initiatives offers new opportunities to support students' well-being. By leveraging digital platforms, schools can provide accessible mental health resources, facilitate early intervention, and enhance the overall learning environment. Educational technology tools, such as online counseling, mental health apps, and digital self-assessment tools, have the potential to break down barriers to mental health care, making it more accessible and personalized for students. This theme explores the role of educational technology in promoting mental health awareness, support, and interventions within academic settings.

Digital technology holds substantial promise for improving both the accessibility and quality of mental health care. Numerous studies have confirmed the effectiveness of interventions delivered through online platforms, text messaging, and telephone support, with pilot studies reporting encouraging preliminary outcomes for these technology-based interventions in clinical and community settings [19]. In response to the global mental health crisis, technological innovations are being explored to provide more effective solutions. Digital platforms enable individuals to independently monitor and manage their mental health, offering an accessibility and convenience that traditional face-to-face or paper-based assessment methods often lack [20]. Mental health applications (MHapps) present several advantages over conventional intervention approaches, including cost-effectiveness, user anonymity, flexibility in context and location, and streamlined data collection for feedback from intervention developers [21]. As the number of adolescents and young adults engaging with digital technologies continues to rise, digital mental health interventions are increasingly recognized for their potential to enhance mental health and well-being within this population [22]. Easy access to straightforward mental health assessment tools is crucial for these individuals to routinely evaluate and monitor their mental health status [23]. The growing interest in leveraging digital technologies to improve the mental health of children and young people is further substantiated by accumulating evidence of their effectiveness. However, challenges related to user engagement, uptake, and adherence underscore the necessity of incorporating early user feedback in the design and implementation of these interventions to ensure they are engaging, feasible, and effective [24]. Overall, digital tools are being increasingly deployed to combat the declining mental health of adolescents, with a rapidly expanding range of options and an increasing number of studies underscoring their potential benefits and importance [25].

**Mental Health in Junior Highschool Students and Teacher support**

The mental health of junior high school students is a critical concern, as this stage of development is marked by significant emotional, social, and cognitive changes. Adolescents, typically between 12 and 15 years old, are particularly vulnerable to mental health challenges such as anxiety, depression, and stress due to academic pressures, social relationships, and family dynamics. Research underscores the need for comprehensive support systems within schools, not just for students but for educators as well. Teachers play a vital role in providing emotional support and guidance, helping to create a safe and non-judgmental environment where students feel comfortable discussing their struggles.

There is a critical need for fostering supportive personal relationships and implementing comprehensive mental health programs in schools. Research shows that junior high school students benefit greatly from quality interactions involving open communication, friendship, respect, and non-judgmental attitudes from both educators and peers. Additionally, there is a strong demand for structured mental health programs, as mandated by R.A. 11036, to provide professional support to students, educators, and parents while reducing academic pressures. Interviews conducted in the study identified family issues as a significant contributor to students' emotional struggles, with family stress, academic expectations, bullying, and feelings of isolation exacerbating mental health problems such as anxiety and depression [1].

Junior high school students face varying levels of mental health problems, with anxiety, depression, and self-injury ranking among the most prevalent issues. Over time, the incidence of these problems, particularly anxiety and suicide attempts, has worsened. The variability in mental health assessment methods, detection standards, and evaluation periods further complicates the accurate identification and measurement of these issues among students [2].

Teacher support plays a crucial role in enhancing students' emotional well-being, particularly when it is paired with open communication, respect, and understanding [3]. Building strong connections between teachers and students is essential for the early detection of mental health issues, allowing for timely interventions [1]. While many teachers express a desire to support their students, they often face challenges such as time constraints, lack of mental health training, and fear of saying or doing the wrong thing [4]. These barriers, along with the stigma surrounding mental health, prevent teachers from fully supporting their students as needed [4]. Despite these challenges, many teachers feel a strong responsibility to contribute to their students' mental health, with a significant number open to further education on the topic [5]. A large proportion of teachers are willing to assist students by listening attentively and recommending professional help when necessary [6].

**Data-Driven Mental Health Interventions**

The use of data-driven interventions in mental health care has emerged as a powerful approach to monitoring and improving well-being across various populations. By leveraging data analytics, digital tools, and real-time tracking systems, these interventions enable more precise and timely responses to mental health challenges. Studies have demonstrated the effectiveness of using behavioral data, predictive models, and machine learning algorithms to identify patterns, assess risk factors, and tailor interventions to individual needs. This approach not only enhances early detection of mental health issues but also improves the overall efficiency and personalization of care, making it a promising avenue for improving mental health outcomes in diverse settings.

Traditionally, diagnosing mental health issues has relied heavily on patient interviews and self-reported experiences, based on the diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). However, with the advent of digital phenotyping, this process is evolving to incorporate more objective data collection. Digital tools now allow for continuous monitoring of behaviors and mental states, enhancing both the accuracy and timeliness of mental health diagnoses [7]. This shift is further supported by the use of smartphones in therapy, which can help overcome participation barriers and increase patient engagement [8].

A systematic review and meta-analysis of 96 randomized controlled trials highlighted the effectiveness of digital mental health (DMH) tools in managing depression and anxiety, particularly in low-resource settings where traditional mental health care is scarce or impractical. The study provides substantial evidence of the future potential for DMH tools in addressing mental health issues in low- and middle-income countries (LMICs), emphasizing the growing demand and the need for the development and implementation of these tools to meet care requirements [9]. Digital technologies offer an innovative, cost-effective solution for improving mental health care, especially in areas like detection and diagnosis. These tools can support healthcare professionals in identifying mental health symptoms and tailoring treatments based on the specific needs of individual patients [10].

Furthermore, digital mental health tools have shown promise in closing the treatment gap for young adults, a group often either uninterested in or unable to access traditional mental health care services. These tools can address young adults' social support needs during behavioral changes, offering them more accessible and personalized care [11]. Mental health professionals could also leverage predictive systems through early intervention to prevent mental illness in high-risk cases, with digital platforms and AI-powered applications emerging as key solutions in this area [12].

**Review of Related Literature**

Mental health has become a critical area of concern, particularly among students, who face unique challenges in managing their emotional and psychological well-being. As awareness of student mental health issues grows, the development of effective support systems becomes increasingly important. This literature review explores three key themes relevant to this issue: student mental health, the current landscape of mental health applications, and the effectiveness of school-based mental health programs. Each theme offers valuable insights into how technology can enhance mental health care and support, especially in educational environments. By examining existing research, tools, and interventions, this review aims to provide a comprehensive understanding of the current state of mental health solutions and their impact on students' well-being.

**Current Landscape of Mental Health Applications**

The rapid advancement of technology has led to a proliferation of digital tools aimed at supporting mental health. Mental health applications (MHapps) have become increasingly popular as a complement or alternative to traditional mental health services. These applications offer users a range of resources, from self-assessment tools to guided therapy sessions, and are often accessible anytime and anywhere, providing much-needed support for individuals who may face barriers to in-person therapy.

The rapid rise in smartphone and tablet usage has led to a significant increase in the popularity of mobile applications designed to enhance health and well-being, including mental and behavioral health. With over 40,000 health, fitness, and medical apps currently available across platforms such as Google Play, iTunes, and Windows, there is a clear demand for digital health solutions [35]. These mobile applications play a vital role in helping users manage their emotions, regulate negative thoughts, express feelings, and prevent self-harm or suicidal ideation [36]. Furthermore, mental health apps improve the quality of care by facilitating the tracking and collection of data, which allows for easier monitoring and analysis [37]. However, it's important to note that these apps are not intended to diagnose conditions or replace professional mental health care [37].

In 2023, the wellness app market generated $950 million in revenue, reflecting a 7.7% decline from the previous year, while over 50 million individuals utilized these apps, resulting in 129 million installations—down by four million from the year prior [38]. The leading mental health apps in 2024, including BetterHelp, Talkspace, and Headspace, are primarily paid services that offer therapy, meditation, and sleep support, making them popular among users seeking mental health assistance [39].

Despite their advantages, mental health apps also have notable drawbacks. While there is research on the use of mobile apps in conjunction with therapy, there is a lack of comprehensive studies regarding the development processes behind these applications [35]. A significant concern with these technological interventions is the need for scientific validation to confirm their effectiveness relative to traditional treatment methods [40]. Additionally, many mental health apps are subscription-based, which can limit access; a study by Monash University revealed that 76% of participants would be interested in using their mobile devices for self-management and monitoring of mental health only if these services were free [41]. Privacy challenges also persist, as many apps inadequately protect sensitive user data, often sharing anonymized information with third parties, raising ethical concerns and jeopardizing user privacy. The extensive collection of personal data further exacerbates risks, especially when not managed according to privacy standards, ultimately undermining user trust in these digital mental health solutions [42].

**Student Mental Health**

Mental health issues significantly impact a student's ability to learn and succeed. Conditions such as depression and anxiety can lead to lower grades, difficulties in concentration, and even increased dropout rates [26]. A student's mental health is closely linked to their academic performance; when students are mentally healthy, they are more likely to be motivated, confident, and focused on learning. Research indicates that fifty percent of mental health problems begin in adolescence (around age 14), with three-quarters emerging by young adulthood (age 24) [27].

In the Philippines, the Department of Education reported a tragic loss of 404 students to suicide and 2,147 learners who attempted suicide in 2021. This alarming situation is exacerbated by a critical shortage of guidance counselors, with an astonishing ratio of only one counselor for every 13,394 students, highlighting the urgent need for increased mental health support in schools [28]. Furthermore, data from the Department of Education (DepEd) in 2023 reveals that suicidal ideation among young people has reached alarming levels, with 10 percent of students aged 13 to 17 having seriously contemplated suicide, as reported in a World Health Organization (WHO) survey conducted in the Philippines. This statistic underscores the pressing necessity for effective mental health interventions for the youth [29].

Cultural expectations in the Philippines often promote emotional resilience, discouraging individuals from expressing their feelings, particularly during difficult times. This societal norm can hinder students from openly discussing their mental health challenges, as mental illness is often stigmatized within many Filipino families [29]. Alarmingly, six out of ten Filipino youth who experienced suicidal thoughts never reached out for help. Among those who did, most confided in close friends or peers (25% of those with suicidal ideation), followed by parents or guardians (7%), and other family members (5%). Seeking professional help was rare, with only 4% of those who acted on their suicidal thoughts reaching out to mental health experts. Additionally, only one in ten young adults is aware of any suicide prevention program or service [30].

Currently, measures to monitor mental health within the country, particularly among children and adolescents, are insufficient [31]. To foster better mental well-being among students, schools must emphasize their strengths and implement programs that promote positive mental health. This includes educating students about mental health and providing resources to help them cope with challenges [32]. In the Philippines, school-based interventions typically involve mental health professionals, such as psychologists or counselors, offering specialized support and treatment to students who are either facing mental health issues or are at significant risk of developing them [33]. This calls for enhanced efforts to address these critical concerns and safeguard the mental well-being of Filipino students [34].

**Effectiveness of School-Based Mental Health Programs**

Mental health plays a critical role in the overall well-being of students, particularly during their formative years. With rising mental health issues among adolescents, schools are increasingly implementing school-based mental health programs aimed at providing necessary support and fostering a culture of resilience. Research shows that these programs can lead to improved academic performance and emotional regulation while addressing existing mental health concerns. This literature review will examine the effectiveness of various school-based mental health initiatives and their impact on student well-being and academic success.

Schools serve as an ideal environment for prevention, intervention, positive development, and ongoing communication between educational institutions and families. They foster supportive relationships and provide consistent interactions between students and staff, both in-person and online [43]. Research has demonstrated the importance of creating comprehensive school mental health programs that support students in their academic achievements and provide opportunities to develop social skills, leadership abilities, self-awareness, and meaningful relationships with adults in both their school and community [44]. Schools play a crucial role in enhancing students' mental health and well-being by implementing educational, preventive, and early intervention initiatives. They offer a platform to engage a significant number of young people with strategies designed to mitigate the effects of negative experiences and promote overall health and wellness [45].

In the Philippines, Sen. Win Gatchalian has introduced the Basic Education Mental Health and Well-Being Promotion Act, which aims to establish a School-Based Mental Health Program in public and private schools. This legislation seeks to create a "Care Center" in each school and a dedicated Mental Health and Well-Being Office in every Schools Division Office to promote students' mental health [46]. Teachers share a distinctive bond with young people and are often the first to notice when students are facing emotional challenges. It is crucial for them to understand how to support both their own mental health and that of their students to foster a nurturing learning environment [47].

When school leaders dedicate time and resources to support the mental health of their students, the entire school community reaps the rewards. Not only does this lead to a healthier and more engaged student body, but young individuals who receive adequate mental health support also experience enhanced academic performance, a higher likelihood of graduating, and increased chances of enrolling in and completing college successfully [48]. A review indicated that school-based mental health and well-being programs have significant potential to enhance students' well-being. Notably, these improvements are also linked to achieving better academic results when such programs are effectively implemented in low- and middle-income countries like the Philippines [49]. Schools serve as effective venues for early intervention due to their established systems for connecting with students. In particular, collaborative efforts that involve community partnerships enable schools to utilize shared resources to provide mental health support [50].

Schools play a crucial role in promoting mental health by implementing comprehensive programs that not only enhance academic performance but also foster social skills among students. When effectively executed, these school-based mental health initiatives can lead to healthier and more engaged student bodies, ultimately resulting in improved educational outcomes. Additionally, collaborative efforts with community partners are vital for maximizing available resources and support for mental health within educational settings.

In summary, literature and study review underscore the urgent need for comprehensive support systems for young people, which is a central focus of the proposed capstone project on a mental health monitoring app for junior high students. Mental health issues significantly affect academic performance, as highlighted by alarming statistics from the Philippine Department of Education, alongside a critical shortage of guidance counselors. While the rise of mental health apps offers potential solutions, challenges such as privacy concerns and accessibility present significant obstacles. Schools provide a unique opportunity for early intervention, employing educational and preventive measures to enhance students’ overall well-being and academic success. This capstone project aims to contribute to these efforts by developing a tool that empowers students to monitor their mental health, fostering collaboration with educators and families to establish a supportive environment that prioritizes mental wellness.

**Definition of Terms**

**Mental Health** – A state of emotional, psychological, and social well-being in which an individual can cope with the normal stresses of life, work productively, and contribute to their community. Mental health is crucial for students as it impacts their academic performance, social relationships, and overall development.

**Mental Health Monitoring** – The process of tracking and assessing an individual's emotional and psychological state over time. In the context of the *Kumusta Ka App*, it refers to the daily surveys and mood tracking features that allow students to self-monitor and track changes in their mental health.

**Wellness Journal** – A private, digital space within the app where students can reflect on their emotions, experiences, and thoughts related to their mental health. This feature provides students an opportunity to express themselves and gain insights into their emotional well-being.

**Mood Tracker** – A feature within the app that enables students to track and monitor their moods on a daily or periodic basis. The mood tracker helps students recognize emotional patterns and allows for better understanding and management of their mental health.

**Pre-Self-Assessment** Tool – A one-time assessment conducted after registration to measure the baseline mental health of students. This tool helps gather initial data to guide future monitoring and support.

**Interactive Quizzes** – Short, engaging quizzes included in the app that allow students to assess their knowledge of mental health topics, self-awareness, and coping strategies. The quizzes aim to educate students while also monitoring their mental well-being.

**Goal Setting** – A feature that allows students to set personal goals related to improving their mental health and well-being. Goals can include managing stress, improving mood, or practicing mindfulness, and students can track their progress over time.

**Guidance Counselor Dashboard** – A dedicated dashboard for guidance counselors, giving them access to detailed, aggregated analytics on student mental health trends. This tool allows counselors to track the emotional well-being of students, intervene when necessary, and create personalized intervention plans.

**Teacher Overview Access** – Teachers have access to aggregated data showing general trends and patterns in student mental health. This overview enables teachers to recognize class-wide mental health trends but does not provide access to individual students’ sensitive data.

**Communication Tool** – A feature that allows students to communicate directly with their teachers or guidance counselors within the app. It provides a secure, confidential space for students to express concerns or seek help.

**Resource Library** – A collection of educational materials, including videos, articles, and resources related to mental health topics such as mindfulness, relaxation techniques, stress management, and meditation. These resources are accessible to students to aid in self-care and mental well-being.

**Privacy and Consent Section** – A section of the app where students and guardians must provide consent for data collection and confirm understanding of the app’s privacy policies. This ensures that students' mental health data is handled with confidentiality and security.

**Emergency Contact Information** – A feature where students can list emergency contacts (e.g., parents, guardians, or a trusted person) to be used in case of urgent situations related to their mental health.

**Digital Phenotyping** – The use of digital tools, such as smartphones and apps, to collect real-time data on an individual’s behaviors, emotions, and mental states. This technique allows for continuous, objective tracking of mental health patterns, enhancing diagnosis and intervention.

**Data Analytics** – The process of using algorithms and statistical techniques to analyze and interpret data. In the *Kumusta Ka App*, data analytics is used to process mental health survey results and generate trends and insights, helping educators and guidance counselors to make informed decisions regarding student well-being.

**ISO 26514:2022 Compliance** – A set of international standards for the usability and documentation of software applications. The *Kumusta Ka App* will adhere to these standards to ensure that the system is user-friendly and that all documentation is clear, consistent, and accurate.

**CHAPTER 3**

**METHODOLOGY**

In this chapter, the methodologies used throughout the study are described together with the diagram presentation. Here are the following sections that will be discussed in this chapter: Requirements Analysis, Requirement Documentation, Design of Software, System Product and/or Process, Development and Testing and Implementation Plan.

**REQUIREMENTS ANALYSIS**

The purpose of this section is to analyze the requirements of the intended users of the *Kumusta Ka App* and understand the current processes used in mental health monitoring among junior high school students. This analysis will determine the necessary system functions to improve efficiency and effectiveness in addressing students’ mental health concerns.

**Information Requirements**

The information requirements are gathered based on the existing mental health monitoring processes within the school, identifying key individuals involved, activities performed, environmental factors, timing, and methods used.

**People Involved**

* **Students** – The primary users who will enter data into the system by answering daily mental health check-ins, journaling, and using wellness tools such as the mood tracker, self-assessments, and goal-setting features.
* **Guidance Counselors** – The main users of the analytics dashboard, responsible for reviewing mental health trends, identifying at-risk students, and creating intervention plans.
* **Teachers** – Have access to aggregated monitoring results and class-wide trends. They can also manage discussion posts and interact with students through the app.
* **School Administrators** – Oversee the implementation of the *Kumusta Ka App*, ensuring data privacy compliance and proper management of intervention protocols.
* **Parents/Guardians** – May be involved indirectly by receiving notifications or insights into the general well-being of students if permitted by privacy policies.

**Business Activity**

The *Kumusta Ka App* aims to streamline the mental health monitoring process in schools by providing a digital platform where students can record their emotional well-being, receive educational resources, and seek guidance. The system also enables educators and counselors to analyze mental health trends and implement timely interventions.

**Environment of Work**

The app will be accessible through mobile devices and web browsers, making it convenient for students to submit their responses and for counselors and teachers to monitor trends from their respective devices. The school’s existing IT infrastructure will support the deployment of the system, ensuring data security and compliance with institutional policies.

**Timing of Activities**

* **Daily** – Students complete self-check-ins, update their wellness journals, and use mood tracking features.
* **Weekly** – Teachers and counselors review aggregated data and trends.
* **Monthly** – Counselors analyze broader mental health trends and prepare intervention reports.
* **As Needed** – Students can reach out for help, complete self-assessments, or engage in discussions with peers and teachers.

**Current Procedures**

**Existing Process of Mental Health Monitoring**

Currently, schools primarily rely on traditional methods such as:

1. **Paper-based surveys** – Conducted periodically to assess student well-being, but results are not updated regularly.
2. **Guidance counselor referrals** – Teachers refer students to counselors based on classroom observations or behavioral concerns.
3. **Face-to-face counseling** – Limited due to high student-to-counselor ratios, causing delays in intervention.
4. **Generalized mental health programs** – Schools may implement general wellness programs, but they do not provide personalized tracking of student mental health.
5. **Teacher-student check-ins** – Informal discussions between students and teachers, but these lack systematic documentation.

**Issues in the Existing System**

The current manual process presents several challenges:

* **Delayed Detection** – Paper-based surveys and manual check-ins do not provide real-time monitoring.
* **Limited Accessibility** – Students may not feel comfortable discussing their concerns in person.
* **Data Inconsistency** – Lack of a standardized way to track individual and class-wide mental health trends.
* **Resource Constraints** – High student-to-counselor ratio makes it difficult to provide timely interventions.
* **Privacy Concerns** – No secure platform for students to express concerns privately.

### **Process Flow of the Existing System**

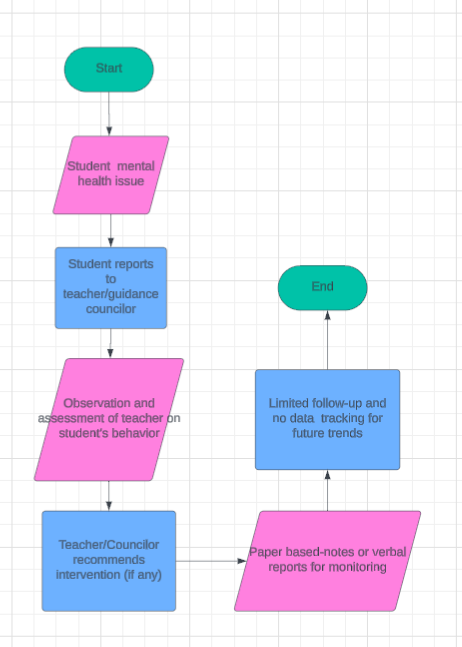
Below is a diagram illustrating the current mental health monitoring process:

Figure 1. Flowchart of existing mental health monitoring on schools

**Proposed System Improvements**

The *Kumusta Ka App* aims to address the challenges of the current system by implementing the following features:

1. **Daily Digital Check-ins** – Students can record their emotions and moods in real-time.
2. **Guidance Counselor Dashboard** – Provides aggregated insights and intervention tracking.
3. **Wellness Journal and Mood Tracker** – Helps students track emotional patterns.
4. **Interactive Quizzes and Resources** – Educates students on mental health topics.
5. **Privacy and Consent System** – Ensures secure handling of mental health data.
6. **Emergency Contact Information** – Allows students to reach out to trusted individuals in critical situations.
7. **Forum Feature** – Enables teachers to post discussion topics on mental health, and students can participate by commenting. This feature fosters open dialogue and peer support in a structured environment.

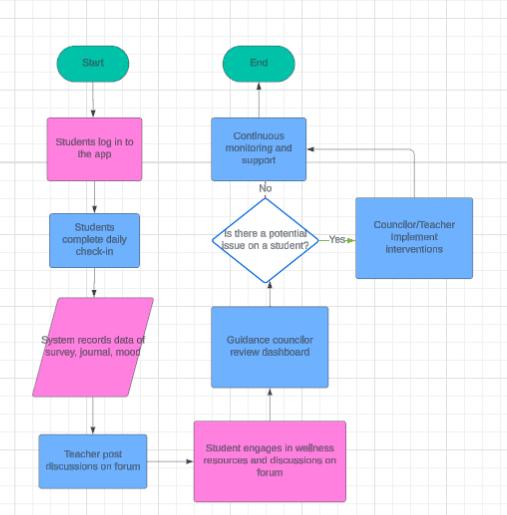
**Proposed System Flowchart**

Figure 1.1 Flow chart of the propose MH monitoring system.

The proposed system enhances accessibility, efficiency, and privacy while providing a structured approach to student mental health monitoring.

**REQUIREMENTS DOCUMENTATION**

1. **Project Overview**

This requirement documentation defines the foundation for the agreement between the developers and the client, outlining the features and functionalities of the proposed Mental Health Monitoring App for junior high school students. This app is designed to help monitor and support the mental health of students, while ensuring data privacy and accessibility for teachers and guidance counselors, with limited student information shared in an anonymized format. The app will have different modules for students, teachers, guidance counselors, and administrators.

1. **Software Features**

The system will be composed of several interconnected modules, each designed to perform specific functions aimed at achieving the project's goals. Below is a breakdown of the key features and modules in the system.

**2.1 Student Module**

• Daily Surveys - Students will fill out a daily mental health survey covering key areas like mood, anxiety, and stress. o Data from these surveys will be stored and aggregated for teacher and guidance counselor access.

• Personal Journaling - Students can write private journal entries to track their thoughts and feelings over time. These entries are confidential and cannot be accessed by teachers, counselors, or admins.

• Participation in Discussion Forums - Students can post or comment in discussion forums related to mental health topics. This fosters peer interaction and encourages open communication about mental well-being.

• Wellness Journal - Students will have access to a wellness journal with prompts and exercises to help manage stress and improve mental well-being.

• Meditation and Coping Resources - The app will provide guided meditation, breathing exercises, and coping strategies to help students manage stress and anxiety.

• Pre-Self-Assessment - Before accessing mental health resources, students will complete a self-assessment to identify their emotional state and appropriate coping strategies.

**2.2 Teacher Module**

• Access to Aggregated Data - Teachers will have access to anonymized, aggregated data derived from student surveys. They can monitor the overall mental health trends in their class without seeing individual students’ responses.

• Analytics and Reports - Teachers can generate reports to analyze mental health trends over time, identifying key issues that may need further attention.

• Forum Moderation - Teachers can manage student discussions, ensuring a safe space by deleting inappropriate content and fostering constructive conversations.

**2.3 Guidance Counselor Module**

• Access to Mental Health Analytics - Guidance counselors will have access to in-depth, aggregated mental health data to monitor trends and identify at-risk students.

• Digital Intervention Log - Counselors can log interventions, including one-on-one counseling sessions, student referrals, and action plans to support students needing mental health assistance.

• Review and Follow-Up - Counselors can review past interventions, schedule follow-ups, and ensure that students receive the necessary support.

• Manage Student Support Plans - Counselors can document strategies and progress notes for individual students who require continuous monitoring and intervention.

**2.4 Admin Module**

• User Management - Admins have full control over the user database. They can create, edit, or delete student, teacher, and counselor accounts.

• Full Data Access (Excluding Journals) - Admins can access system-wide data, including the ability to generate reports for school-wide analysis.

• System Settings - Admins can configure system settings, including privacy controls, data storage policies, and access permissions for teachers and counselors.

• Privacy Consent Management - The system will include a privacy consent module where students and their guardians can acknowledge data privacy terms before using the app.

1. **Functional Decomposition Diagram**

The system is divided into four major modules as described below:

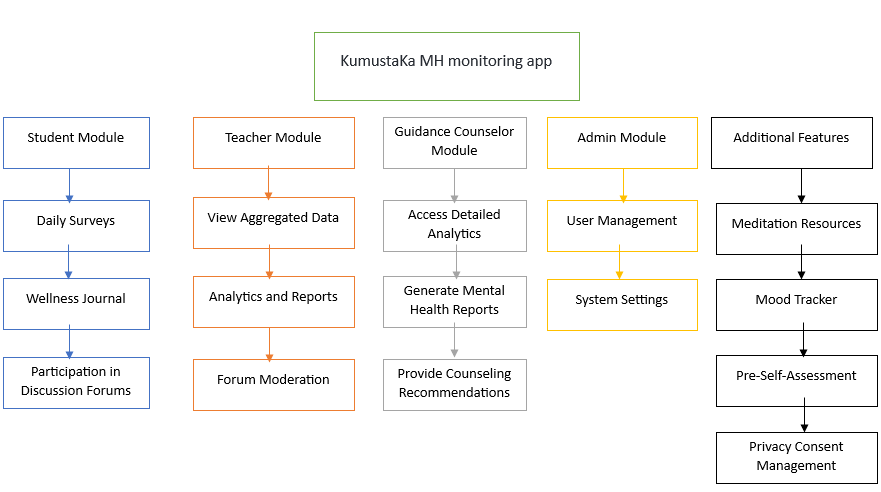


Figure 2. Functional Decomposition Diagram of KumustaKa App

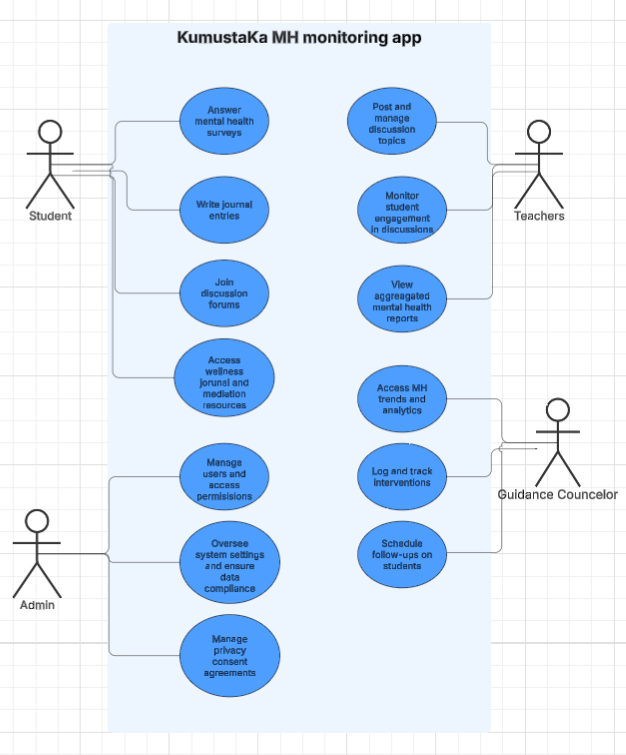
1. **Use Case Diagram**

Figure 3. Use Case Diagram of KumustaKa App

4.1 Actors in the System:

1. Student – Inputs daily mental health data, writes journal entries, and participates in discussions.
2. Teacher – Views aggregated student mental health reports and manages discussion posts.
3. Guidance Counselor – Reviews mental health trends, logs interventions, and follows up with students in need.
4. Admin – Manages user accounts, system settings, and data access control.

4.2 Use Cases:

• For Students:

* Answer mental health surveys
* Write journal entries o View personal mental health trends
* Join discussion forums
* Access wellness journal and meditation resources

• For Teachers:

* View aggregated mental health reports (without accessing student journals)
* Post and manage discussion topics
* Monitor student engagement in discussions

• For Guidance Counselors:

* Access mental health trends and analytics
* Log and track interventions o Manage and review student support plans
* Schedule follow-ups with students

• For Admins:

* Manage users and access permissions
* Oversee system settings and ensure data compliance
* Manage privacy consent agreements

1. **Functional Requirements by Module**

5.1 Student Module

• Survey Data Entry

* The system must allow students to input their mental health status daily through a series of questions.

• Journal Function

* Students must have the ability to write and save private journal entries within the app.

• Discussion Participation

* Students should be able to participate in moderated mental health-related discussions by posting comments and interacting with peers.

• Access to Wellness and Meditation Resources

- Students should have access to guided meditation, wellness exercises, and self-help materials.

5.2 Teacher Module

• Aggregated Data View

* The system will provide teachers access to anonymized, aggregated data in graphical form, showing class-wide trends.

• Report Generation

* Teachers must be able to generate and download reports that summarize student mental health trends over time.

• Forum Moderation

- Teachers must be able to monitor and moderate discussion posts to maintain a safe, supportive environment.

5.3 Guidance Counselor Module

• Intervention Logging

* The system must allow counselors to log student interventions and support actions.

• Student Follow-Ups

* Counselors should be able to review past interventions and schedule follow-ups.

• Support Plan Management

- The system must allow counselors to create and update student support plans.

5.4 Admin Module

• User Management

* Admins must be able to create, update, or delete user profiles.

• System Configuration

* Admins should be able to change system settings, including privacy and access control levels for teachers, students, and counselors.

• Privacy Consent

* The system must include a privacy consent module to ensure compliance with data protection policies.

1. **Non-Functional Requirements**

6.1 Performance

• The system must respond to user inputs (such as survey submissions or report generation) within 2 seconds.

• Data processing (e.g., generating aggregated reports) must occur in real-time.

6.2 Security

• All student data (survey answers, journal entries) must be encrypted at rest and during transmission.

• The app must comply with ISO 26514:2022 standards to ensure the privacy and confidentiality of user data.

• Anonymization of data must be enforced before presenting aggregated reports to teachers and counselors.

6.3 Usability

• The app must feature a simple, intuitive interface that can be navigated easily by users with varying levels of technical expertise.

• The user interface must be optimized for mobile, tablet, and desktop devices.

6.4 Scalability

• The system must be able to handle an increasing number of users as more schools and students adopt the app.

**DESIGN OF SOFTWARE, SYSTEMS, PRODUCT, AND/OR PROCESS**

**System Design Approach**

The design of the Kumusta Ka App follows a structured approach aligned with ISO 26514:2022 standards to ensure usability, accessibility, and security in mental health monitoring. The system is web-based and adopts a modular design, allowing seamless interaction between students, teachers, guidance counselors, and administrators while maintaining data privacy and compliance with ethical standards.

**Conceptual Framework**

The conceptual framework of the system is based on input-process-output (IPO) methodology, which ensures a structured flow of information from data collection to meaningful analysis.

* **Input:**
  + Student responses from daily mental health surveys
  + Journal entries (private and confidential)
  + Participation in discussion forums
  + Guidance counselor intervention logs
* **Process:**
  + Aggregation and anonymization of student data for teacher access
  + Mental health trend analysis for guidance counselors
  + Data encryption and security measures
  + Report generation for teachers and administrators
* **Output:**
  + Graphical representations of mental health trends
  + Summary reports for teachers and administrators
  + Intervention tracking logs for guidance counselors
  + Secure journaling and discussion forums for students

**System Architecture**

The KumustaKa App follows a three-tier architecture, ensuring scalability, security, and efficiency in data processing and access control.

1. **Presentation Layer (Frontend):**
   * User-friendly web interface developed using ReactJS
   * Responsive design for mobile and desktop access
   * Secure authentication system
2. **Application Layer (Backend):**
   * Node.js with Express.js handling API requests
   * Role-based access control to ensure data privacy
   * Data processing and aggregation for analytics
3. **Data Layer (Database):**
   * PostgreSQL database for structured data storage
   * Encryption of sensitive data (journals, survey responses)
   * Backup and recovery mechanisms

**System Modules and Features**

**1. Student Module**

* Daily mental health surveys
* Personal journaling (private and confidential)
* Participation in discussion forums

**2. Teacher Module**

* Access to aggregated mental health data
* Mental health analytics and reports
* Forum moderation

**3. Guidance Counselor Module**

* Access to detailed mental health trends (non-anonymized for intervention purposes)
* Intervention logs to track student progress
* Personalized student recommendations for mental health support
* Collaboration with teachers on classroom well-being strategies

**4. Admin Module**

* User account management
* System configuration and privacy settings
* Compliance monitoring with data security standards

**Standards Compliance**

The system design follows ISO 26514:2022 standards, ensuring:

* User-friendly interface for different roles
* Data privacy and protection (encryption, anonymization)
* Accessibility and usability for all stakeholders

**DEVELOPMENT AND TESTING**

**Development Procedure**

The Agile Development Methodology will be used in the development of the mental health monitoring app. Agile was chosen due to its iterative, flexible nature, allowing for continuous user feedback and adjustments. The app aims to meet the dynamic needs of students, teachers, and administrators, while ensuring compliance with standards like ISO 26514:2022. Agile's emphasis on collaboration, adaptability, and incremental progress aligns with the project’s need for ongoing refinement and testing.

**Agile Phases**

1. **Requirement Gathering & Planning:**
   * Conduct initial interviews with stakeholders (teachers, school administrators, and students) to gather detailed requirements. Identify core features such as student self-monitoring, teacher-accessible statistics, and privacy safeguards. Create user stories to outline the app’s functionality.
2. **Design:**
   * Develop wireframes and UI/UX mockups for each app interface, including the student journal, teacher dashboards, and admin views. Focus on a user-friendly interface with accessibility in mind. Create a technical design document outlining the system architecture, database schema, and API endpoints.
3. **Development (Sprint Cycles):**
   * Begin coding core modules in short, iterative sprints. Implement the student journal and daily monitoring features, the teacher dashboard for aggregated stats, and the admin panel for user and content management. Backend services will be developed using Node.js, with front-end components in ReactJS.
4. **Testing:**
   * During each sprint, conduct unit tests and functional testing. After every iteration, a complete system integration test will be performed to ensure the modules work well together. Collaborate with stakeholders for user acceptance testing (UAT) to validate each completed feature.
5. **Deployment:**
   * Prepare for deployment by setting up the production environment. Deploy the app to a secure hosting platform and configure it to handle real-time data. Train teachers and admins on how to navigate and use the app effectively.
6. **Maintenance & Feedback Loop:**
   * Post-deployment, monitor app performance and collect feedback from end-users. Any issues or new requirements will be added to future sprints for iterative improvements and bug fixes.

This methodology will ensure that the app remains user-centric and adaptable, with room for modifications based on real-world testing and feedback from the school environment.

**Testing Procedure**

The testing of the proposed mental health monitoring app will be conducted using a structured approach to ensure that all functionalities work as intended, meet user needs, and align with the project requirements. The testing procedure will focus on the core areas of the system and will involve both developers and end-users (students, teachers, and administrators). Multiple phases of testing will be conducted to address different aspects of system functionality, performance, and user satisfaction.

**Areas/Modules to be Tested:**

1. Student Module

* Survey Data Entry – Ensure students can complete and submit daily surveys.
* Journal Functionality – Verify that students can write, save, and retrieve personal journal entries.
* Discussion Participation – Test the ability to post and comment in discussion forums.

2. Teacher Module

* Aggregated Data View – Confirm that teachers can only see anonymized student data.
* Report Generation – Check if teachers can generate and download reports correctly.
* Forum Moderation – Ensure teachers can manage discussion posts (edit, delete inappropriate content).

3. Guidance Counselor Module

* Access to Detailed Analytics – Validate that guidance counselors can access and interpret student mental health trends.
* Report Generation – Ensure accurate reports are generated based on student survey data.
* Intervention Log Management – Test logging, updating, and retrieving intervention records.
* Counseling Recommendations – Verify that recommendations can be added and accessed properly.

4. Admin Module

* User Management – Ensure admins can add, edit, and delete users.
* System Configuration – Validate that admins can modify settings, privacy controls, and permissions.
* Full Data Access (Excluding Journals) – Confirm that system-wide analytics are accessible while protecting student journal privacy.

5. Additional Features

* Meditation Resources – Ensure students can access guided meditation content.
* Mood Tracker – Test if students can log and visualize their mood trends.
* Wellness Journal – Validate that the wellness journal functions properly.
* Pre-Self-Assessment – Ensure that students can complete and review their self-assessments.
* Privacy Consent Management – Check compliance with data privacy policies.

6. Backend Services:

* + - Data Storage and Security: Test the system's ability to securely store and retrieve data.
    - API Communication: Ensure smooth communication between frontend and backend.

**Who Will Test the System:**

1. **Development Team**:
   * The development team will conduct unit testing to verify that individual components (e.g., journal entry module, statistics dashboard) function correctly. They will also perform integration testing to ensure all modules work together seamlessly.
2. **User Group**:
   * **Participants**: A sample of 15 users will be selected to test the system, including:
     + 15 students from junior high school
     + 2 teachers who will have access to aggregated data and post moderation features
     + 1 guidance councilor for the data analytics and intervention logs
     + 2 school administrators responsible for managing the platform
   * **Testing Focus**: User acceptance testing (UAT) will be conducted to gather feedback on functionality, usability, and overall satisfaction

**Evaluation Instrument:**

A survey questionnaire will be designed to gather feedback from the users after testing. The questionnaire will evaluate key aspects such as:

* Usability
* Accuracy of Data
* Security and Privacy
* User Satisfaction
* System Performance

The Likert scale (ranging from 1 to 5, where 1 is "Strongly Disagree" and 5 is "Strongly Agree") will be used to quantify user responses.

**Statistical Measuring Tools:**

To evaluate the effectiveness and performance of the app, the following statistical tools will be used:

1. **Descriptive Statistics**:
   * Mean, median, mode, and standard deviation will be calculated to summarize the user satisfaction and system performance ratings.
2. **T-Test**:
   * A t-test will be used to compare the average satisfaction scores between students, teachers, and administrators to determine if there are any significant differences in how each group perceives the system.
3. **Percentage Agreement**:
   * The percentage of users who rate each aspect of the system (e.g., usability, security) as satisfactory will be calculated to assess overall system performance.

By using these tools, the evaluation of the mental health monitoring app will be comprehensive, ensuring that all areas of the system are functioning properly and meeting user needs.

**IMPLEMENTATION PLAN**

The implementation plan outlines how the mental health monitoring app will be deployed, configured, and transitioned into a fully operational system. Since the app is web-based and hosted on a cloud platform, deployment efforts focus on setting up the cloud infrastructure, user access management, and ensuring seamless integration with school systems.

**Overview of the System**

The mental health monitoring app is designed to track and support the mental well-being of students through self-reported surveys and teacher-accessible statistics. The app is cloud-based, accessible through any web browser, and includes distinct roles for students, teachers, guidance counselors, and administrators. It supports students in tracking their mental health daily, allows teachers to monitor aggregated data trends, enables guidance counselors to access detailed mental health analytics and manage intervention logs, and provides administrators with oversight and system management capabilities.

**Major Tasks for Implementation**

1. **Cloud Environment Setup**:
   * Configure the cloud platform to host the application (e.g., AWS, Google Cloud, or Azure).
   * Set up the database system to store user data, survey results, and statistical reports.
   * Ensure proper security protocols are implemented, including HTTPS, SSL certificates, and data encryption.
2. **Application Configuration**:
   * Customize user roles and permissions for students, teachers, guidance councilors, and administrators.
   * Configure notifications and reminders for students to complete surveys and for teachers to monitor key statistics.
   * Set up data dashboards for administrators, teachers, and guidance councilors to view mental health trends and aggregated data insights.
3. **User Account Setup and Training**:
   * Schools will be provided access to the platform where they can register students, teachers, guidance councilors, and administrators.
   * Training materials, including user guides and online tutorials, will be provided to ensure all users understand the platform.
   * IT personnel will assist in ensuring secure and smooth access to the system through their web browsers.
4. **Testing and Debugging**:
   * Conduct testing on the deployed system, including load testing to ensure the platform can handle multiple users simultaneously.
   * Test for compatibility across different browsers and devices (e.g., mobile phones, tablets).
   * Address any identified bugs or issues before the full launch.
5. **Pilot Launch**:
   * Conduct a pilot launch in select schools to monitor the system’s real-world performance.
   * Collect feedback from users, including students, teachers, guidance councilors, and administrators, to fine-tune the system.
6. **Full Rollout**:
   * Deploy the system across all participating schools after successful completion of the pilot phase.
   * Monitor the system post-launch for any additional technical support needs or updates.

**Resources Needed**

1. **Hardware**: No hardware is required at the school level since the system is fully cloud-hosted. Schools will need reliable internet connections and devices (e.g., computers, tablets) for users to access the platform.
2. **Software**: Cloud hosting services (AWS, Google Cloud, or Azure), web server software, database management systems, and browser access will be required.
3. **Personnel**:
   * **Development Team**: Responsible for configuring the cloud environment, customizing the platform, and providing technical support.
   * **School IT Personnel**: To assist with initial user account setup and troubleshoot access issues for users.
   * **Trainers**: To create and deliver training materials and assist in onboarding users.
4. **Facilities**: No additional physical facilities are required for the system implementation as it is web-based.
5. **Materials**: User manuals, training guides, and online resources to assist teachers, students, guidance councilors, and administrators with navigating the platform.

**Site-Specific Requirements**

Each school should have the following:

* Reliable internet access to ensure smooth interaction with the platform.
* Basic devices (computers, tablets, smartphones) for students, teachers, guidance councilors, and administrators to access the system.
* An IT department or personnel responsible for troubleshooting basic user access issues.

| **Task** | **Description** | **Responsible Personnel** | **Timeframe** |
| --- | --- | --- | --- |
| Cloud Environment Setup | Configure the cloud server, database, and security. | Development Team | 2 weeks |
| Application Configuration | Set up user roles, permissions, and notifications. | Development Team | 1 week |
| User Account Setup & Training | Create user accounts, provide training materials. | School IT & Trainers | 1 week |
| Testing and Debugging | Test the platform across browsers, fix any issues. | Development Team | 1-2 weeks |
| Pilot Launch | Deploy pilot in select schools and gather feedback. | Development Team & School IT | 2 weeks |
| Full Rollout | Deploy the system across all participating schools. | Development Team & School IT | 1-2 weeks |

Table 1. Implementation Plan for the Mental Health Monitoring App.

**References:**

[1] M. A. B. Chavez and A. C. Marasigan (2020), "Mental health issues among selected junior high school students in a selected sectarian school," IOER International Multidisciplinary Research Journal, vol. 2, no. 4, pp. 1-12, Dec. 2020. Available: <https://orcid.org/0000-0003-0121-12241>.  
[2] ZHANG, Y., JIN, J., & YU, G. (2022). Prevalence of mental health problems among junior high school students in Chinese mainland from 2010 to 2020: A meta-analysis. Advances in Psychological Science, 30(5), 965-977.   
[3] Caayaman, E. T., Gomez, J. A. L., Cahigao, C. C., & Acosta, R. B. (2023, July). Societal factors affecting the mental health of junior high school students. International Journal of Academic Multidisciplinary Research (IJAMR), 7(7), 24-28.  
[4] O'Toole, C. (2023). The role of teachers in supporting students' mental health. Teachers and Curriculum, 23(1), 89-99. doi: 10.15663/tandc.v23i1.428  
[5] Watson, K. J. (2024). Secondary teachers’ perceived ability to support student mental health. Educational Research: Theory and Practice, 35(1), 233-247.  
[6] Dey, M., Marti, L., & Jorm, A. F. (2022). Teachers’ experiences with and helping behaviour towards students with mental health problems. International Education Studies, 15(5), 118-129. doi: 10.5539/ies.v15n5p118  
[7] Y. Liang, X. Zheng, and D. D. Zeng (2019). "A survey on big data-driven digital phenotyping of mental health," Information Fusion, vol. 52, pp. 290-307, Dec. 2019, doi: 10.1016/j.inffus.2019.04.001.  
[8] J. Schroeder, J. Suh, C. Wilkes, M. Czerwinski, S. A. Munson, J. Fogarty, and T. Althoff (2021). Data-Driven Implications for Translating Evidence-Based Psychotherapies into Technology-Delivered Interventions,   
in Proceedings of the 14th EAI International Conference on Pervasive Computing Technologies for Healthcare, PervasiveHealth     
'20, pp. 274-287, 2021, doi: 10.1145/3421937.3421975.  
[9] J. Kim, L. M. D. Aryee, H. Bang, S. Prajogo, Y. K. Choi, J. S. Hoch, and E. L. Prado (2023). "Effectiveness of Digital Mental Health Tools to Reduce Depressive and Anxiety Symptoms in Low- and Middle-Income Countries: Systematic Review and Meta-analysis,"     
Journal of Medical Internet Research, vol. 10, 2023, doi: 10.2196/43066.  
[10] N. A. Martin-Key, T. S. Schei, E. J. Barker, B. Spadaro, E. Funnell, J. Benacek, J. Tomasik, and S. Bahn (2021). "The Current State and Diagnostic Accuracy of Digital Mental Health Assessment Tools for Psychiatric Disorders: Protocol for a Systematic Review and Meta-analysis," Journal     
of Medical Internet Research, vol. 10, no. 1, Jan. 2021, doi: 10.2196/25382  
[11] J. Meyerhoff, R. Kornfield, D. C. Mohr, and M. Reddy (2022). "Meeting Young Adults' Social Support Needs across the Health Behavior Change Journey: Implications for Digital Mental Health Tools," in Proceedings of the ACM on Human-Computer Interaction, vol. 6, no. CSCW2, Article No. 312, pp. 1-33, Nov. 2022, doi: 10.1145/3555203.  
[12] L. Balcombe and D. De Leo (2021). "Digital Mental Health Challenges and the Horizon Ahead for Solutions," JMIR Mental Health, vol. 8, no. 3,     
2021, doi: 10.2196/26811.  
[13] Bharadwaj, P., Pai, M. M., & Suziedelyte, A. (2015). Mental Health Stigma (Working Paper No. 21240). National Bureau of Economic Research. Retrieved from <https://www.nber.org/system/files/working_papers/w31729/w31729.pdf>  
[14] R. A. Vidourek and M. Burbage (2019), "Positive mental health and mental health stigma: A qualitative study assessing student attitudes," Mental Health and Prevention., vol. 13, pp. 1-6, Mar. 2019, doi: 10.1016/j.mhp.2018.11.006.  
[15] K. A. Patte, K. Battista, J. Goddard, J. Ferro, and S. T. Leatherdale (2023). "Students' reasons for being reluctant to seek help for mental health concerns in secondary schools," \*\*Cogent Ment. Health\*\*, vol. 3, no. 1, p. 1, 2024, doi: 10.1080/28324765.2023.2298918  
[16] L. Crumb, T. M. Mingo, and A. Crowe (2019). "'Get over it and move on': The impact of mental illness stigma in rural, low-income United States populations," Ment. Health Prev., vol. 13, pp. 143-148, 2019, doi: 10.1016/j.mhp.2019.01.010.  
[17] P. W. C. Wong, G. Arat, M. R. Ambrose, K. X. Qiuyuan, M. Borschel, and M. Qian (2019). "Evaluation of a mental health course for stigma reduction: A pilot study," Cogent Psychol., vol. 6, no. 1, 2019, doi: 10.1080/23311908.2019.1595877.  
[18] J. A. Naslund and D. Deng (2021). "Addressing mental health stigma in low-income and middle-income countries: A new frontier for digital mental health," Ethics Med. Public Health, vol. 19, no. 100719, pp. 1-9, 2021, doi: 10.1016/j.jemep.2021.100719.   
[19] J. A. Naslund, K. A. Aschbrenner, R. Araya, L. A. Marsch, J. Unützer, V. Patel, and S. J. Bartels (2017). "Digital technology for treating and preventing mental disorders in low-income and middle-income countries: A narrative review of the literature," Lancet Psychiatry, vol. 4, no. 6, pp. 486-500, 2017, doi: 10.1016/S2215-0366(17)30096-2.  
[20] S. Bucci, M. Schwannauer, and N. Berry (2019). "The digital revolution and its impact on mental health care," J. Pers. Assess., vol. 92, no. 2, pp. 161-170, Jun. 2019, doi: 10.1111/papt.12222.  
[21] D. Bakker, N. Kazantzis, D. Rickwood, and N. Rickard (2018). "A randomized controlled trial of three smartphone apps for enhancing public mental health," Behav. Res. Ther., vol. 109, pp. 75-83, 2018, doi: 10.1016/j.brat.2018.08.003.  
[22] S. Lehtimaki, J. Martic, B. Wahl, K. T. Foster, and N. Schwalbe (2021). "Evidence on Digital Mental Health Interventions for Adolescents and Young People: Systematic Overview," JMIR Ment. Health, vol. 8, no. 4, e25847, 2021, doi: 10.2196/25847.  
[23] S. P. Chen, W. P. Chang, and H. Stuart (2020). "Self-reflection and screening mental health on Canadian campuses: Validation of the mental health continuum model," BMC Psychol., vol. 8, no. 76, 2020, doi: 10.1186/s40359-020-00446-w.   
[24] R. B. Jones, P. Stallard, S. S. Agha, S. Rice, A. Werner-Seidler, K. Stasiak, J. Kahn, S. A. Simpson, M. Alvarez-Jimenez, F. Rice, R. Evans, and S. Merry (2020). "Practitioner review: Co-design of digital mental health technologies with children and young people," J. Child Psychol. Psychiatry, vol. 61, no. 8, pp. 928-940, Aug. 2020, doi: 10.1111/jcpp.13258.  
[25] M. Wright, F. Reitegger, H. Cela, et al. (2023). "Interventions with Digital Tools for Mental Health Promotion among 11–18 Year Olds: A Systematic Review and Meta-Analysis," J. Youth Adolesc., vol. 52, pp. 754–779, 2023, doi: 10.1007/s10964-023-01735-4.  
[26] "Consequences of Student Mental Health Issues", Suicide Prevention Resource Center, <https://sprc.org/settings/colleges-and-universities/consequences-of-student-mental-health-issues/>, [Accessed: Oct. 09, 2024].  
[27] A. Marshall-Sesslar (2023). "Why is Mental Health Important for Students: Overview (2023)", McMillen Health, <https://www.mcmillenhealth.org/tamtalks/student-mental-health>, [Accessed: Oct. 09, 2024].  
[28] S. Torres (2023). "Number of students suffering from mental health issues growing", ABS-CBN news, <https://news.abs-cbn.com/spotlight/01/31/23/number-of-students-suffering-from-mental-health-issues-growing>, [Accessed: Oct. 09, 2024].  
[29] R. Villa (2024). "Mental health in schools: A growing concern for Filipino youth", The Manila Times, <https://www.manilatimes.net/2024/10/03/opinion/columns/mental-health-in-schools-a-growing-concern-for-filipino-youth/1978092>, [Accessed: Oct. 09, 2024].  
[30] "Pinoy youth in worse mental shape today, nationwide survey indicates", University of the Philippines Population Institute, <https://www.uppi.upd.edu.ph/news/2022/pinoy-youth-in-worse-mental-health-shape-today>, [Accessed: Oct. 09, 2024].  
[31] "Mental Health and Psychosocial Well-being", Situation of Children Philippines, <https://situationofchildren.org/child-rights-dimensions/survive-and-thrive/mental-health-and-psychosocial-well-being>, [Accessed: Oct. 09, 2024].  
[32] JV. Embalsado(2024). "Locus-of-Hope Intervention in School: A Localized Strength-Based Mental Health Promotion Program", Young Research Editorial, <https://www.ssph-journal.org/journals/international-journal-of-public-health/articles/10.3389/ijph.2024.1607010/full>, [Accessed: Oct 09, 2024].  
[33] J. Babate (2023). "Increase public school funding for mental health services", Inquirer.net, <https://opinion.inquirer.net/162363/increase-public-school-funding-for-mental-health-services>, [Accessed: Oct. 09, 2024].  
[34] "Training Programs for Effective Mental Health Support in Philippine Schools", My Private Tutor, <https://www.myprivatetutor.com.ph/blog/training-programs-for-effective-mental-health-support-in-philippine-schools>, [Accessed: Oct. 09, 2024].  
[35] "Beneftis and Risks of Apps", APA Practice Organization, <https://www.apaservices.org/practice/good-practice/mobile-behavioral-apps.pdf>, [Accessed: Oct. 11, 2024].  
[35] K. Slay (2021). "Five Benefits of Mobile Health Apps for Protecting Mental Health", Health Tech Zone, <https://www.healthtechzone.com/topics/healthcare/articles/2021/11/24/450730-five-benefits-mobile-health-apps-protecting-mental-health.htm>, [Accessed: Oct. 11, 2024].  
[36] Muteki Group (2024). "Mental Health App Development: Essential Features, Benefits and Cost", LinkedIn, <https://www.linkedin.com/pulse/mental-health-app-development-essential-features-benefits-idnff/>, [Accessed: Oct. 11, 2024].  
[37]. A Braun, E. Cronkleton (2024). The Best Mental Health Apps to Use in 2024", Healthline, <https://www.healthline.com/health/mental-health/mental-health-apps#1>, [Accessed: Oct. 11, 2024].  
[38] L. Wylie (2024). "Wellness App Revenue and Usage Statistics (2024)", Business of Apps, <https://www.businessofapps.com/data/wellness-app-market/>, [Accessed: Oct. 11, 2024].  
[39] L. Dorwart, A. Tust (2024). "The Best Mental Health Apps, Tried and Tested in 2024", Verywell Mind, <https://www.verywellmind.com/best-mental-health-apps-4692902>, [Accessed: Oct. 11, 2024].  
[40] "The Pros and Cons of Mental Health Care Apps", Delaware Psychological Services, <https://www.delawarepsychologicalservices.com/post/2020/01/23/the-pros-and-cons-of-mental-health-care-apps>, [Accessed: Oct. 11, 2024].  
[41] "Pros and Cons of Mental Health Apps", Transformations Care Network, <https://www.transformationsnetwork.com/post/pros-and-cons-of-mental-health-apps>, [Accessed: Oct. 11, 2024].  
[42] Zee (2024). "The Pros And Cons Of Mental Health Apps", TechRound, <https://techround.co.uk/other/pros-cons-mental-health-apps/>, [Accessed: Oct. 11, 2024].  
[43] National Association of School Psychologists. (2021). "Comprehensive School-Based Mental and Behavioral Health Services and School Psychologists", <https://www.nasponline.org/resources-and-publications/resources-and-podcasts/mental-and-behavioral-health/additional-resources/comprehensive-school-based-mental-and-behavioral-health-services-and-school-psychologists>, [Accessed: Oct. 11, 2024].  
[44] "School Based Mental Health", Youth.gov, <https://youth.gov/youth-topics/youth-mental-health/school-based>, [Accessed: Oct. 11, 2024].  
[45] "Promoting Mental Health and Well-Being in Schools", Centers for Disease Control and Prevention, <https://www.cdc.gov/healthyyouth/mental-health-action-guide/index.html>, [Accessed: Oct. 11, 2024].  
[46] "School-based mental health program", Senate of the Philippines, <https://legacy.senate.gov.ph/photo_release/2024/0904_04.asp>, [Accessed: Oct. 11, 2024].  
[47] C. Nunez. "Mental Health Awareness in Schools". Rotary District 3810, <https://robertkoa.rotary3810.org/mental-health-awareness-in-schools/>, [Accessed: Oct. 11, 2024].  
[48] "Mental Health and Academic Achievement", NH.GOV, <https://www.education.nh.gov/sites/g/files/ehbemt326/files/inline-documents/mental_health_and_academic_achievement.pdf>, [Accessed: Oct. 11, 2024].  
[49] "Identifying effective school-based mental health and wellbeing programs" (2023), ACER Discover, <https://www.acer.org/ae/discover/article/identifying-effective-school-based-mental-health-and-wellbeing-programs>, [Accessed: Oct. 11, 2024].  
[50] A. Haight, R. Gokiert, J. Daniels (2023). "A collaborative, school-based wraparound support intervention for fostering children and youth's mental health", Frontiers, <https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2023.1289408/full>, [Accessed: Oct. 11, 2023].