

Empowering Student Well-Being: A Holistic Approach through an Online Social Platform and Mental Health Tracking System at NEUST

Almer D. Bondoc¹

¹College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Angelo Julius G. Taruc²

²College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Jefferson L. Diaz³

³College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Joshua M. Ulic-ulic⁴

⁴College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Jodell R. Bulaclac⁵

⁵College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Emilsa T. Bantug⁶

⁶College of Information and Communication Technology,
Nueva Ecija University of Science and Technology,
Cabanatuan City, Nueva Ecija, Philippines - 3100

Abstract:- The study conducted at Nueva Ecija University of Science and Technology (NEUST) explores the development and evaluation of an Online Social Platform and Mental Health Tracking System, known as HeadSpace, to enhance students' mental health and social connectedness. By integrating interactive social features with sophisticated mental health tracking tools, the platform aims to provide a comprehensive solution for addressing the evolving needs of students in the academic community. Through a user-centered approach and iterative methodology, the platform offers forums, interest-based groups, real-time messaging, self-assessment tools, mood tracking, and access to mental health resources. The study emphasizes the importance of social support in promoting well-being and academic success, aligning with NEUST's commitment to student welfare. By leveraging technology to empower students, foster meaningful connections, and reduce stigma surrounding mental health, the Online Social Platform and Mental Health Tracking System demonstrate the potential for digital platforms to positively impact student well-being in higher education settings.

Keywords:- HeadSpace; Mental Health Tracking System; Online Social Platform; Student Well-Being; User-Centered Design.

I. INTRODUCTION

Mental health and social connectedness are pivotal aspects of students' well-being and academic prosperity. The challenges inherent in academia, compounded by personal struggles and feelings of social isolation, underscore the necessity for robust support systems within educational

institutions (Smith, 2019). Recognizing these challenges, this study endeavors to explore avenues for enhancing student well-being through innovative means, particularly tailored for the dynamic community at Nueva Ecija University of Science and Technology (NEUST).

Extensive research consistently underscores the critical role of social support and community engagement in mitigating stress and combating feelings of depression among students grappling with the rigors of academic life (Jones & Smith, 2020). While traditional offline support structures have proven valuable, they may not always be readily accessible or fully equipped to address the diverse and evolving needs of contemporary students. Thus, there exists a growing demand for cutting-edge digital platforms that can function as virtual sanctuaries, facilitating connections, sharing experiences, and providing essential mental health resources (Brown, 2018).

This study aims to address these needs by developing an Online Social Platform and Mental Health Tracking System uniquely tailored to the NEUST community. Through integrating interactive social features with sophisticated mental health tracking tools, this endeavor seeks to craft a comprehensive solution that enriches the social fabric of NEUST while serving as a beacon of mental health awareness and support within the academic sphere. The platform encompasses various features, including forums, interest-based groups, and real-time messaging, fostering social interactions within the university community. Additionally, the Mental Health Tracking System embedded within the platform empowers users to monitor and manage their mental well-being through self-assessment tools, mood tracking, and access to mental health resources.

Amidst the unprecedented disruptions caused by the COVID-19 pandemic, there has been a heightened demand for online learning platforms and monitoring tools, necessitating innovative solutions to address emerging challenges related to student mental well-being (Smith, 2019; Johnson & Lee, 2020; Kang et al., 2021; Zhang et al., 2021). The NEUST Online Social Platform and Mental Health Tracking System, aligned with the institution's Citizens' Charter, responds to these challenges by leveraging technology to promote effective communication, collaboration, and mental health assessment (Smith, 2019). This initiative supports the broader objective of enhancing mental well-being and resiliency among students, a critical aspect of higher education's mission to equip learners for personal growth and success in a constantly evolving global landscape (Smith, 2020).

This study endeavors to exemplify an innovative approach to addressing the evolving needs of NEUST students through the Online Social Platform and Mental Health Tracking System. By providing a comprehensive and accessible solution that integrates social support and mental health tracking, this initiative strives to empower students to excel academically and personally.

II. METHODOLOGY

The development of the Online Social Platform and Mental Health Tracking System at Nueva Ecija University of Science and Technology (NEUST) followed a carefully structured and iterative methodology to ensure the successful implementation of the project. The methodology encompassed various stages, including the initial study, design, development, testing, deployment, and operation, in alignment with the Agile-Database Life Cycle framework (TechTarget, 2023).

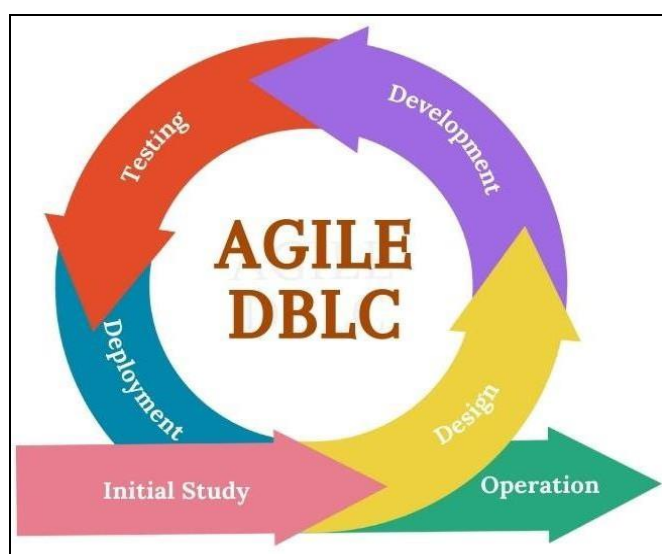


Fig 1 Agile – DBLC Framework

The initial study phase involved comprehensive research and analysis to understand the specific needs and challenges faced by NEUST students in terms of mental health and social connectedness. This phase laid the foundation for the design process, where the key features and functionalities of the

Online Social Platform and Mental Health Tracking System were conceptualized and outlined based on user requirements and feedback gathered through surveys and interviews.

Subsequently, the development phase focused on translating the design concepts into a functional and user-friendly platform. This involved the implementation of interactive social features, mental health tracking tools, and security measures to ensure a safe and supportive online environment for NEUST students. Throughout the development process, continuous feedback loops were established to incorporate user input and refine the system iteratively.

Following the development phase, rigorous testing procedures were conducted to evaluate the performance, functionality, and usability of the Online Social Platform and Mental Health Tracking System. This testing phase aimed to identify and address any potential issues or bugs before the system was deployed for operational use within the university community.

Upon successful completion of testing, the deployment phase involved the implementation and integration of the system within NEUST's existing infrastructure. This phase also included user training and onboarding to ensure a seamless transition to the new platform. Finally, the operation phase focused on monitoring the system's performance, gathering user feedback, and making continuous improvements to enhance the overall user experience.

The research design adopted for this study was developmental in nature, emphasizing the iterative and user-centered approach to system development. By engaging stakeholders, conducting surveys, and incorporating feedback at each stage of the process, the research design facilitated the creation of a tailored and effective Online Social Platform and Mental Health Tracking System for NEUST students (Richey, 1994).

III. RESULTS AND DISCUSSION

The development and evaluation of the Online Social Platform and Mental Health Tracking System, referred to as "HeadSpace", at Nueva Ecija University of Science and Technology (NEUST) yielded significant insights into addressing mental health challenges among students. This combined section provides a comprehensive analysis of the findings, incorporating both the results obtained and the ensuing discussion regarding their implications, limitations, and future directions.

A. Evaluation of Existing System: Sharing of thoughts and Emotions of the Students

A critical aspect of mental health support systems is their ability to facilitate the sharing of thoughts and emotions among users. The comparison between the existing system "MoodFit" and "HeadSpace" revealed fundamental differences in their approaches in terms of key features, counseling features and maintainability aspects as shown in table 1 to table 3.

Table 1 Comparison of Features between Moodfit and Headspace

Feature	MoodFit	HeadSpace
Description	Designed for tracking and managing moods and emotional well-being.	Offers social networking features for extensive expression and support within a comprehensive environment.
Functionality	Mood journaling, self-assessment tools, mood-tracking charts.	Forums, interest-based groups, real-time messaging.
Emphasis	Self-assessment of moods.	Integration of social support networks.

Table 2 Evaluation of Counseling Features

Feature	MoodFit	HeadSpace
Description	Designed for tracking and managing moods and emotional well-being.	Offers direct access to mental health professionals and on-campus counseling services.
Functionality	Self-assessment tools, mood-tracking charts.	Integrates counseling services within the platform.
Benefits	Helps users gain insights into their mental health.	Fosters trust and engagement, encourages users to seek professional help when needed.

Table 3 Evaluation of Maintainability Aspects

Aspect	MoodFit	HeadSpace
Adaptability	Limited adaptability due to rigid structure.	Demonstrates superior adaptability and flexibility.
Feedback Incorporation	Limited ability to incorporate user feedback.	Actively integrates user feedback to evolve and expand the platform in response to changing needs and trends.
Technological Updates	Relies on periodic updates, may lag behind in technology.	Utilizes agile development methodologies to stay updated with technological advancements and user requirements.
Long-term Sustainability	May face challenges in remaining relevant over time.	Ensures continued relevance and impact through iterative development and user-driven enhancements.

The comparison between MoodFit and HeadSpace highlights the significant advantages offered by the latter in terms of counseling features and maintainability aspects. HeadSpace's integration of direct access to counseling services within the platform and its superior adaptability and flexibility make it a more comprehensive and sustainable solution for addressing mental health challenges among students. By actively incorporating user feedback and staying updated with technological advancements, HeadSpace ensures continued relevance and effectiveness in promoting student well-being.

B. Development of HeadSpace: Agile Database Life Cycle (Agile-DBLC)

➤ *Initial Study Stage*

The development of HeadSpace was guided by a thorough understanding of the existing support systems and the specific needs of NEUST students. Collaborative

discussions with stakeholders and surveys among students provided valuable insights, informing the project's objectives and scope. This user-centered approach laid the foundation for a platform that is tailored to the unique context and requirements of the target user population, thereby maximizing its potential impact and effectiveness.

➤ *Design Stage*

Visual representations, including Use Case Diagrams and Data Flow Diagrams, played a crucial role in guiding the design and development of HeadSpace. These tools facilitated the translation of user requirements into tangible system functionalities, interfaces, and database structures. By visualizing the system architecture and user interactions, these diagrams enhanced communication and alignment among project stakeholders, ensuring that the final product meets the needs and expectations of its intended users.

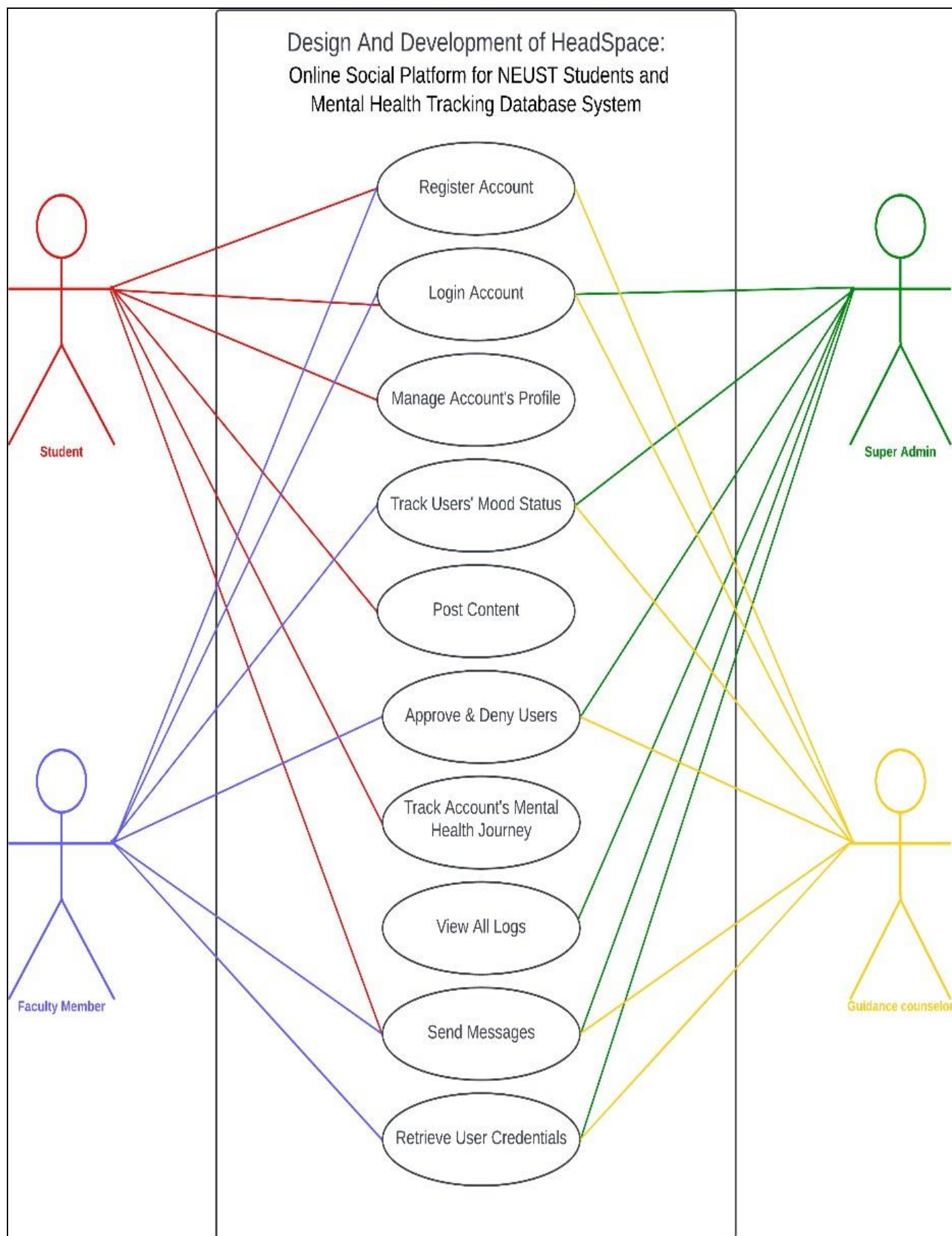


Fig 2 Use-Case Diagram

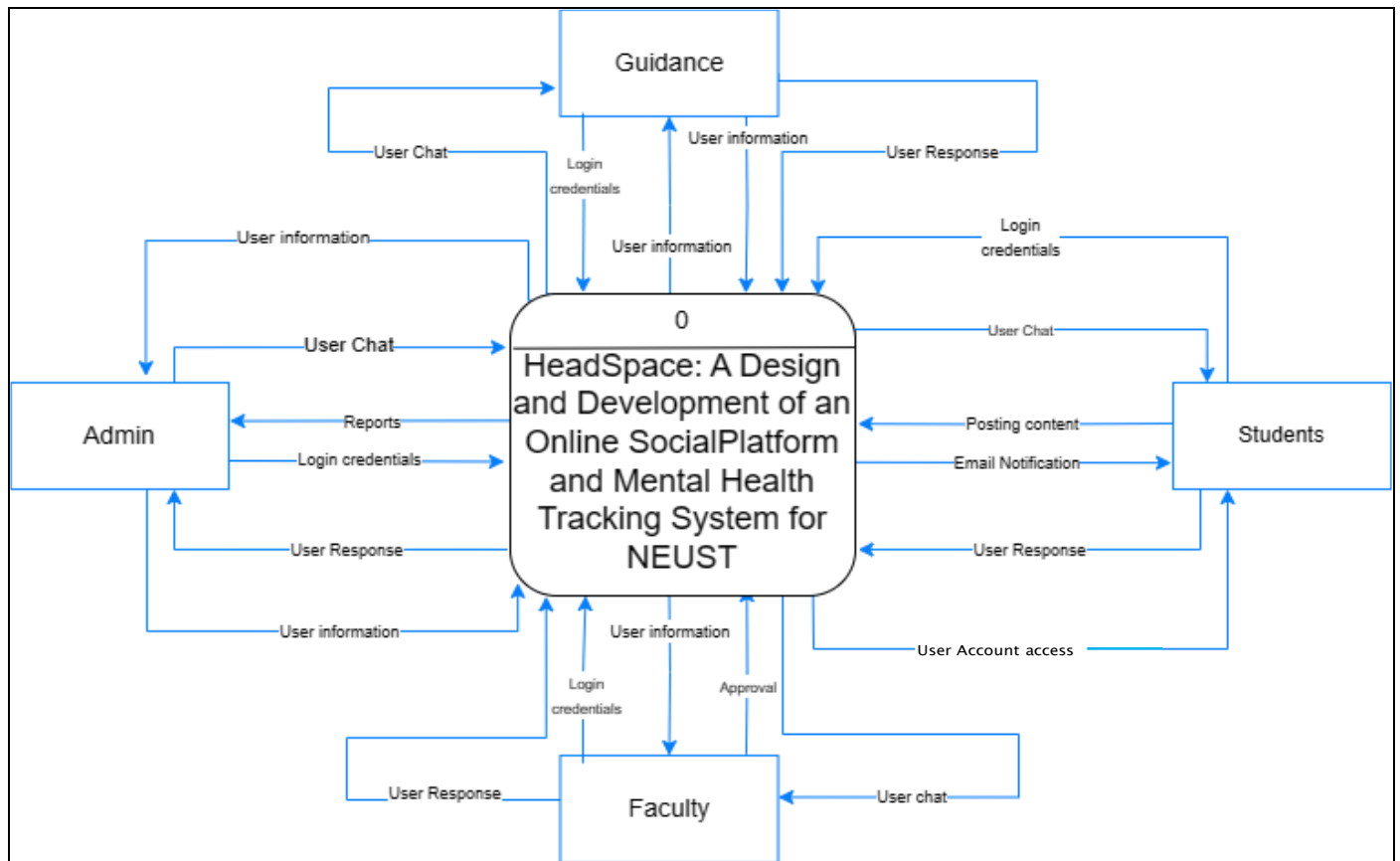


Fig 3 Context Diagram

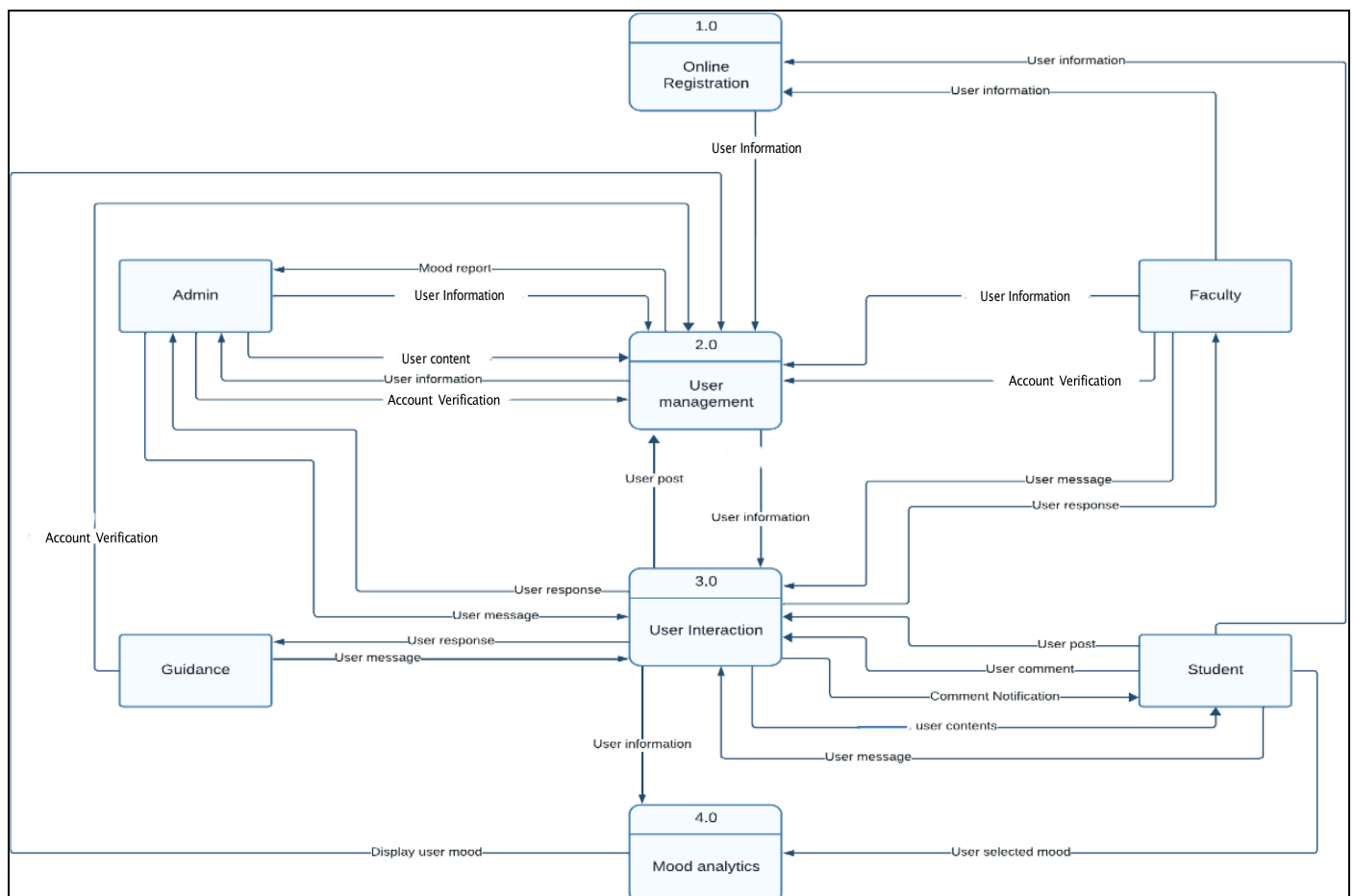


Fig 4 DFD Level 1

➤ Development Stage

The development of HeadSpace involved the use of robust programming languages and database management systems, including PHP and MySQL. Tools such as Visual Studio and XAMPP Control Panel were employed for code development, testing, and deployment, ensuring reliability and performance. The use of industry-standard development practices and technologies underscores the commitment to delivering a high-quality and user-friendly platform that meets the highest standards of reliability, security, and usability.

➤ Testing Stage

A rigorous testing phase was conducted to evaluate the accuracy, user-friendliness, and security of HeadSpace. Measures such as data encryption and access controls were

implemented to enhance system security and protect user information. By subjecting the platform to comprehensive testing procedures, potential vulnerabilities and usability issues were identified and addressed, thereby ensuring a robust and reliable user experience.

➤ Deployment Stage

Following extensive testing and refinement, HeadSpace was deployed after consultations with IT experts and end-users. Feedback from stakeholders was incorporated to fine-tune the platform and address any remaining concerns or usability issues. This iterative deployment approach reflects a commitment to continuous improvement and user-centric design, ensuring that HeadSpace meets the evolving needs and expectations of its user community.

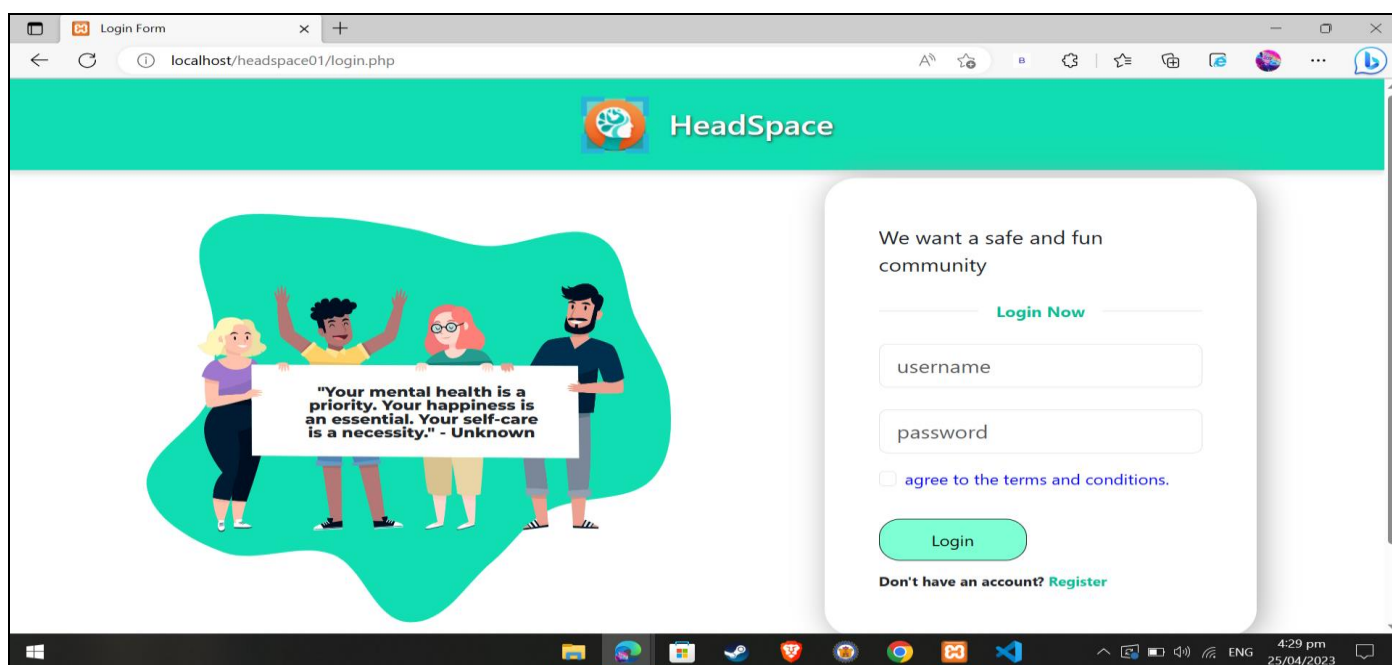


Fig 5 HeadSpace's Login Page

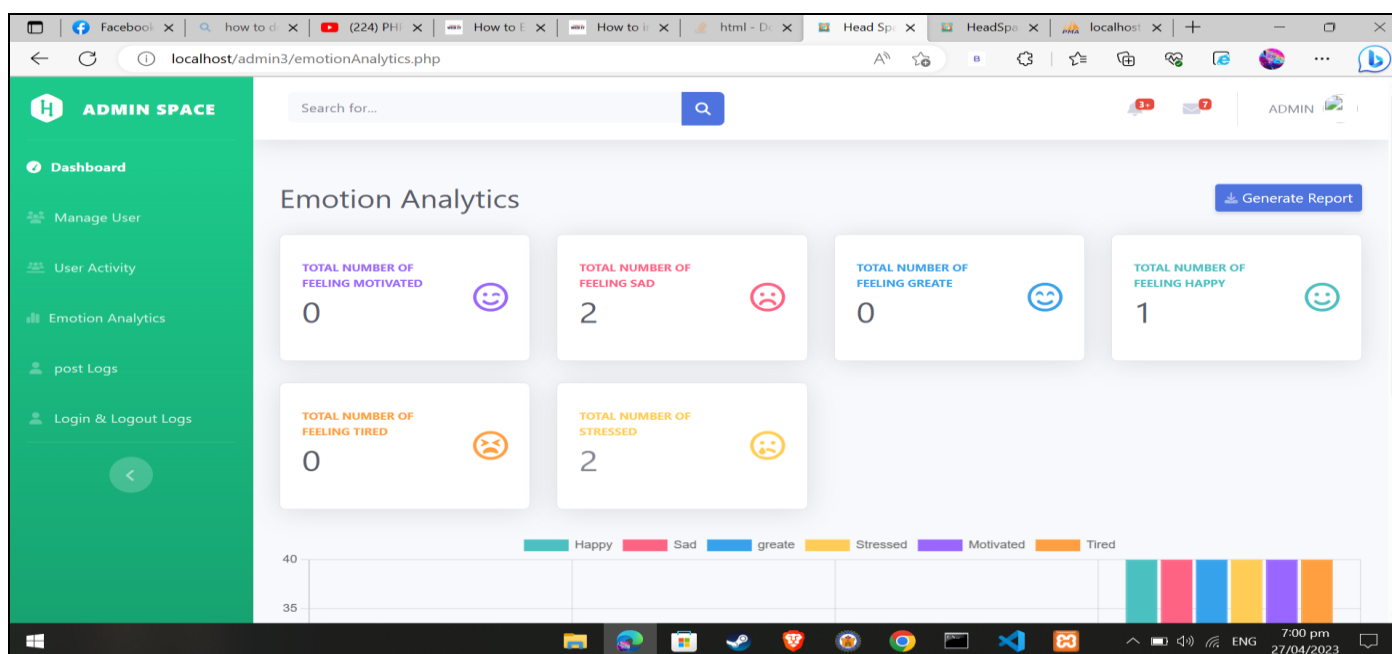


Fig 6 HeadSpace's Dashboard Page

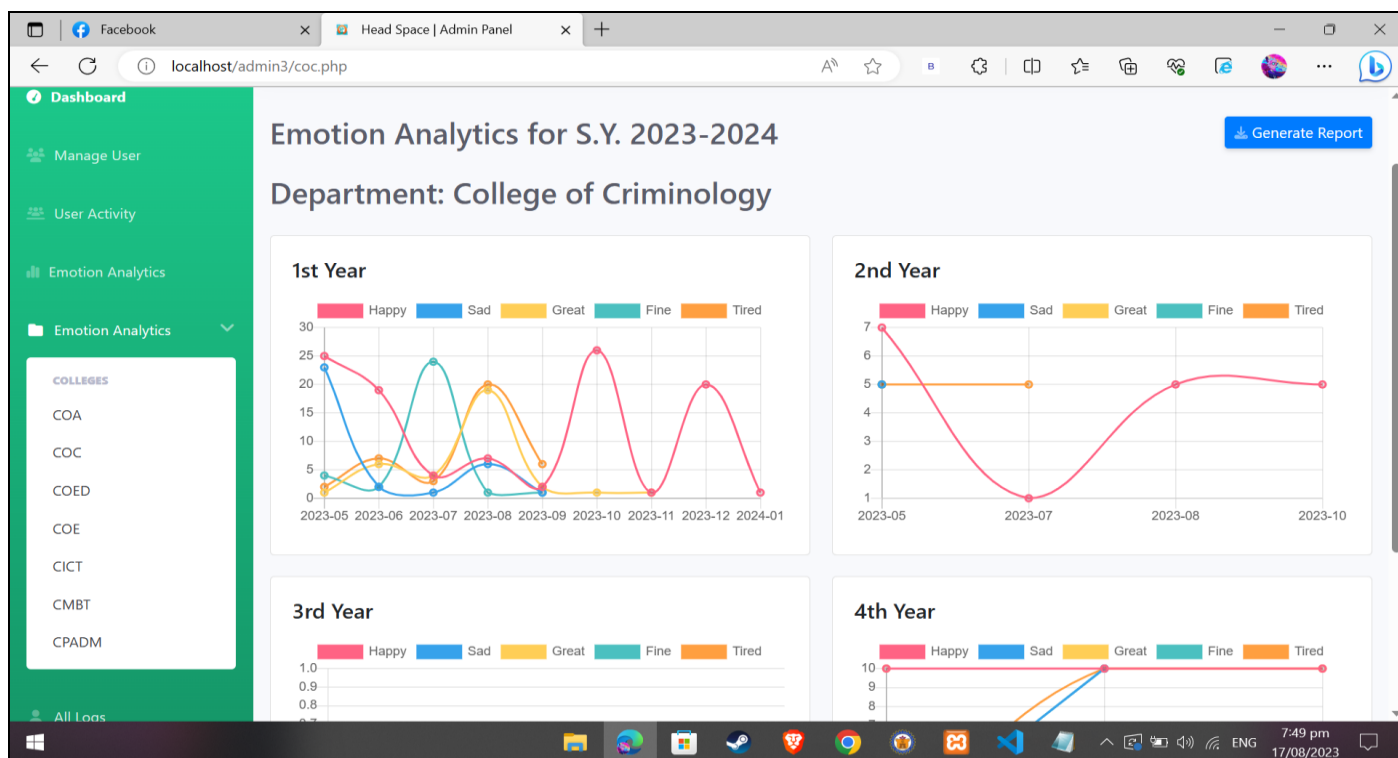


Fig 7 HeadSpace's Emotional Analytics Page

➤ Operation

Continuous monitoring and improvement efforts were undertaken to address system shortcomings and enhance performance. Security features were strengthened, and user feedback was leveraged to optimize the platform's usability and functionality. By actively soliciting and responding to user input, HeadSpace remains responsive and adaptive to the changing needs and preferences of its user base, thereby maximizing its long-term impact and effectiveness in promoting student mental health and well-being.

C. Evaluation of HeadSpace

HeadSpace undergoes evaluation by both IT experts and end users utilizing the ISO/IEC 25010 standard. The standard provides a framework for software product quality and system quality in use, comprising eight product quality characteristics and 31 sub-characteristics, as well as five characteristics and seven sub-characteristics for quality in use (ISO/IEC 25010:2011).

The IT experts assess the system against the complete set of criteria outlined in the ISO/IEC 25010 standard, covering aspects such as functionality, reliability, usability, efficiency, maintainability, and portability. On the other hand, end users evaluate HeadSpace based on specific criteria: Functional Suitability, Usability, Reliability, and Security. This focused evaluation approach by end users is due to their expertise lying in user experience and interaction with the system rather than technical intricacies covered comprehensively by IT experts.

The selection of criteria for end user evaluation is strategic as it aligns with their primary interactions with the system and ensures that aspects directly impacting their user experience are thoroughly assessed. Functional Suitability

evaluates if the system meets user needs, Usability assesses how user-friendly the system is, Reliability examines the system's consistency and dependability, and Security focuses on safeguarding user data and privacy. This targeted evaluation approach by end users enhances the overall usability and effectiveness of HeadSpace from a user-centric perspective.

According to the authors Presser & Blair (1994), researchers and practitioners may focus their evaluations on specific aspects of the standard depending on the project's scope and objectives. For example, some researchers have chosen to examine only six of the eight product quality characteristics—Functional Suitability, Performance Efficiency, Usability, Reliability, Security, and Portability—when conducting evaluations. Similarly, others might concentrate solely on the quality in use aspect if the primary concern is user experience rather than broader product attributes.

The evaluation process utilizes a 4-point Likert scale to gauge responses from both IT experts and end users. This scale allows for a structured assessment of various aspects of HeadSpace based on predefined criteria, providing a standardized method for capturing feedback and perceptions effectively. A 4-point Likert scale can be advantageous in certain situations compared to a 5-point or 7-point scale due to its lower skewness and higher loadings (Jamieson, 2004; Krosnick, 1999). Lower skewness indicates that the distribution of responses is more balanced, while higher loadings suggest stronger relationships between the responses and the underlying latent variable (Jamieson, 2004). A 4-point Likert scale can help reduce response bias and central tendency bias, leading to more reliable and valid data (Jamieson, 2004; Presser & Blair, 1994).

For instance, a 4-point Likert scale might be suitable for measuring user satisfaction with a software application, focusing on the extremes of "Very unsatisfied," "Somewhat unsatisfied," "Somewhat satisfied," and "Very satisfied" (Bangor, Kortum, & Miller, 2009). By limiting the number of response options, this scale helps prevent ambiguity and reduces the chances of acquiescence bias, where respondents tend to agree with all statements regardless of their actual opinions (Presser & Blair, 1994).

Overall, a 4-point Likert scale can be justified for its ability to enhance data reliability and validity through reduced skewness and increased loading strength, particularly in scenarios requiring straightforward and concise measurements of user experiences.

➤ *IT Experts Evaluation Result*

- *Functional Suitability*

IT experts rated the system's functional suitability as "Very Functional," indicating high performance in terms of completeness, correctness, and appropriateness of functionalities. This positive assessment underscores the effectiveness of HeadSpace in meeting the diverse needs and expectations of its user community, thereby enhancing user satisfaction and engagement.

- *Performance Efficiency*

The system demonstrated "Very Efficient" performance in terms of time behavior, resource utilization, and capacity, reflecting its ability to deliver responsive and scalable services. This high level of performance ensures a smooth and seamless user experience, even during periods of high traffic or system demand, thereby maximizing user satisfaction and engagement.

- *Compatibility*

IT experts rated the system's compatibility as "Very Compatible," indicating its ability to coexist and interoperability with other systems effectively. This compatibility ensures seamless integration with existing IT infrastructure and platforms, minimizing disruptions and enhancing user convenience and accessibility.

- *Usability*

The system was deemed "Very Usable" by IT experts, reflecting its ease of operation, learnability, and user interface aesthetics. This positive assessment highlights the user-friendly design and intuitive navigation of HeadSpace, ensuring that users can easily access and utilize its features and functionalities without encountering significant barriers or challenges.

- *Reliability*

The system achieved a rating of "Very Reliable," demonstrating maturity, availability, fault tolerance, and recoverability. This high level of reliability ensures uninterrupted access to critical services and resources, thereby instilling confidence and trust among users in the platform's ability to meet their needs and expectations reliably and consistently.

- *Security*

IT experts rated the system's security as "Very Secured," highlighting its robustness in ensuring confidentiality, integrity, non-repudiation, accountability, and authenticity of data. This strong emphasis on security safeguards user privacy and protects sensitive information, thereby fostering a secure and trustworthy environment for users to engage with the platform and its services.

- *Maintainability*

The system was assessed as "Very Maintainable" by IT experts, indicating its modularity, reusability, analyzability, and modifiability. This high level of maintainability ensures that HeadSpace can be easily updated, extended, and adapted to meet evolving user needs and technological requirements, thereby ensuring its long-term sustainability and relevance.

- *Portability*

IT experts rated the system's portability as "Very Portable," reflecting its adaptability, installability, and replaceability across different environments. This high level of portability ensures that HeadSpace can be deployed and accessed across a wide range of devices and platforms, maximizing its accessibility and reach among its target user community.

➤ *End Users Evaluation Result*

- *Functional Suitability*

End users rated the system's functional suitability as "Very Functional," indicating its completeness, correctness, and appropriateness of functionalities. This positive feedback reflects the platform's effectiveness in meeting the diverse needs and expectations of its user community, thereby enhancing user satisfaction and engagement.

- *Usability*

The system was assessed as "Very Usable" by end users, reflecting its ease of operation, learnability, and accessibility. This positive assessment highlights the user-friendly design and intuitive navigation of HeadSpace, ensuring that users can easily access and utilize its features and functionalities without encountering significant barriers or challenges.

- *Reliability*

End users rated the system as "Very Reliable," demonstrating maturity, availability, fault tolerance, and recoverability. This high level of reliability ensures uninterrupted access to critical services and resources, thereby instilling confidence and trust among users in the platform's ability to meet their needs and expectations reliably and consistently.

- *Security*

End users rated the system's security as "Very Secured," highlighting its robustness in protecting data confidentiality, integrity, non-repudiation, accountability, and authenticity. This strong emphasis on security safeguards user privacy and protects sensitive information, thereby fostering a secure and trustworthy environment for users to engage with the platform and its services.

➤ *Overall Evaluation Summary:*

Based on the ISO/IEC 25010 Software Quality Standards, both IT experts and end users evaluated the system as "Excellent" quality, reflecting its high performance across functional suitability, usability, reliability, and security. This positive assessment underscores the effectiveness and impact of HeadSpace in addressing mental health challenges among NEUST students, thereby contributing to their overall well-being and academic success.

IV. SUMMARY

The results of the development and evaluation of HeadSpace highlight its potential as a valuable tool for addressing mental health challenges among NEUST students. By integrating social networking features, counseling support services, and robust security measures, HeadSpace offers a comprehensive and user-centric approach to promoting student well-being and resilience. The positive evaluations from both IT experts and end users underscore the platform's effectiveness, usability, reliability, and security, validating its role as a trusted resource for mental health support and intervention.

One of the key strengths of HeadSpace is its emphasis on proactive support and early intervention. By providing direct access to counseling services and fostering a supportive social environment, HeadSpace empowers students to take control of their mental health and seek help when needed. This proactive approach not only reduces the stigma associated with mental health but also promotes a culture of openness and support within the NEUST community, thereby enhancing overall campus well-being.

The user-centered design and agile development methodologies employed in the development of HeadSpace have contributed to its success and effectiveness. By actively involving stakeholders and end users throughout the development process, HeadSpace has been able to address their specific needs and preferences, resulting in a platform that is tailored to the unique context of NEUST. This iterative and collaborative approach has also facilitated ongoing improvements and updates to the platform, ensuring its continued relevance and impact over time.

While the results of the evaluation are overwhelmingly positive, it is essential to acknowledge some limitations and areas for future improvement. For example, while HeadSpace has been well-received by NEUST students, further research is needed to assess its effectiveness in other educational settings and among diverse student populations. Additionally, ongoing efforts are needed to monitor and address emerging mental health trends and challenges, ensuring that HeadSpace remains responsive to the evolving needs of its user community.

Overall, the development and evaluation of HeadSpace represent a significant step forward in addressing mental health challenges among NEUST students. By providing a comprehensive and user-centric platform for mental health support and intervention, HeadSpace has the potential to make

a meaningful difference in the lives of students, promoting resilience, well-being, and academic success. Moving forward, continued collaboration, research, and innovation will be essential to further enhance and expand the reach and impact of HeadSpace, ensuring that it remains a valuable resource for students now and in the future.

V. CONCLUSIONS

In conclusion, the development and evaluation of the Online Social Platform and Mental Health Tracking System, HeadSpace, at Nueva Ecija University of Science and Technology (NEUST) represent a significant step forward in addressing the mental health challenges faced by students in the academic setting. The positive reception and feedback from both IT experts and end users highlight the platform's effectiveness, usability, reliability, and security, validating its role as a trusted resource for mental health support and intervention within the NEUST community.

HeadSpace's emphasis on proactive support and early intervention sets it apart by providing direct access to counseling services and fostering a supportive social environment. This approach empowers students to take control of their mental health, seek help when needed, and contribute to reducing the stigma associated with mental health issues. By promoting a culture of openness and support, HeadSpace enhances overall campus well-being and resilience among students.

The user-centered design and agile development methodologies employed in creating HeadSpace have been instrumental in tailoring the platform to the specific needs and preferences of NEUST students. By actively involving stakeholders and end users throughout the development process, HeadSpace has been able to address evolving mental health trends and challenges, ensuring its continued relevance and impact over time.

Looking ahead, it is essential to acknowledge the limitations and areas for improvement identified in the evaluation process. Further research is needed to assess HeadSpace's effectiveness in diverse educational settings and among varied student populations. Ongoing efforts to monitor emerging mental health trends and challenges will be crucial to maintaining the platform's responsiveness to the evolving needs of its user community.

Overall, the development and evaluation of HeadSpace have the potential to make a meaningful difference in the lives of NEUST students by providing a comprehensive and user-centric platform for mental health support and intervention. Continued collaboration, research, and innovation will be key to enhancing and expanding the reach and impact of HeadSpace, ensuring its continued value as a vital resource for students now and in the future.

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