Research Article

ARTFUL MIND: DEVELOPING MENTAL WELLNESS THROUGH ART THERAPY FOR PERSONALIZED EXPRESSION AND THERAPEUTIC GUIDANCE

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Abstract

In the dynamic landscape of digital healthcare, e-health technologies have transformed the delivery of health services, providing increased accessibility and convenience. The study explains integrating digital technologies and art therapy to address stress, focusing on enhancing emotional well-being. Specifically, it seeks to develop and evaluate a digital platform for art therapy that promotes stress reduction and emotional healing through interactive activities such as free drawing, collage-making and mindful coloring. By combining art therapy's therapeutic benefits with digital accessibility, this platform enables users to start on a personalized mental health journey, encouraging self-expression, social connectivity and community engagement. The platform targeted primarily at college student's aged 18 to 24 years, addresses a demographic facing significant academic stress. Through a comprehensive and user-centric digital design, it provides tools for creative expression and offers a supportive community for users to connect with and share experiences. The study evaluates the platform's effectiveness in reducing stress and enhancing emotional well-being, drawing on data from user feedback, functionality tests and interviews with mental health professionals. Findings indicate that digital art therapy fosters a constructive environment for emotional exploration, yielding stress management and self-awareness improvements. The study concludes that technology-enhanced art therapy can be a valuable tool in mental health support, offering accessible and meaningful interventions. Future recommendations suggest expanding the platform's features to include journaling, guided therapeutic exercises and advanced creative tools to enhance user engagement and therapeutic outcomes. This research contributes to integrating art therapy into digital healthcare, providing a foundation for innovative solutions in mental wellness. ***ASEAN Journal of Psychiatry, Vol. 25(10) December, 2024; 1-13.***

Keywords: Art Therapy; e-Health; Mental Health; Stress; Emotional Well-Being

Introduction

This section introduces the study, explaining its purpose and objectives in creating a digital platform to enhance mental wellness through art therapy. It highlights the platform's significance in supporting stress management and emotional well-being.

Background of study

In today's rapidly evolving digital landscape, e-health has revolutionized healthcare delivery, offering unprecedented accessibility and convenience [1]. E-Health encompasses diverse services facilitated through the internet and related technologies, with telemedicine as one of its earliest manifestations. This system shift has ushered in patient conferences, informative health websites and self-tracking systems, effectively democratizing access to healthcare information and services [2]. Among these, telemedicine has emerged as a beacon of convenience, providing a cost-effective gateway for individuals to access healthcare services while emphasizing patient-centered care [3].

This research explains combining digital technology with art therapy within the e-health framework to create a therapeutic digital platform focused on mental well-being. As mental health challenges like stress, anxiety and depression

become more prevalent, conventional therapies may not always align with the demands of modern life [4]. Consequently, this study seeks to develop an innovative platform that uses art therapy principles to facilitate self-expression, self-discovery and emotional healing. This digital platform, grounded in the therapeutic power of creativity, aims to empower users to navigate their emotions and contribute to their mental health. Future research will examine the platform's theoretical foundations, development and potentially transformative impact on mental wellness.

Research problem

Highly engaged college students often face significant stress and emotional challenges due to academic pressures and heavy workloads. Yet, there are limited accessible resources tailored to help them manage these demands effectively. Traditional therapy options may not align with their schedules or preferences and many struggle to find tools that allow for emotional expression in a way that feels natural and non-intrusive. The lack of a flexible, creative digital solution that integrates therapeutic practices specifically designed for stress management among highly productive students highlights the need for an innovative approach that supports mental wellness while accommodating their busy lifestyles.

Objectives of the study

The main objective of this study is to develop a digital platform that promotes mental wellness through personalized art therapy. Specifically, it aims to: To develop a platform integrating digital tools with art therapy for activities like free drawing, collage making and mindful coloring to support emotional healing. To create a mental health platform offering personalized therapeutic journeys, collaboration with professionals and access to resources, communities and educational content. To assess the effectiveness of a tech-driven art therapy platform in improving mental health and emotional stability. To evaluate the platform's impact on stress reduction and mental well-being through user feedback and data analysis.

Research question

How does an integrating digital technology with the therapeutic aspects of art therapy contribute to reducing stress and improving overall mental well-being?

Scope and delimitations

The study aims to understand the fundamental principles of art therapy and its impact on alleviating stress among individuals aged 18 years to 24 years, explicitly targeting highly engaged college students. It will focus on free drawing, collage making and mindful coloring to manage stress and promote personal development. Throughout the Academic Year 2023-2024, the study seeks to deliver a tailored therapeutic experience fostering self-discovery and emotional revitalization.

The scope includes developing a web-based digital platform that integrates technology with art therapy and provides a support system for emotional healing while considering factors like internet connectivity, digital literacy and device accessibility. While the primary focus is stress reduction, the study acknowledges other contributing factors to mental well- being that may warrant further study.

Delimitations include limiting the platform deployment to a website format, with future research potentially exploring other digital platforms or access methods. The study recognizes that the influence of technology-driven art therapy may vary across different individuals and cultural contexts. The technological framework involves using Laravel, HTML, CSS, Vue 3, Inertia JS, MySQL, Node.js, Axios.js and Tailwind CSS, with comprehensive testing to ensure the platform's functionality, security and readiness for deployment.

Related terms

The following principles provide significant subjects which associate healthcare, technology and mental well-being.

Art therapy: Art therapy is a widely utilized intervention primarily aimed at addressing mental illnesses and facilitating the management of psychosocially challenging behaviors [5]. Additionally, it has been observed to contribute to the deceleration of cognitive decline and the improvement of overall quality of life. The utilization of art therapy has garnered recognition as a valuable modality for facilitating self-expression, promoting mental well-being and cultivating positive interpersonal connections.

E-health: E-health is a field that uses

advancements in technology within healthcare systems to enhance the provision of services and facilitate the advancement of health [6]. The achievement is facilitated through the utilization of electronic means, such as the internet and mobile devices, which enable the exchange of health-related information between healthcare consumers and providers. The e-health systems within the healthcare sector have demonstrated significant advancements in the areas of data transmission, access to critical information and the facilitation of informed medical decisions.

Mental health: Mental health refers to the state of one's psychological and emotional well-being, characterized by the absence of mental disorders and the presence of sufficient adaptation skills. This is typically manifested through a sense of self-acceptance, good attitudes towards others and the ability to effectively cope with the challenges of everyday life [7].

Mental well-being: Mental well-being significantly influences various aspects of our daily existence. This encompasses various aspects of human behavior, such as the formation of social connections and engagement in social activities, the implementation of stress management strategies and the decision-making processes employed in reaction to these external influences [8]. This pertains to individuals who do not experience mental illness. Additionally, the program places emphasis on individuals who have the potential to enhance their personal growth and strive towards a more purposeful existence.

Digital technology: Digital technologies encompass several components such as the Internet of Things (IoT), advanced telecommunication networks, big-data analytics and Artificial Intelligence (AI) utilizing deep learning techniques and block chain technology [9]. The relationship between the proliferation of the Internet of Things (IoT) in healthcare settings and the establishment of a highly interconnected digital ecosystem is significant. This integration allows for the collection of real-time data on a large scale, which can subsequently be utilized by Artificial Intelligence (AI) and deep learning systems to analyze healthcare trends, model risk associations and make predictions about outcomes.

Review of related literature

The below mentioned types encompass diverse applications of art therapy, including its effectiveness in reducing academic stress, integrating digital technology in therapeutic practices and supporting psychological well-being through online group sessions, highlighting its ability across multiple challenges and scenarios.

The effectiveness of art therapy to reduce academic stress among students during online learning: The study investigates the effectiveness of art therapy in reducing academic stress among academically challenged adolescents experiencing increased stress during the transition from in-person to online learning due to the COVID-19 pandemic [10]. This study aims to evaluate the potential impact of art therapy on reducing academic stress, developing student motivation and enhancing their capacity to meet assignment deadlines. The study utilizes a standardized academic stress scale instrument to assess the effects of the art therapy intervention. The research uses a quasi-experimental design and applies an experimental methodology. The study's participants consist of students who experience significant academic pressure. The instrument employed in this study was the academic stress scale.

The research participant actively participated in the data-gathering process. Art therapy tools are utilized in direct interventions that adhere to the COVID-19 transmission prevention strategy. The statistical software program developed by Jeffreys, known as Jeffrey's Amazing Statistics Program, was employed to analyze study data. The study's findings indicated that those who engaged in art therapy exhibited a noteworthy decrease in academic stress levels, with an average drop of 47,800 units. This reduction was determined to be statistically significant. This finding suggests that art therapy is a viable and productive method for reducing academic stress. Moreover, art therapy enhances the process of emotional exploration and aids in the identification of the underlying causes of academic stress among individuals who participate in this therapeutic intervention.

Art therapy in the digital world-an integrative review of current practice and future directions: The study employed an integrated review methodology to examine the utilization of digital technology within art therapy, focusing on peer-reviewed literature [11]. The background section of the study emphasized the growing prevalence of digital technologies in psychotherapy and their potential to expand the scope of art therapy. The study investigated how art therapists actively interact with digital technology and studied the

feasibility of its secure integration into therapeutic practices. The research process encompassed screening over 400 records and analyzing 12 papers presenting empirical findings about digital technology utilization in art therapy. The study's results revealed repeating patterns, encompassing the advantages and drawbacks of using digital technology in therapeutic practices, ethical considerations, limitations of technology and the potential impact on the therapeutic alliance. The research findings indicate a discernible inclination toward utilizing digital technology within art therapy. This emerging trend presents both advantageous prospects and potential obstacles that require thorough deliberation and examination. There is a need for additional study and open dialogues to investigate the potential of technology in augmenting the scope of art therapy while simultaneously upholding the fundamental ideals of the profession and ensuring the safety of clients.

Effects of online group art therapy on psychological distress and quality of life after family bereavement: In COVID-19 pandemic: This research investigated the impact of online group art therapy on adults who have experienced the loss of family members [12]. The study employed three assessment tools to measure levels of depression, grief and quality of life within a randomized controlled trial. Among the thirty-six participants who had encountered the death of a family member, twenty were allocated to the experimental group, which engaged in online group art therapy consisting of eight one-hour sessions held once a week. The remaining sixteen participants constituted the control group, receiving no intervention. Results from the experimental group indicated a reduction in depression and grief and an enhancement in their overall quality of life. These findings suggest that online group art therapy holds promise in supporting adults in coping with the loss of family members, alleviating psychological distress and improving their overall quality of life (Figure 1).

Synthesis of findings and research gap

The reviewed studies confirm art therapy's effectiveness in reducing academic stress and enhancing emotional well-being. For instance, research on art therapy during online learning demonstrated significant stress reductions and improved motivation and emotional processing among students facing academic pressures [10]. Similarly, digital technology's integration within art therapy has shown promise in expanding accessibility and flexibility, which are particularly valuable for those with restrictive schedules, like college students [11]. Other studies indicate the potential of online group art therapy in alleviating psychological distress, showcasing its applicability in various high-stress environments, from academic to personal losses [12].

However, these studies also reveal a critical gap. While digital art therapy shows potential, there is a lack of targeted digital solutions designed specifically for college students, balancing demanding workloads with the need for accessible mental health resources. This gap, particularly the need for a platform that integrates creative therapeutic practices in a flexible digital format, points to the need for a tool tailored to college students' unique challenges. Thus, this research seeks to bridge this gap by developing a digital art therapy platform that supports stress management and overall mental wellness among highly productive students meeting them where they are with an innovative and practical approach.

Materials and Methods

Figure 2 illustrates the researcher's use of the Waterfall Model as the framework for developing the art therapy website, a structured approach selected due to its suitability for projects with clearly defined requirements and sequential processes.

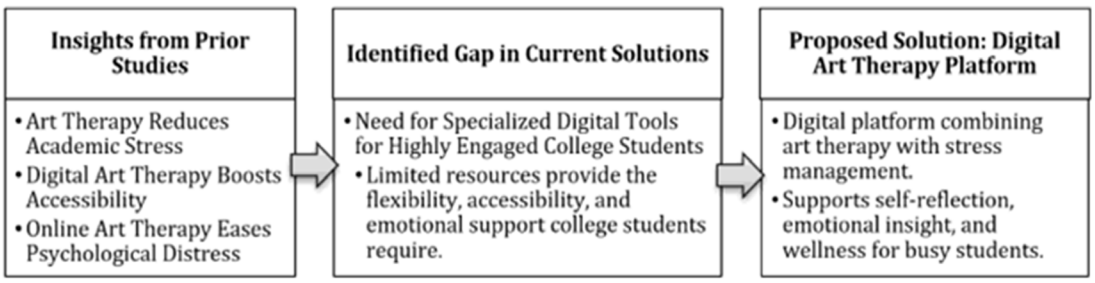

Figure 1. Visual representation of synthesis.

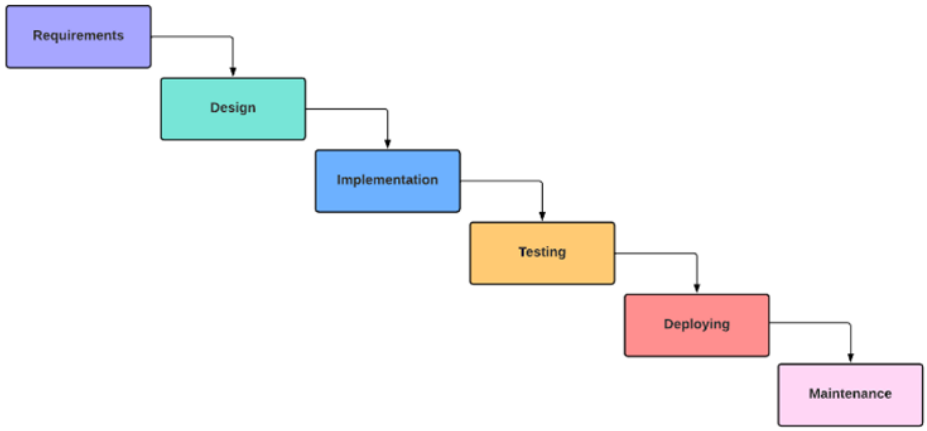

Figure 2. Waterfall model methodology phases.

Waterfall model

The Waterfall Model's linear and step-by-step nature guarantees disciplined progression, ensuring that each phase is completed in its entirety before transitioning to the next. This approach minimizes the risk of overlooked details and promotes a thorough, well-organized development process. The process begins with the requirements phase, where researchers gather and document the therapeutic goals, user needs and technical specifications through consultations with mental health professionals and potential users to identify key features like digital art tools, privacy requirements and accessibility standards. In the design phase, they develop the system's architecture, interface and user experience by creating detailed blueprints, wireframes and prototypes, focusing on an intuitive interface that supports therapeutic processes. The Implementation phase translates the design into a functional system through coding, integrating components such as user account management and secure data storage while adhering to documentation standards. During the Testing phase, the website is rigorously evaluated for functionality, usability and reliability, with identified issues resolved to ensure quality. The deployment phase follows, making the platform accessible to the target audience and optimizing performance for real-world use.

Finally, the Maintenance phase involves ongoing monitoring and iterative improvements based on user feedback to keep the platform effective and relevant, incorporating new features and addressing evolving needs. By adopting the Waterfall Model, the researchers adhered to a methodical and structured development approach, resulting in a robust, user-centric art therapy website that is well-equipped to deliver its intended therapeutic benefits.

Research design

A mixed method research design, a convergent parallel method was employed, focusing on objective measurements and statistical analysis to collect numerical data about the observed phenomenon of utilizing the website under this study [13]. Statistical data analysis will be used to prove the website's efficacy and answer the research question. The responses gathered from participants will be used to evaluate the features and contents of the proposed website.

System design

The system design phase is vital in developing the personalized art therapy platform, structuring its core components for a seamless, user-friendly experience. This phase includes creating intuitive UI and comprehensive system documentation, emphasizing both functionality and the integration of therapeutic principles. This ensures the platform is engaging, emotionally supportive and aligns with the project's goal of enhancing mental wellness.

The therapist dashboard offers a user-friendly interface for managing client sessions and tracking mental health progress. Key features include a "Feelings Tracker" for logging emotions, a 'Progress Level' tracker for session completion and a "Monthly Mood Summary" chart to visualize emotional trends. Therapists can post updates, share announcements and add session notes to maintain thorough records and consistent communication. These tools enable personalized care and streamline the therapeutic process (Figure 3).

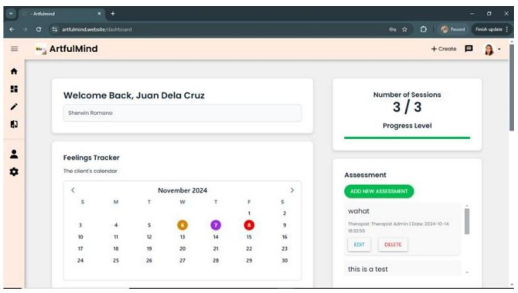

Figure 3. User-therapist side dashboard (step 1).

The therapist dashboard is designed to streamline session management and client tracking. It includes a personalized greeting that displays the therapist's name, a progress tracker showing the number of sessions completed by the client and a progress bar for quick reference. The "Feelings Tracker" features an interactive calendar with color-coded markers indicating the client's logged emotions on specific dates, enabling therapists to monitor emotional trends over time. The assessment section allows therapists to add, edit or delete evaluations, with timestamps ensuring accurate and organized record-keeping. The header provides navigation options and profile access, offering a user-friendly interface for managing therapeutic activities efficiently (Figure 4).

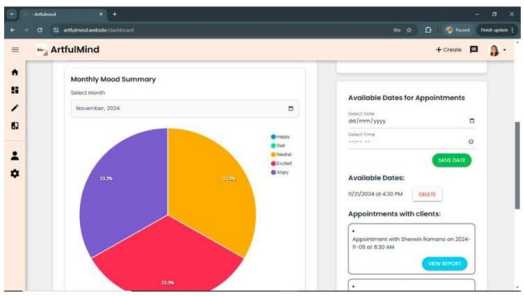

Figure 4. User-therapist side dashboard (step 2).

The interface includes key features for monitoring client moods and managing appointments. The left panel displays a pie chart summarizing the client's emotional states for the selected month, with color-coded segments representing moods such as happy, sad, neutral and angry, providing a quick overview of emotional patterns. The right panel offers tools for appointment management, including a date picker to select and save available dates and a "Delete" button to remove appointments. Below the date picker, a list of upcoming appointments shows the therapist's and client's names and session times and a "View Report" button allows access to detailed session records. This layout efficiently combines data visualization and appointment management, supporting therapists in tracking client progress and managing their schedules (Figure 5).

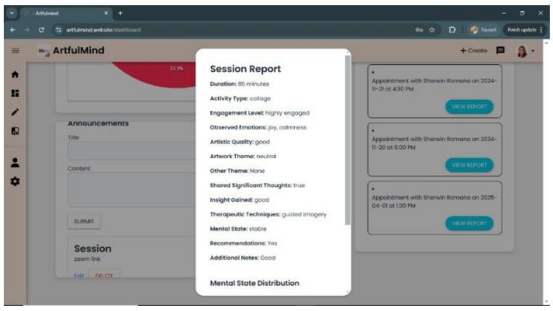

Figure 5. User-therapist side dashboard (step 3).

The interface displays the "Session Report" summarizing a therapy session. Key metrics include the session duration, activity type, engagement level and observed emotions. The report also assesses artistic quality and includes insights into themes, significant thoughts and applied techniques. A recommendation status and the client's mental state are noted. The dashboard provides tools to view past session reports, track client progress and manage appointments.

The Artful Mind user dashboard mirrors aspects of the therapist's interface but is personalized for an engaging user experience. It greets users by name, developing connection and encouraging active participation. A progress tracker visually displays completed therapy sessions, motivating users and highlighting achievements. The Feelings Tracker and Mood Selection tools let users log daily emotions with intuitive emoji buttons, which mark the date on an interactive calendar to reveal emotional patterns over time. The Assessment section provides personalized feedback, offering motivational insights and suggestions. A recent announcements area keeps users informed about updates, developing community connection and continuous engagement (Figure 6).

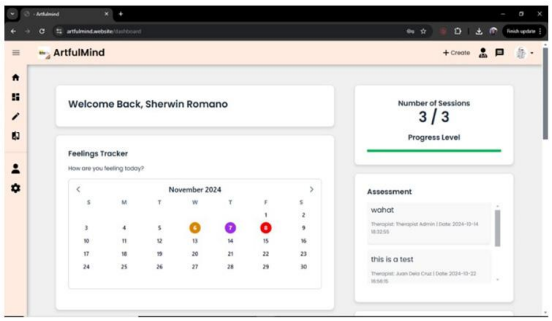

Figure 6. User-therapist side dashboard (step 4).

The client dashboard provides an overview of client engagement and session tracking. It includes a "Feelings Tracker", allowing clients to log daily emotional states, visually represented on a calendar. A progress summary indicates the client has completed the scheduled sessions. The "Assessment" section displays feedback or evaluations from therapists, including session dates and brief comments. The interface is designed to help clients monitor their mental health and review therapy outcomes (Figure 7).

This interface allows users to manage appointments, access session reports and view announcements. The "Announcements" section displays updates from the therapist. Users can review available appointment dates and schedule sessions directly. The "Session Report" section provides details of completed sessions, including duration, activity type and engagement level. The dashboard is structured to help clients stay informed about their therapy progress and manage their participation effectively (Figure 8).

The displayed client-side dashboard organizes and visualizes data related to mental state evaluation through artistic inputs. Key elements include a pie chart summarizing the "Mental State Distribution" with three categories: Improved, stable and deteriorated. The right-hand panel lists critical metadata, including observed emotions, artistic quality, thematic aspects and therapeutic techniques utilized. The dashboard highlights mental state status and additional recommendations or notes. The layout supports data-centric assessments, emphasizing clarity and functionality in tracking the mental health of the patient and their therapeutic outcomes.

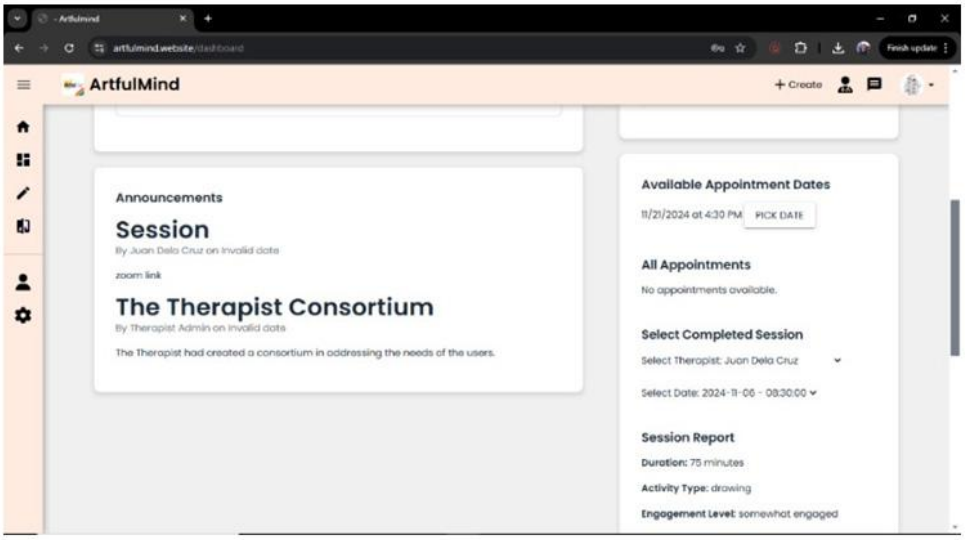

Figure 7. User-therapist side dashboard (step 5).

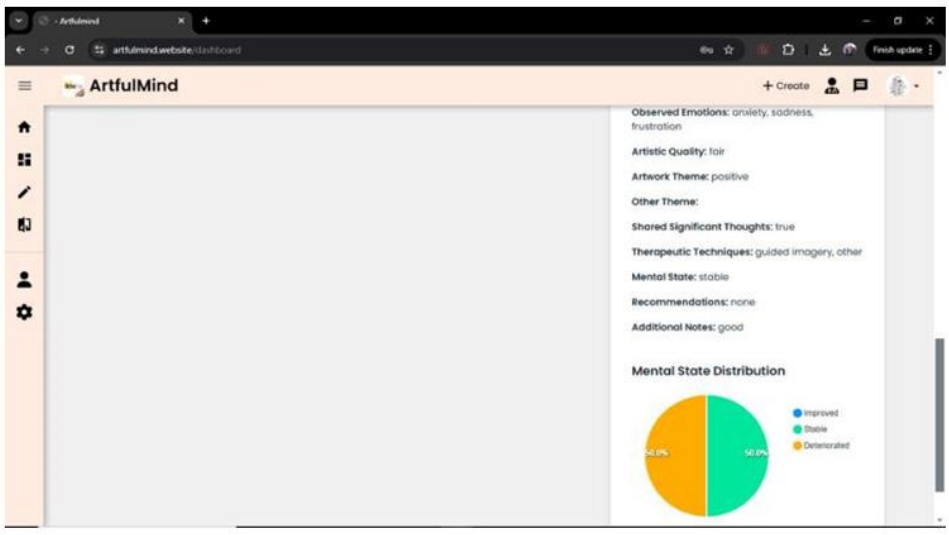

Figure 8. User-therapist side dashboard (step 6).

Results and Discussion

This section presents the outcomes of functionality testing performed on the developed system. These results were obtained by executing rigorously designed test scripts, aimed at verifying the system's intended functionalities. The researchers organized the testing procedures into checklists, which acted as detailed guides to assess the system's performance in different functional areas. This testing was carried out prior to moving on to the usability testing with the target respondents.

Functionality testing

Table 1 presents the functionality testing results for the Artful Mind Web Application, focusing on three main modules: Account management, dashboard and activities. In the account management module, essential functionalities such as account registration and authentication for both users and therapists were tested.

This module passed all four expected tests, resulting in a 100% success rate, confirming that both users and therapists can successfully register and authenticate their accounts. The Dashboard module was evaluated for key features, including "Progress Level", "Feelings Tracker", "Assessment" and "Announcement". With seven expected results, all tests passed, demonstrating that therapists can update users on their progress, monitor emotional patterns, assess user sessions and post announcements as needed. This module also achieved a 100% success rate.

The Activities module was tested to ensure both users and therapists could fully utilize the "Free Drawing" and "Coloring/Collage" tools. Covering eight expected results, all tests passed, confirming complete accessibility and functionality for both activities. Overall, the application achieved a 100% pass rate across all 19 expected results, verifying that each module performs as intended and supports the necessary user interactions within the Artful Mind Web Application.

Usability testing

The research utilized a quasi-experimental and quantitative approach to evaluate the system's usability. A pre-designed survey questionnaire, based on the Likert Scale, was administered to the selected participant's three psychology professionals and five highly productive or engaged college students assigned to the experimental group [14]. The questionnaire included a set of standardized statements pertaining to usability, which participants evaluated using a Likert Scale [15]. The scale ranged from one to five, corresponding to the following levels of agreement: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly Agree [16]. Furthermore, the questionnaire was divided into four sections: Learnability, efficiency, memorability and satisfaction. Each of them aligned with different features of the developed system [17]. The survey was conducted simultaneously with the system's implementation as part of the experimental intervention.

Table 2 interprets measurements on a 5-point Likert scale, categorizing responses based on descriptive labels, numerical values and corresponding intervals. Each level on the Likert scale is associated with a specific range of values, indicating the intensity of agreement or disagreement. The scale ranges from "Strongly disagree" with a value of 1 and an interval of 1.00-1.80, to "Strongly agree" with a value of 5 and an interval of 4.21-5.00. Values of 2 and 4 represent "Disagree" (1.81-2.60) and "Agree" (3.41-4.20), respectively, while a value of 3 represents a "Neutral/Uncertain" stance within the interval of 2.61-3.40. For the primary analysis, the mean values derived from the descriptive statistics were interpreted as follows: A range of 1.00-1.80 indicates Strongly Disagree, 1.81-2.60 indicates "Disagree", 2.61-3.40 reflects a "Neutral response", 3.41-4.20 indicates Agree and 4.21-5.00 represents "Strongly agree" [18]. This interpretative framework aids in understanding the distribution and overall sentiment of responses.

Table 1. Functionality testing results for the artful mind web application.

Test descriptions	Expected results	Test results (pass/fail)
Account management	4	Pass (100%)
Dashboard	7	Pass (100%)
Activities	8	Pass (100%)
Total	19	100%

Table 2. Functionality testing results for the Artful Mind web application interprets measurements.

Likert-scale description	Likert-scale	Likert scale interval	Interpretation
Strongly disagree	1	1.00-1.80	Negative
Disagree	2	1.81-2.60	Negative
Neutral/uncertain	3	2.61-3.40	Positive
Agree	4	3.41-4.20	Positive
Strongly agree	5	4.2-5.0	Positive

Table 3 comprehensively evaluates various system features, focusing on key usability metrics: Learnability, efficiency, memorability and satisfaction. The account management features scored exceptionally well across all metrics, with a learnability rating of 4.8, efficiency at 5, memorability at 4.6 and satisfaction at 5. These results suggest that users find this feature highly intuitive, efficient and satisfying. Similarly, the art therapy activities feature exhibited strong usability, receiving a learnability, efficiency and memorability score of 4.4 and satisfaction at 4.8. While the results indicate that users generally find the feature easy to learn and remember, there is room for improvement in enhancing memorability. The Assessment with professional feature also performed well, though it scored slightly lower than the other features, with a learnability rating of 4.2, efficiency of 4.6, memorability at 4.2 and satisfaction at 5. This suggests that while users are highly satisfied with the feature, its memorability could be further improved. Lastly, the overall system received positive feedback, with ratings of 4.4 for learnability and efficiency, 4.6 for memorability and 5 for satisfaction, reflecting an overall favorable user experience across the system.

Table 4 presents the usability test results for therapists, assessing key system features based on essential usability factors: Learnability, efficiency, memorability and satisfaction. The results indicate that therapists rated the account management feature with a perfect score of 5 for both learnability and efficiency, demonstrating that the feature is highly intuitive and efficient. The memorability score of 4.67 suggests that therapists find it relatively easy to recall how to use the feature, while the perfect satisfaction score of 5 reflects high user approval. In comparison, Art Therapy Activities received slightly lower scores, with 4 for both learnability and efficiency, indicating that while the feature is relatively easy to learn and efficient, there is room for improvement. Memorability was rated higher at 4.67, suggesting that recalling how to use the feature is not an issue, but the satisfaction score of 4.33 highlights some potential areas for enhancing user satisfaction. Lastly, the overall system was rated positively, with a learnability score of 4.67, efficiency of 4.0, memorability of 4.33 and a satisfaction score of 5. While the overall user experience is strong, improvements in efficiency and memorability could further enhance the system's usability.

Effectiveness of artful mind web application

To align with the study's objective and methodology, comprehensive surveys and in-depth interviews were conducted. The researchers selected participants to represent two distinct perspectives: Expert opinions from psychology professionals and insights from highly productive or engaged students. The subsequent analysis, presented in the following figure, studies the evaluation results, focusing on the system's effectiveness in alleviating stress among these students. The findings are used to gauge how the digital platform performs in supporting the mental health of highly productive students. This approach allows the study to gather both professional view points and personal experiences while emphasizing the strengths and limitations of the digital art therapy system, particularly in its capacity to address stress in a manner that resonates with this specific group of students (Figure 9).

The researchers conducted a pre-survey with the assistance of a psychology professional to determine the level of stress and the difficulty in expressing emotions among highly productive or engaged college students. The purpose of the pre-survey questions under the "Stress" category is to gauge the participant's current stress levels and identify its sources. The statements are designed to study how stress manifests in their

daily lives and how effectively they cope with it. By addressing feelings of overcome, mood swings and difficulties in managing stress, the survey aims to provide a baseline understanding of the participant's mental and emotional state. This understanding will help determine the extent to which stress impacts their academic performance and overall well-being, thus serving as a foundation for developing appropriate support or intervention strategies. Moreover, the "Difficulty Expressing Emotions" category is focused on understanding participant's ability to articulate and communicate their emotional experiences.

The statements assess whether participants feel inhibited when describing emotions, struggle to convey what they are feeling or tend to avoid emotional discussions altogether. This category aims to identify potential barriers in emotional communication, which could lead to feelings of isolation or misunderstanding. The results from this survey can guide the development of activities or workshops aimed at improving emotional literacy and enhancing participants' capacity to express them more clearly and confidently. The overall stress level among the respondents is considerably high, with a total average score of 4.24 out of 5. The results indicate that most participants are experiencing significant stress, largely driven by academic pressures and a feeling of being stressed by their responsibilities, both of which scored 4.4.

Moreover, students reported difficulties in managing their stress effectively and are experiencing mood swings or irritability, both scoring 4.2. The results suggest that the respondents are struggling with their current workload and academic demands, which contribute significantly to their stress levels. Subsequently, the students also reported moderate to high difficulty in expressing their emotions, with an average score of 4.08 out of 5. The students expressed challenges in putting their emotions into words and talking about them, with a score of 4.2 in several related items. A slightly lower score of 3.8 was recorded for the feeling of being misunderstood, indicating that while some students find it hard to communicate their emotions, it is not always perceived as a major barrier. The consistency of high scores suggests that most of the students avoid talking about their feelings due to the inability to express them, which may contribute to feelings of isolation or frustration (Figure 10).

Table 3. Usability test results per feature for users.

Features	Learnability	Efficiency	Memorability	Satisfaction
Account management	4.8	5	4.6	5
Art therapy activities	4.4	4.4	4.4	4.8
Assessment with professional	4.2	4.6	4.2	5
Overall system	4.4	4.4	4.6	5

Table 4. Usability test results per feature for therapist.

Features	Learnability	Efficiency	Memorability	Satisfaction
Account management	5	5	4.67	5
Art therapy activities	4	4	4.67	4.33
Overall system	4.67	4	4.33	5

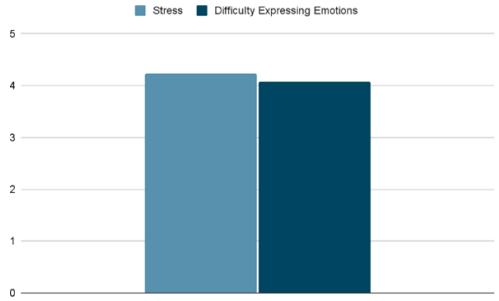

Figure 9. Pre-assessment survey.

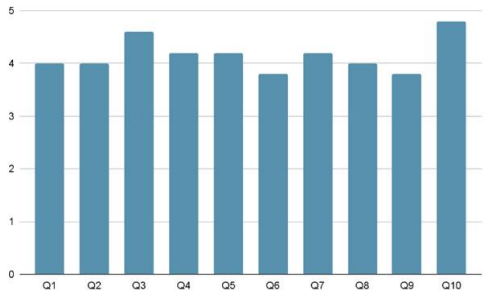

Figure 10. Post-assessment survey.

The post-survey was conducted after respondents had undergone several art therapy sessions to assess the impact on their stress levels and emotional expression abilities. The focus was on measuring improvements in managing stress and their ability to communicate emotions more effectively. Participants were asked to reflect on changes in their emotional well-being, self-awareness and stress management since the initial survey. The post-survey aimed to capture how engaging in art therapy influenced their emotional processing, stress resilience and overall psychological health, providing insights into the effectiveness of art therapy as a tool for personal growth and mental wellness.

The survey results indicate a generally positive impact of art therapy on college student's emotional and psychological well-being. With an average rating of 4 out of 5, individuals report that art therapy has helped them better understand their emotions. Most respondents reported high levels of satisfaction, with an average score of 4 for understanding and gaining control over emotions. Subsequently, participants felt that art therapy significantly reduced stress (4.6) and provided a safe environment for expressing difficult emotions (4.2). Positive mood changes were commonly noted (4.2), alongside improved self-esteem and confidence (3.8). A sense of deeper connection with one's inner self (4.2) and the ability to manage negative thoughts (4) was also frequently reported. Although some rated the development of new coping strategies slightly lower (3.8), the overall emotional and psychological benefits of art therapy were highly regarded, with an impressive score of 4.8 out of 5, suggesting its effectiveness in supporting mental wellness. These results affirm art therapy as a valuable tool in emotional regulation, stress relief and self-exploration.

Methodological approach and process

In developing a digital platform for art therapy, a structured, stepwise approach was applied using the Waterfall Model methodology to ensure thorough planning, reliability and measurable outcomes. Each phase contributed strategically to the platform's potential for supporting mental wellness. During the Requirements Phase, input was collected from mental health professionals and potential users, particularly college students, to establish therapeutic goals, user needs and essential features. This included incorporating personalized art therapy activities-such as free drawing, collage making and Mindful coloring aimed at supporting emotional expression and reducing stress.

The subsequent design Phase involved creating detailed blueprints and wireframes to ensure an intuitive, user-centered interface. Design considerations prioritized essential features such as user account management, professional collaboration tools and access to supportive resources, all of which are critical for providing a holistic mental health environment. These designs were then translated into functional modules in the implementation phase, where each component was rigorously tested for reliability and usability. Functionality testing confirmed that important features, including account management, dashboards and art therapy activities, consistently performed as intended, achieving a 100% pass rate across all test cases. Usability testing yielded high scores in areas such as learnability, efficiency and user satisfaction, underscoring the platform's alignment with user needs.

The design choices made in this development process significantly contributed to positive outcomes. A user-centered interface, combined with popular art therapy tools, developed high engagement and intuitive navigation, supporting users in achieving therapeutic benefits. Additionally, the platform's collaboration features and access to mental health resources likely enhanced its perceived value, as reflected in high

satisfaction scores. This systematic approach validated that each platform aspect effectively aligned with the study's objectives, promoting a positive and impactful user experience.

Conclusion

The primary objective of this research was to develop a digital platform aimed at reducing stress and enhancing overall mental well-being through art therapy, offering personalized expression and therapeutic guidance for highly engaged college students aged 18-24. The research successfully developed a digital platform aimed at reducing stress and enhancing mental well-being through personalized art therapy. Findings from interviews, functionality and usability testing showed that integrating digital technology with art therapy effectively supported emotional expression, stress relief and overall wellness. The platform met its primary objectives, achieving a 100% success rate in both user and admin functionalities, confirming its effectiveness in delivering personalized therapeutic guidance.

The integration of digital technologies with art therapy demonstrated a positive impact on stress reduction and mental well-being among highly productive college students. Pre-survey data indicated significant stress levels and difficulties in emotional expression due to academic pressures. Following digital art therapy sessions, post-survey results showed notable improvements in emotional awareness and stress management, with students reporting greater emotional control and stress relief. These findings suggest that digital platforms combined with art therapy can effectively support emotional study and stress management, addressing key mental wellness challenges.

Recommendations

The interview with the psychology professional provides clear evidence that integrating digital technologies with art therapy significantly contributes to reducing stress and improving overall mental well-being among highly engaged college students. This emphasized that digital art therapy enhances patient engagement by offering a creative and pressure-free environment, particularly appealing to students who benefit from its flexibility. Its non-verbal nature allows for emotional expression and processing, which is especially valuable for individuals who struggle with verbal communication of emotions. Activities like creating digital artwork were shown to lower stress levels and promote calmness. Furthermore, the therapy encouraged self-reflection and deeper emotional understanding as students gained insight into their feelings through their creations and subsequent guided discussions. The findings suggest that digital art therapy is a powerful tool for managing emotional stress, supporting mental health and developing self-awareness in highly productive students.

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