Major Project Presentation

on

MANASSU: AN AI-POWERED MENTAL HEALTH SUPPORT SYSTEM

By

Samsoth Sanjay (2021UG1090)

Under the supervision of

Dr. Kirti Kumari

Assistant Professor

Department of Computer Science and Engineering

Indian Institute of Information Technology Ranchi

Ranchi- 835217

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PROBLEM STATEMENT

➢ Mental health issues are rising globally, yet access remains limited.

➢ A study in the Netherlands observed a significant increase in sleep problems among working young adults between 2009 and 2019.

➢ Globally, depression is a significant burden among young adults.

➢ There is a clear need for accessible and convenient solutions for mental health support.

➢ Our solution: An AI-based web companion offering emotional support, education, and self-help tools.
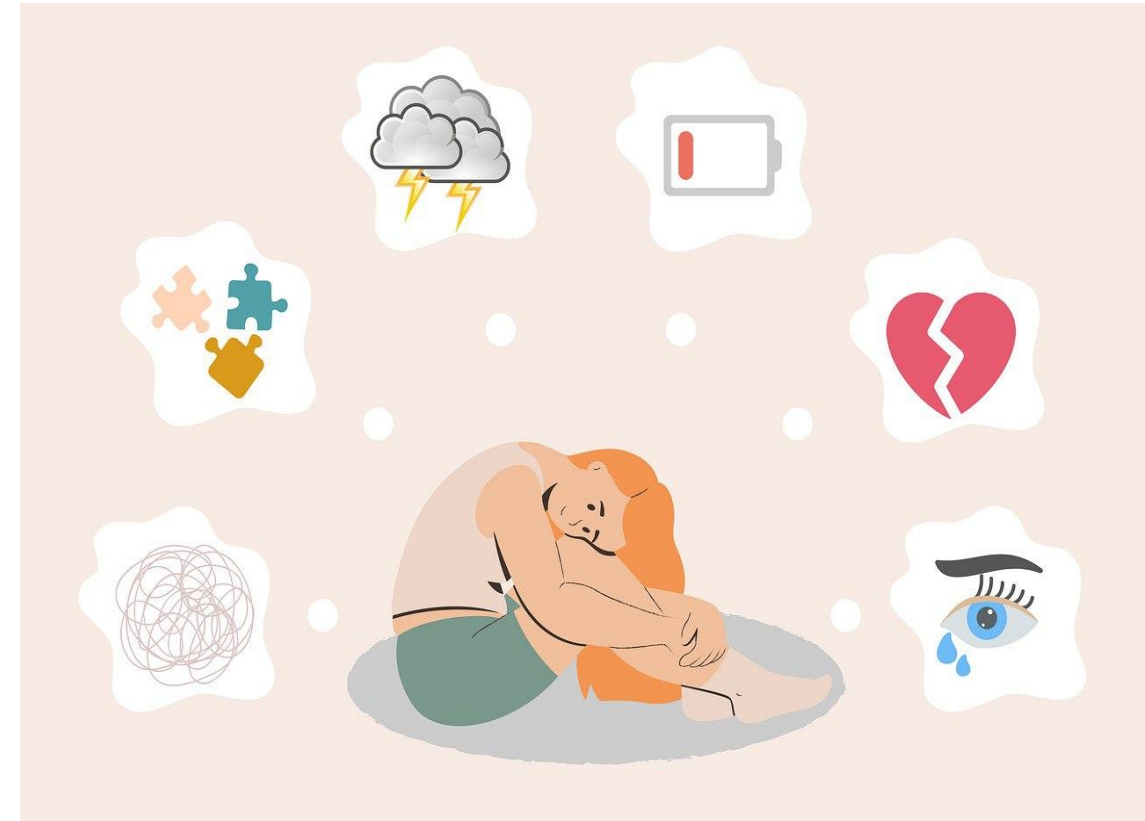
Fig 1. Overwhelmed Mind

INTRODUCTION

➢ Mental health is a critical component of overall health and well-being, alongside physical and social health.

➢ Technology, specifically AI-powered applications, offers potential to improve accessibility and convenience in mental health care.

➢ These applications can provide self-help tools, peer support, and access to professional guidance.

➢ An AI-powered mental health support system can function as an AI buddy for students, offering immediate and confidential help for issues like depression, exam stress etc.

➢ These systems can also analyze user behavior and responses over time to provide personalized insights and early detection of mental health concerns.

Fig 2. AI-Powered Mental Wellness

LITERATURE SURVEY

Core Contributions:

Ref. No.	Author(s)	Focus Area	Contribution to Manassu
[1]	Brown & Kumar (2021)	CBT-based digital therapy	Justifies CBT integration in chatbot design
[2]	Patel et al. (2022)	Empathy modeling in AI	Shaped GPT-3.5 + VoiceFlow interaction logic
[3]	Lee et al. (2022)	Mood journaling for emotional regulation	Supported mood tracking & reflection module
[4]	Singh & Thomas (2020)	Wysa case study	Benchmarked real-world mental health chatbot performance

LITERATURE SURVEY

Technical Foundations:

Ref. No.	Author(s)	Focus Area	Contribution to Manassu
[5]	Kumar & Desai (2021)	Ethical considerations in AI mental health	Guided ethical guardrails and non-diagnostic design
[6]	OpenAI	GPT-3.5 language model	Core of the AI chatbot's conversation capabilities
[7]	VoiceFlow Inc.	Conversational design platform	Used for logic-based chatbot flow creation
[8]	Google Firebase Docs	Realtime backend & security	Enabled secure authentication and live data handling

CHALLENGES & LIMITATIONS

➤ **Emotional Understanding**

- Subjective emotions are complex and context-dependent, making accurate AI interpretation difficult.

- Variations in language, culture, and individual expression limit emotion detection accuracy.

➤ **Clinical Validity**

- Many AI tools lack clinical validation and approval from mental health authorities.

- Risk of misdiagnosis or misguidance when used as a replacement for professional therapy.

➤ **Data Privacy & Security**

- Mental health data is highly sensitive, requiring robust protection against breaches.

- Risk of data misuse or unauthorized access if privacy protocols are inadequate.

PROPOSED METHODOLOGY

➢ An AI-based web companion is designed to provide emotional support, education, and self-help tools.

➢ Core features include mood journaling, goal planning, CBT lessons, meditation, and a peer support section.

➢ GPT-3.5, integrated via VoiceFlow, powers the chatbot to ensure empathetic and safe conversations.

➢ Firebase handles authentication, real-time data storage (Firestore), and analytics.

➢ Mood trends and user progress are visualized using Chart.js on the frontend.

Fig 3. Mental Clarity vs. Mental Chaos

TECHNOLOGY STACK

Component	Technology Used	Purpose
Frontend	HTML, CSS, JavaScript	Builds responsive and user-friendly UI across devices
Backend	Firebase	Manages authentication, hosting, and real-time database sync
AI Layer	GPT-3.5 + VoiceFlow	Empathetic chatbot with structured conversation logic and safe responses
Database	Firestore	Securely stores user data like mood logs, goals, journals
Visualization	Chart.js	Plots emotional trends and user progress visually

SYSTEM ARCHITECTURE

AI-Powered Mental Health Support Workflow:
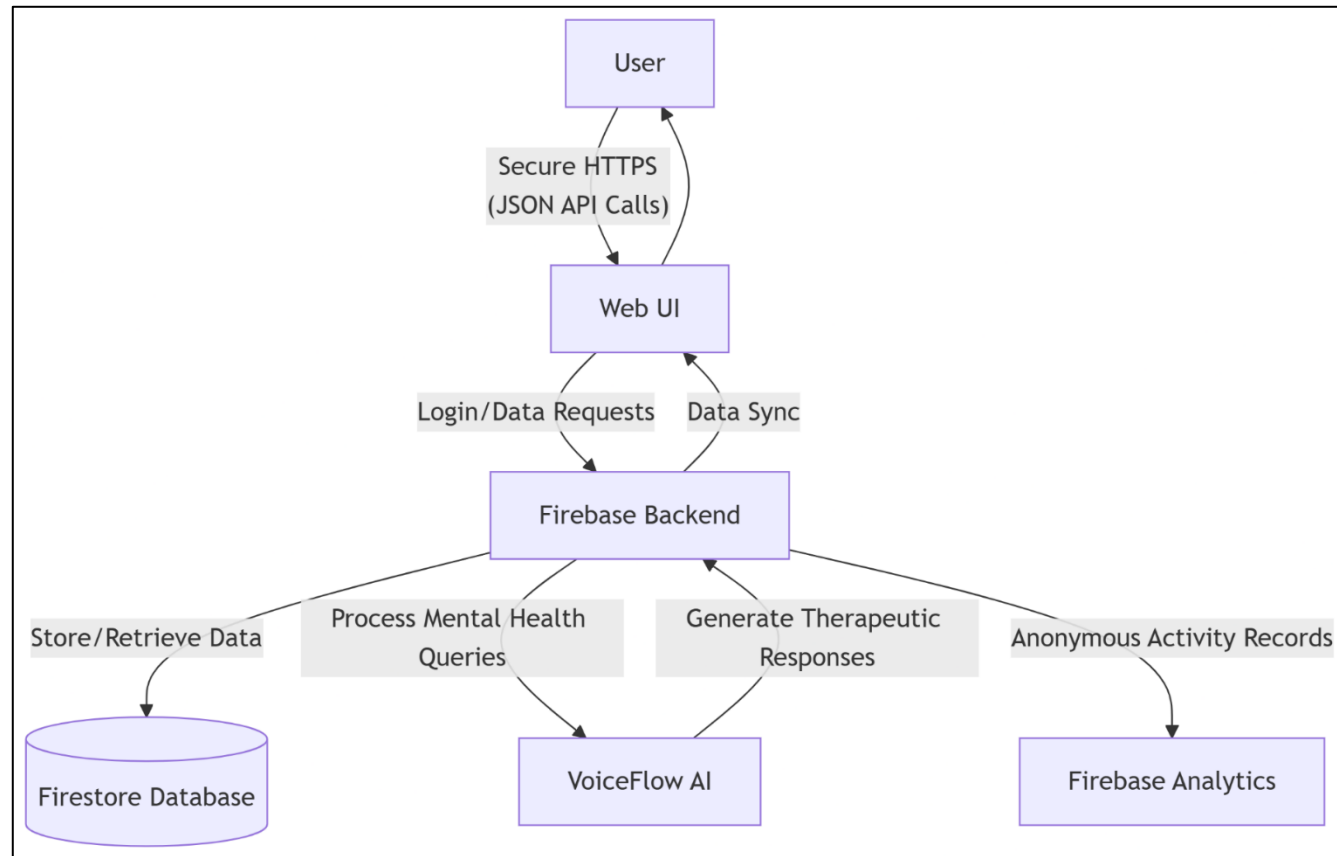
Fig 4. System Architecture of Manassu

MODULE OVERVIEW

➢ **Mood Journal**

- Purpose: To help you keep track of and understand your feelings over time.

- Functionality: You simply add how you're feeling each day, maybe adding a quick note about why. The app then takes these daily entries and shows you a graph (like a line going up and down) so you can easily see your mood trends over days or weeks.

- Benefits: Helps you become more aware of what affects your mood, spot patterns you might not have noticed, and understand yourself better.

➢ **Goal Planner**

- Purpose: To help you set clear targets and make progress towards feeling better mentally.

- Functionality: You can set personal goals related to your mental well-being (like "worry less" or "be more active").

- Benefits: Gives you direction and focus. Makes big goals feel less overwhelming by breaking them down.

MODULE OVERVIEW

➢ **Meditation Player**

- Purpose: To help you relax, calm your mind, and reduce stress.

- Functionality: Provides simple audio recordings that guide you through breathing exercises or short meditation sessions. You just listen and follow the voice.

- Benefits: Helps you quiet busy thoughts, relax your body, and feel more present and peaceful in the moment. It's a handy tool to use when you feel stressed or just need a few minutes to reset.

➢ **AI Chatbot**

- Purpose: To offer immediate, private, and supportive conversation whenever you need it.

- Functionality: You can type messages to the AI, sharing how you feel or what's bothering you. The AI is designed to understand you and respond with empathy and helpful, intelligent messages, like a caring friend you can talk to anytime.

- Benefits: Provides a safe space to express yourself without judgment. Gives you instant support when you're feeling down or anxious.

MODULE OVERVIEW

➤ **CBT Lessons**

- Purpose: To teach you simple, practical skills to manage your thoughts and feelings better.

- Functionality: These are like mini-lessons that explain ideas from Cognitive Behavioral Therapy (CBT), a proven type of talk therapy.

- Benefits: Gives you valuable tools and knowledge to understand why you feel the way you do and how to change negative thinking or cope with challenges more effectively in your daily life.

➤ **Progress Tracker**

- **Purpose:** To show you visually how you are doing and motivate you.

- **Functionality**: It automatically collects information from other parts of the app, like your Mood Journal entries and your Goal Planner.

- **Benefits:** Helps you clearly see your journey and the progress you've made. Shows you what strategies or habits are working best for you.

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KEYS FEATURES & SCREENSHOTS

Screenshot 1: App Introduction & Features Overview
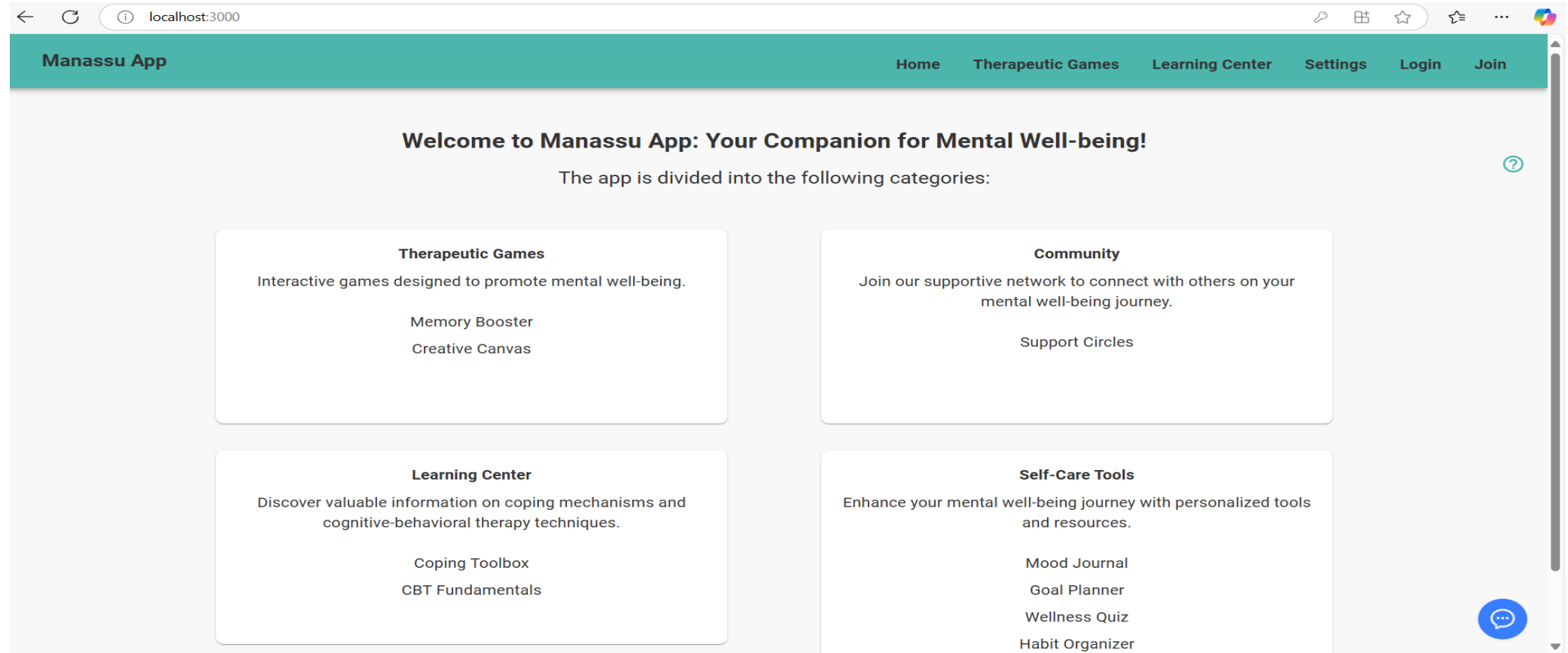
Explanation: Introduces the Manassu App and its main categories, including Therapeutic Games Community, and Self-Care Tools.
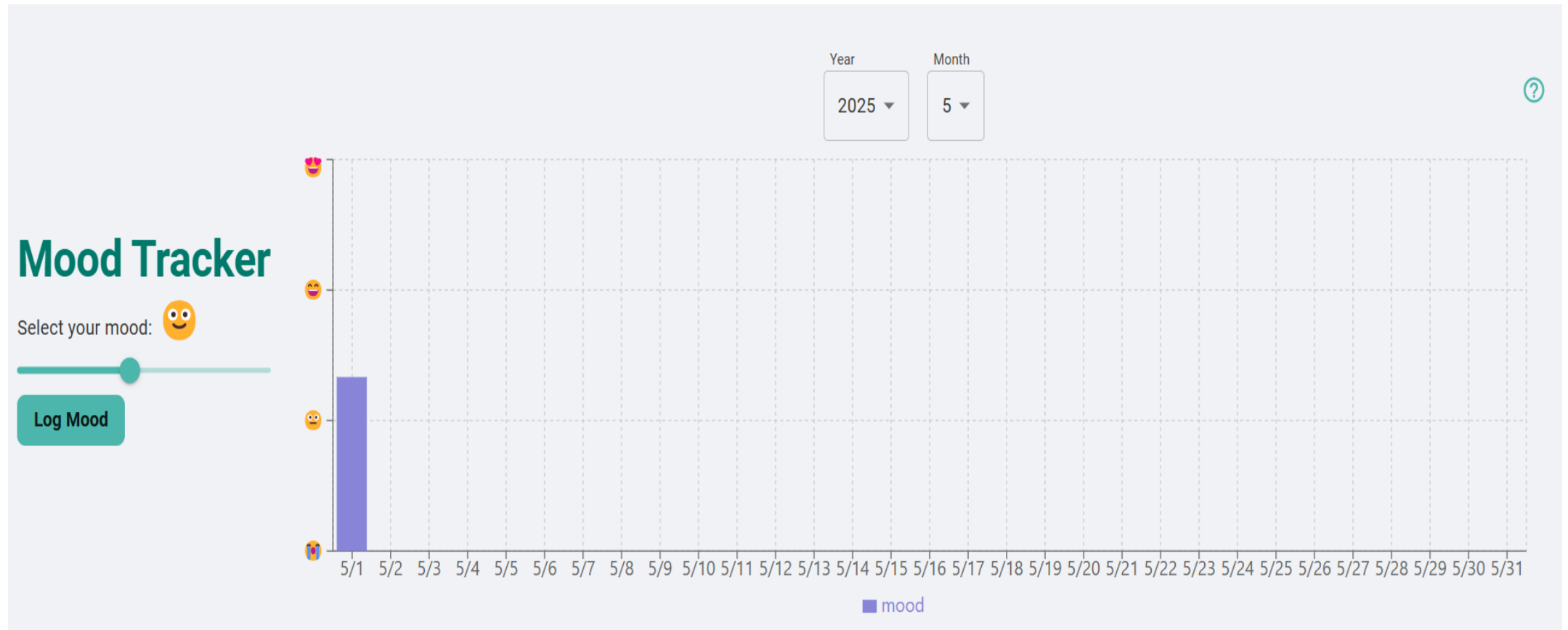
KEYS FEATURES & SCREENSHOTS

Screenshot 2: App Navigation & AI Interaction
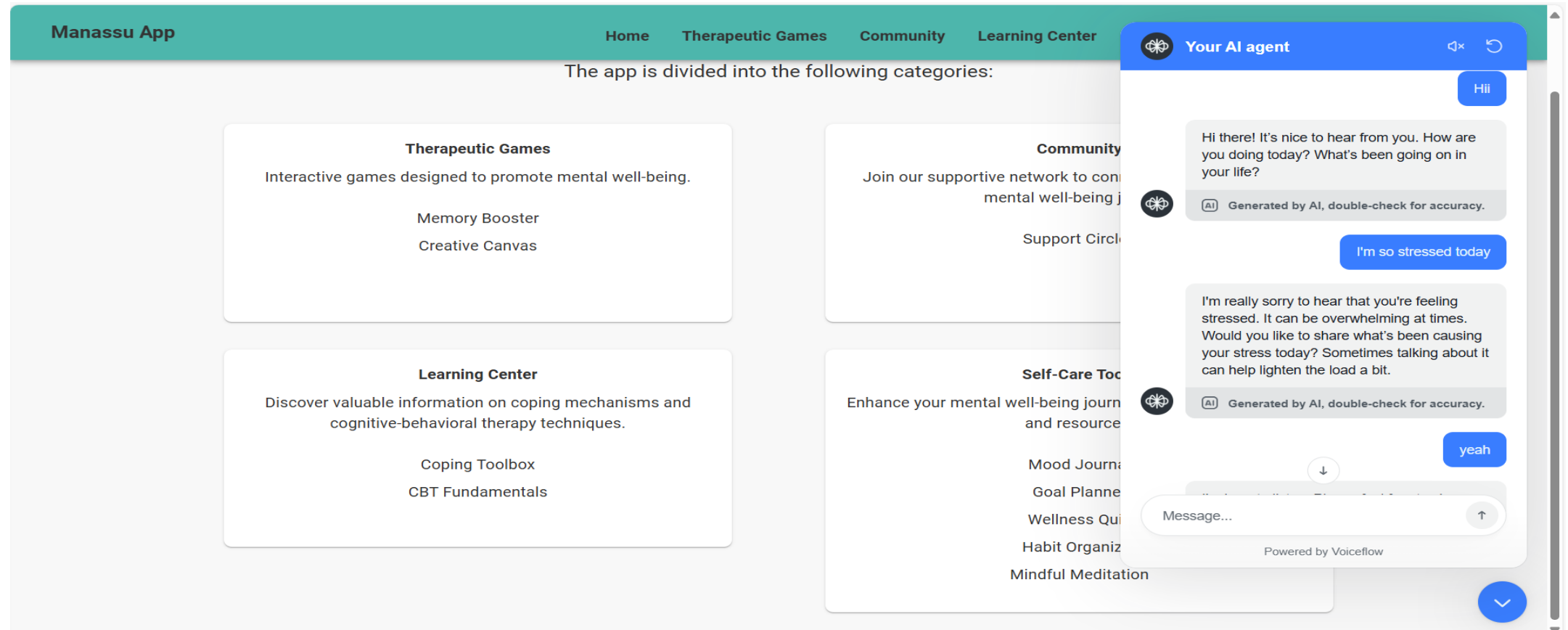
Explanation: Shows the app's navigation menu and highlights the AI agent feature, which provides conversational support and governance.

KEYS FEATURES & SCREENSHOTS

Screenshot 3: Mood Tracker Feature

Explanation: Displays the mood logging functionality, allowing users to track their daily emotions over a calendar month.

KEYS FEATURES & SCREENSHOTS

Screenshot 4: Goal Setting & Progress Tracking

Explanation: Illustrates the goal-setting tool, where users can create, edit, and monitor SMART goals for mental well-being.

KEYS FEATURES & SCREENSHOTS

Screenshot 5: Wellness quiz and feedback modal

Explanation: Quizzes assess well-being, followed by personalized, non-clinical feedback to guide self-awareness.

KEYS FEATURES & SCREENSHOTS

Screenshot 6: Habit Organizer Dashboard

Explanation: Shows the habit-tracking interface, including filters, streaks, and completion rates for user-defined habits.

KEYS FEATURES & SCREENSHOTS

Screenshot 7 : Guided Meditation Options
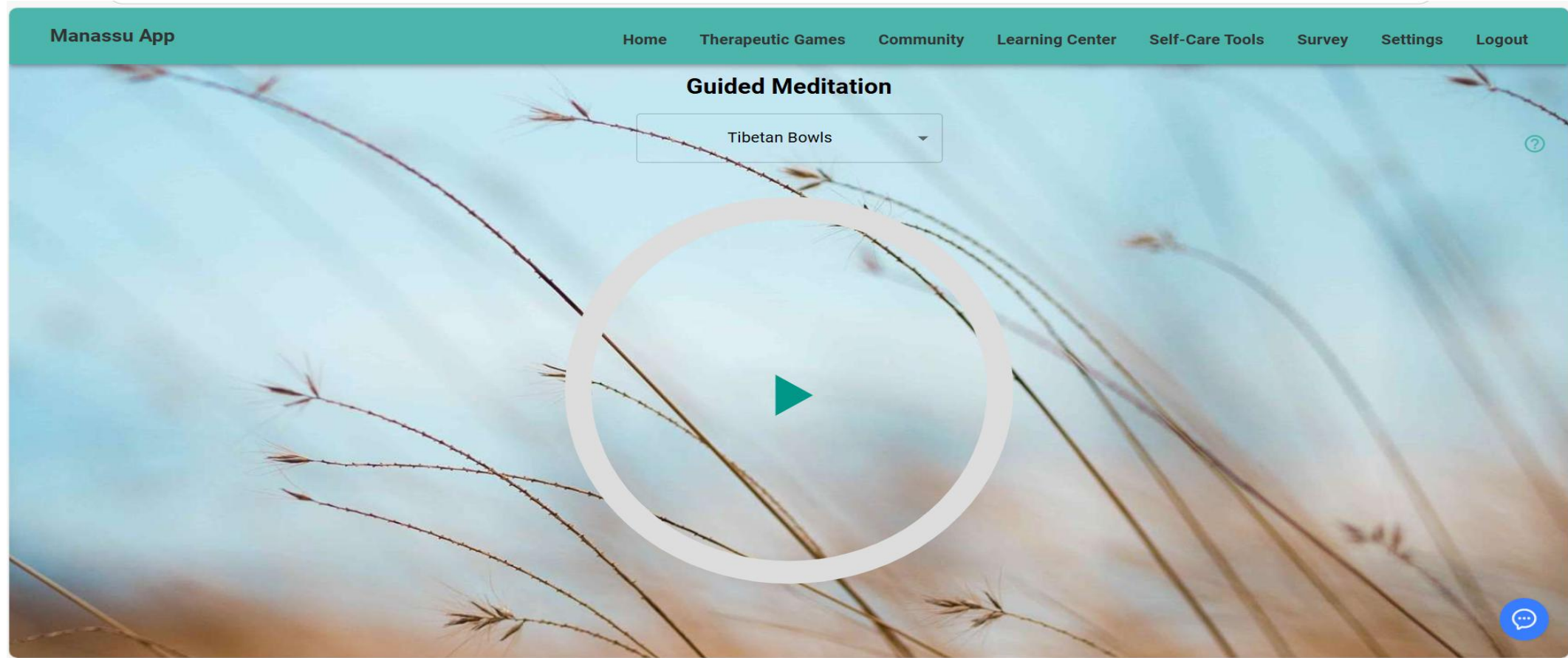
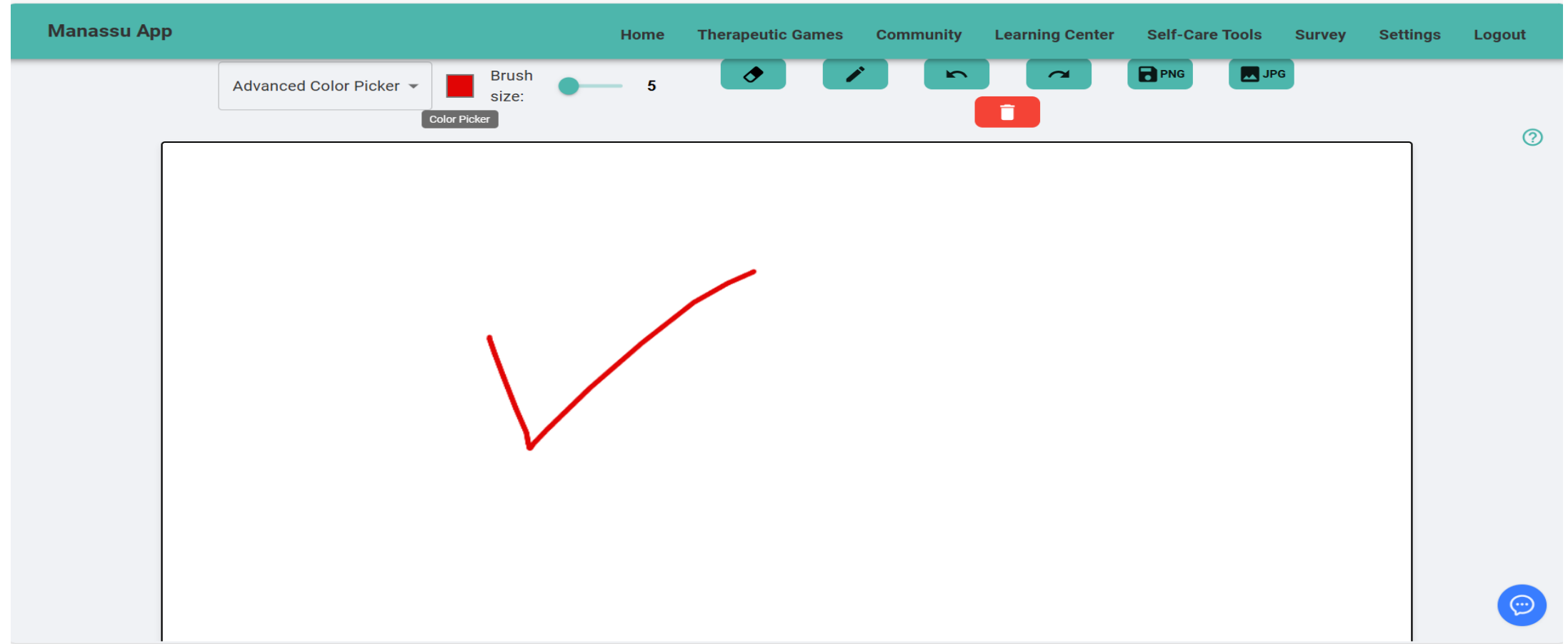**Explanation:** Highlights the meditation section, offering options like Tibetan Bowls and more musics for relaxation and mindfulness.

KEYS FEATURES & SCREENSHOTS

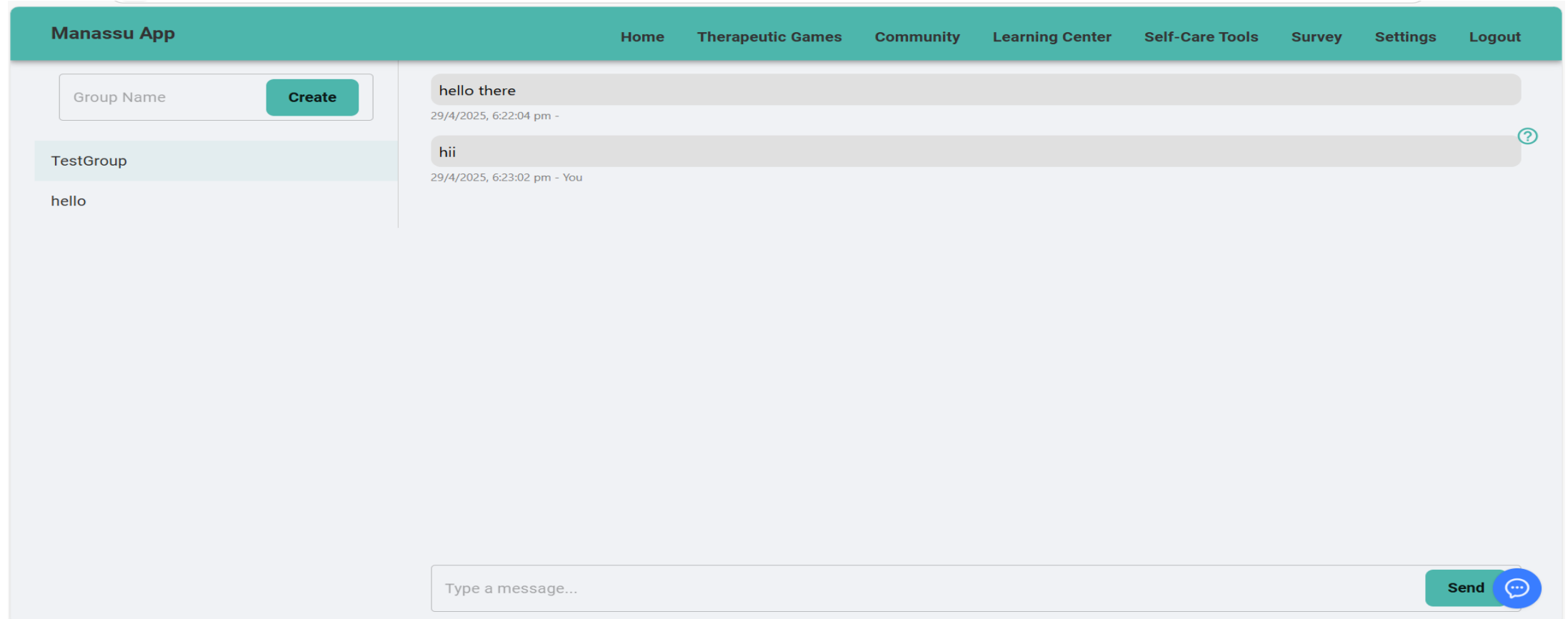**Screenshot 8:** Creative Canvas Tool

Explanation: Displays the art-based therapeutic tool with adjustable brush sizes and color options for creative expression.

KEYS FEATURES & SCREENSHOTS

Screenshot 9: Community Support Groups

Explanation: Showcases the community feature, where users can join or create groups for shared support and interaction.

COMPARATIVE ANALYSIS

Manassu vs. Existing Platforms:

Feature	Manassu	Wysa	Woebot	Replika
Empathetic Chatbot	✓ GPT-3.5	✓	✓	✓
CBT Tools	✓	✓	✓	✗
Mood Tracking	✓	✗	✗	✗
Web-Based	✓	✗	✗	✓
Tailored to Students	✓	✗	✗	✗
Privacy & Ethics	✓	✓	✓	✗

CONCLUSION AND FUTURE WORK

➤ **CONCLUSION**

- Mental health challenges are growing, and many people face difficulties getting the help they need because of factors like cost, societal stigma, and limited access to services.

- AI-powered applications like this one offer a promising way to overcome these barriers by providing accessible and confidential mental health support tools.

- The system is designed to help users understand themselves better and develop coping skills through features such as tracking moods, setting goals, learning therapeutic techniques (like CBT), and having access to an AI chat companion.

- Ultimately, this AI-powered system aims to be a valuable digital companion, empowering individuals in managing their mental well-being and making support more readily available.

CONCLUSION AND FUTURE WORK

➢ **FUTURE WORK**

- Confirm Effectiveness: It's important to conduct scientific studies to prove that using this app genuinely helps improve people's mental health and overall well-being.

- Make it More Personal: Develop the app further to provide support and suggestions that are highly customized to each individual user's specific needs and how they are progressing.

- Enhance the AI: Work on making the AI chatbot even better at understanding complex human emotions and providing sensitive, helpful responses, including having clear ways to assist users in crisis situations.

- Ensure Data Safety: Continuously improve the measures in place to protect all user data and keep it completely private and secure.

REFERENCES

1. Brown, T. and Kumar, R., *"Chatbots in Digital Therapy: The Rise of CBT-Based Virtual Support Systems,"* Journal of Digital Mental Health, vol. 9, 2021, pp. 45–59.

   - Validated use of CBT for AI-based therapy tools.

2. Patel, A., Verma, S., and Choudhary, R., *"Virtual Mental Health Assistants: Empathy Modelling Using Conversational AI,"* Proc. Intl. Conf. on AI in Healthcare, 2022, pp. 78–86.

   - Guided empathetic response flow with GPT-3.5 and VoiceFlow.

3. Lee, Y., Chang, K., and Rajan, M., *"Mood Journals in Therapy: Benefits of Daily Tracking on Emotional Regulation,"* Journal of e-Therapy and Counselling, vol. 11, 2022, pp. 88–101.

   - Supported use of mood tracking as a mental wellness tool.

4. Singh, A. and Thomas, G., *"Wysa: AI-Based Support for Mental Health – A Real-World Case Study,"* Proc. Intl. Conf. on AI for Wellness, 2020, pp. 51–59.

   - Used for comparative evaluation and benchmarking.

REFERENCES

5. Kumar, S. and Desai, R., *"Ethical Considerations in AI-Driven Mental Health Applications,"* NIMHANS, 2021, pp. 102–109.

    - Informed design of ethical and non-diagnostic AI interactions.

6. OpenAI, *GPT-3.5 Overview.*

    - Core large language model enabling intelligent chatbot conversation.

7. VoiceFlow Inc., *VoiceFlow – Conversational AI Builder.*

    - Tool used to build safe and structured AI conversation logic.

8. Google, *Firebase Documentation – Realtime Database and Authentication.*

    - Backend framework for secure data handling, real-time sync.

THANK YOU