### **School/Organisation:**

### St Andrew’s secondary school

**Team name:**

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### **Team members:**

### **Anand Ram Sanjith**

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### **Project title:**

### **RoboStudy Buddy**

**🧠 Problem:** Studying alone at home often leads to distractions, low motivation, and decreased productivity. Without structure or support, it’s easy to fall off track. It is also hard to keep a constant eye on students to ensure they are focusing on studying.

**💡 Solution:** *RoboStudy Buddy* is your AI-powered tabletop study guardian designed to make solo studying simpler and more engaging. With time management, personalized coaching, real-time assistance, and fun motivational tools, it turns your desk into a productivity powerhouse.

### **✨ Key Features**

* **⏱️ Pomodoro Timer:**Structure your study and break sessions using the Pomodoro Technique to help you stay consistent and avoid burnout. The Pomodoro Technique is a time management method based on 25-minute stretches of focused work broken by five-minute breaks. Longer breaks, typically 15 to 20 minutes, will be taken after four consecutive study intervals. We can implement it into our project by ensuring that the users get proper breaks through changing certain settings such as the colour of the WRGB lights to ensure they know when to take the break. Our detection system can detect when the user is actually taking a break, we can again use the lighting system to indicate the break is over.
* **🌈 Lighting:** Customizable LED lighting that shifts to support alertness, calm, or relaxation—ideal for day or night sessions. We can use WRGB lights or also known as White,Red,Blue,Green lights. These lights can simulate all the colours on the colour spectrum while being able to display pure white unlike normal RGB lights. We will also individually addressable leds to be able to individually control the colour of each LED. These LEDs will also reduce the number of wires required to connect to the microcontroller from 5 to 3. We can wire these lights to the GPIO of a microcontroller and program it to detect when someone is not focusing on their studies and to flash a red light to ensure they know to be focused on their studying.

* **🤖 AI Study Assistant:** Provides access to explanations, summaries, and even brainstorming help. We will be able to implement our assistant using an API key from AI models such as the Perplexity or OpenAI models.These models will be implemented in such a way that they will be specially tailored to ensure that the needs of the user will be met and so that they will be able to have a more efficient and convenient study experience.
* **📹 Distraction Detection & vibration alarm:** Uses a mind reading system(does not exist yet) and camera coupled with an eye tracking system to detect inactivity or distractions, prompting friendly voice and vibration cues to refocus your attention. We will use a mind reading system to detect when a student is not focusing on their studies. This mind system will be able to detect the user’s exact thoughts and decide whether he/she is thinking about studying or not. There are ethical qualms about such technology so rest assured that the exact thoughts of any user will never be saved for more than five minutes.
* **📊 Personalized Study Coach:** Learns your habits and suggests optimized schedules, better break timing, and tailored productivity tips over.
* **🎮 Gamified Focus System:** This system transforms study sessions into an engaging, reward-driven experience by integrating game mechanics. Users accumulate "Focus Points" by completing timed study blocks (e.g., 25-minute Pomodoro sessions) and maintaining daily or weekly streaks, which reinforce consistency. Points can be redeemed for curated rewards, such as access to ambient playlists designed to enhance concentration, personalized motivational messages that celebrate milestones, or screen-free breaks (e.g., guided breathing exercises or quick outdoor walks) to prevent burnout. By linking tangible, immediate rewards to productive behavior, the system taps into dopamine-driven motivation loops, making it psychologically easier to start and sustain study habits. Over time, the accumulation of points not only reflects progress but also fosters a sense of achievement, turning disciplined focus into a satisfying challenge rather than a chore. This approach leverages behavioral psychology principles to create a self-reinforcing cycle where effort feels rewarding, ultimately increasing long-term engagement and academic resilience.
* **📈 Productivity Dashboard:** Stay motivated and informed with a built-in dashboard that gives a clear picture of study habits and progress over time. The RoboStudy Buddy tracks daily and weekly productivity using intuitive visualizations, such as bar charts, heat maps, and focus streak timelines. Users will be able to see how many Pomodoro cycles have been completed, how consistently a student has been studying, and when someone’s most productive hours are, Identify patterns in study behavior—like when someone tends to lose focus or when someone is at peak performance, export stats or receive weekly summaries via email or connected apps like Notion or Google Calendar, set specific study targets (e.g., hours per subject, revision goals) and track your progress toward them in real time. Whether you're preparing for exams, building daily habits, or trying to avoid burnout, the dashboard keeps you motivated with tangible evidence of your growth.
* **🗣️ Voice Control Mode:** Set timers, ask questions, or log goals with voice commands—stay hands-free and in the zone.

**Future developments**

* **📅 Smart Scheduler:** The Smart Scheduler is an intelligent study planning tool that syncs seamlessly with your calendar to analyze your workload, deadlines, and energy levels, then suggests optimal study windows tailored to your personal rhythm. By identifying your peak focus times and balancing them against existing commitments, it automatically allocates study blocks when you’re most alert and productive, helping you tackle urgent tasks first and avoid conflicts. This adaptive system can dynamically reschedule sessions if unexpected events arise, ensuring your study plan remains realistic and manageable. By integrating time-blocking strategies and considering your mental energy throughout the day, the Smart Scheduler not only maximizes efficiency but also helps prevent burnout, making your study routine smarter, more personalized, and easier to maintain consistently.
* **📊 Personalized Study Coach:** Learns your habits and suggests optimized schedules, better break timing, and tailored productivity tips over.
* **🔗 App & Tool Integration:** Seamlessly connects with Google Calendar, Notion, Anki, and more to enhance your workflow and track tasks across platforms.