

SUMMARY

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School/ Department	School of Engineering
Title of Project	Mood Zen Assistant
Problem Statement / Needs <i>(In less than 200 words)</i>	Problem statement: Providing a solution that integrates meditation guidance, mood analysis, and focus enhancement into a single device, fostering improved mental well-being and productivity.
Abstract <i>(In less than 200 words)</i>	As college students, we are aware that some students may find it challenging to concentrate on their work (particularly for their academics). We have come up with an idea to make use of a device to monitor the user's pulse rate (BPM) and offer some pertinent advice, including breathing methods and meditation techniques, while concurrently providing comforting visual signals that can improve their mood and concentration. Thus, we hope to create a product that can enhance the students' productivity and attention toward their studies.

ANNEX A

Product Description

1) Describe the new opportunity the proposed product offers or the existing problem(s) in the target market that the proposed solution is trying to solve.

The project involves simulating a mood lamp with the capacity to influence the user's mood and emotions, enabling modification of their attention mode. This product helps to provide assistance to individuals who struggle with focus and often become distracted to stay on task. Furthermore, a heart rate monitoring system will be integrated into the mood lamp. The system will provide the user's heart rate statistics to alert the user to adjust their meditation or study mode when there is an elevated heart rate.

2) Give a detailed description of the functions/features and the way it works.

This innovative device incorporates a heart rate sensor, LCD screen, buzzer, LED, and a button. *(Note: 60-100BPM is optimal heart rate, anything outside of the range is the situation that needs to be taken care of.)*

- A. **Heart rate sensor:** Detects user's heart rate (BPM) when the ear-clip was clipped onto the user's finger.
- B. **LCD:** Displays the user's heart rate and gives reminders and advice on adjusting their focus mode when abnormalities are detected. (eg. When the user's heart rate exceeds 100 BPM, the screen will display "BPM too high! Stand up and give yourself a little stretch...")
- C. **Buzzer:** Alerts the user to adjust their thoughts or techniques (eg. When the user's heart rate exceeds 100BPM, the
- D. e buzzer will "beep" to alert them to refer to the LCD for visual cues.)
- E. **LED:** Acts as ambient lighting which helps users to achieve their desired state of productivity. (When the user's heart rate is below 100 BPM, the blue LED will light up to focus and cognitive functions. When the user's heart rate exceeds 100 BPM, the red LED will light up to alert the user to adjust their mood/emotions)
- F. **Button:** Used to activate or deactivate the LED lighting

3) Describe the competitive advantages and novelty of the proposed solution as compared to other competing solutions.

A similar product on the market is the Mood Lamp. The competitive advantages and novelty of our "Mood Zen Assistant" device incorporate a heart rate detection mechanism, providing users with additional guidance and techniques to help them achieve their desired state of productivity.

4) What is the market scale? How could the product scale?

The proposed "Mood Zen Assistant" device enters a highly promising market, as the global mindfulness and wellness industry continues to experience steady growth. Research indicates a substantial search volume of 1.57 million units per month for mood lighting, with a noteworthy click concentration of 20.47%. This demand is projected to contribute to a market value of around \$8.36 million, according to Amazon's estimates.

Similarly, heart rate monitors show significant interest, with a search volume of 1.62 million units per month and a click concentration of 31.91%, leading to a projected market value of approximately \$13 million on Amazon. These figures underscore a strong consumer desire for innovative solutions that promote relaxation and mental well-being.

The "Mood Zen Assistant" device is well-positioned for growth within this expanding market due to several factors. Primarily, its target audience consists of individuals seeking stress relief, enhanced focus, and overall mental wellness. This wide customer base encompasses professionals, students, and wellness enthusiasts, providing ample opportunities for market penetration and growth.

By effectively capitalizing on the industry's growth, targeting the right audience, and leveraging strategic partnerships and technological advancements, we anticipate substantial scalability for the "Mood Zen Assistant" device. As we continuously refine and enhance our product, we are confident in its potential to meet current market demands and adapt to future industry developments.

5) What is the expected deliverable(s) or outcome(s) from the project, e.g. IP, new product/service, improvement in process and etc.?

- A. **Integrated Device:** The project aims to deliver a fully functional integrated device that combines meditation guidance, mood analysis, and focus enhancement features. The device will incorporate a heart rate sensor, LCD screen, buzzer, LEDs, and a push button.
- B. **Improved Mental Well-being:** The device intends to foster improved mental well-being by providing users with meditation guidance and breathing exercises. The heart rate sensor will monitor the user's pulse rate, and the LCD screen will display reminders and advice on adjusting focus mode based on abnormalities detected. The buzzer will alert users to adjust their thoughts or techniques accordingly.
- C. **Enhanced Productivity:** The integrated device seeks to enhance users' productivity by offering visual cues through ambient LED lighting. The users can also customise the color of ambience provided by the LEDs (by switching the LED with the specific color they want) to create the desired atmosphere for improved concentration and mood.

- D. **Improved Focus and Concentration:** By combining meditation guidance, mood analysis, and focus enhancement features, the device aims to help users improve their focus and concentration levels during tasks such as studying or working.

3) What is the implementation plan for the developed solution?

Designing phase:

- Designing the prototype's external and internal look.
- Using paper to make the mood lamp.

Development phase:

- Combine the respective Arduino Kit components (eg. Grove sensors and components: LCD, heart rate sensor, LED, buzzer, push button) needed for the mechanism.

Testing phase:

- Debug code multiple times to ensure error-free and smooth program operation.
- Modify the prototype for convenience, operation, durability, etc.

Deploy for use:

- Consumers can test the prototype to provide feedback.
- Gain insights for improvements.

ANNEX B**1) Gantt Chart - How to read the table**

Scope of Action	Immediate Predecessors	Duration (weeks)
a	-	1
b	-	2
c	-	10
d	-	2
e	d	5
f	d	5
g	e,f	2
h	g	1

2) Gantt Chart - Early Start approach

[illegible]

