

LAPORAN POSTURE MANAGER

Innovation Title: Posture Manager

Name of Department / Agency / Institution: Individual

Introduction

I am a secondary school student with a deep passion for technology and innovation. My journey in this field began during the Movement Control Order (MCO) in year 2020 when schools were closed, and students had to adapt to remote learning. During this time, my father encouraged me to explore new skills, which led me to discover micro: bit and Make Code. Fascinated by the potential of coding and hardware integration, I immersed myself in online classes and tutorials, gradually honing my technical skills through hands-on projects.

As I gained more experiences, I began developing my own innovations, including Posture Manager, a project designed to promote better sitting posture. Seeking to challenge myself further, I started participating in various competitions, where my projects received recognition and won multiple awards. These achievements have further fuelled my enthusiasm for technology, inspiring me to continue exploring new ideas and creating impactful solutions.

Explanation of Innovation

1. Summary of the Innovation Outcome

Posture Manager developed to monitor and correct improper body posture while reminding users when they have been sitting for too long. With advanced monitoring technology, Posture Manager provides alerts when users maintain an unsuitable posture or remain seated for extended periods. Consistent use of Posture Manager can help improve comfort and reduce the risk of physical discomfort.

2. Date of Innovation Development

The Posture Manager innovation was developed in December 2023.

3. Purpose of the Innovation Project

Posture Manager aims design and develop a prototype device attached on chairs to monitor and correct users' posture. This device helps users maintain the correct posture. Additionally, the project seeks to improve overall health by preventing various posture-related conditions such as musculoskeletal disorders (MSD) while reducing discomfort and pain. Ultimately, the project aims to familiarize society with proper posture practices, contributing to a healthier and more comfortable lifestyle.

4. Innovation Implementation Process

The development of Posture Manager was carried out in-house, where device development, hardware integration, and web interface creation were self-managed. The device uses sensors I learned these years, including ultrasonic sensors, buttons, and more, to detect users' posture and transmit data directly to a website developed using HTML, CSS, and JavaScript. To facilitate data management and monitoring, the website is integrated with Google Sheets, enabling automatic data storage and analysis without requiring a complex database. Additionally, I integrated an AI chatbot so users can ask questions about Posture Manager and posture positioning. This approach makes Posture Manager an accessible, user-friendly, and efficient innovation in helping teenagers maintain good posture.

5. Process Before and After Implementation

Before implementing Posture Manager, the process began with research and problem identification, where studies were conducted to understand the impact of poor posture on workers' health and identify their needs through surveys. The device development was done in-house, including designing sensors to detect posture and developing the website using HTML, CSS, and JavaScript, with Google Sheets integration for data storage. Once the device was developed, testing and optimization were conducted to ensure sensor accuracy and smooth user interface operation before launching a trial to a small group for feedback and device improvements before the full launch.

After implementation, monitoring and data collection began, with the device recording users' posture in real-time via sensors, while data was stored in Google Sheets for further analysis. Through data analysis, the device is periodically updated to improve accuracy and user experience. To ensure growth, marketing and expansion strategies are conducted through social media and collaborations with educational institutions and offices. Finally, regular maintenance and user support are provided to ensure the device remains stable and responsive to user needs, making Posture Manager an effective solution in helping teenagers maintain healthy posture.

6. Target Group and Coverage Scope

The primary target audience for Posture Manager is workers who spend long hours sitting in office or working from home. It is suitable to maintain proper posture to avoid long-term health issues such as back pain and neck strain. Not only that, but Posture Manager can also help cure back pain problem that is caused by poor posture.

7. Innovation Impact on Target Group

a. Innovative / Creative Elements

- This device offers an alternative to ergonomic seating solutions. While ergonomic chairs provide features such as adjustable lumbar support and backrests, they possess inherent limitations in actively correcting user posture. The Posture Manager, in contrast, functions as an intelligent monitoring device, facilitating real-time postural correction. Leveraging Internet of Things (IoT) technology and integrated sensors, the device provides immediate feedback when deviations from optimal sitting posture are detected. Furthermore, the device incorporates a temporal monitoring function, alerting users to prolonged periods of sedentary behavior.

b. Effectiveness Elements

- Users can reduce the risk of back and neck pain by proactively correcting their posture based on feedback provided by the Posture Manager Website. It also raises awareness about posture health, reducing absenteeism caused by posture-related health issues.

- With better posture, the user can focus more effectively without discomfort, while workers can improve efficiency and comfort at work. This contributes to overall performance improvement.

- If commercialized, I will collaborate with chair manufacturers, offering Posture Manager as an additional accessory for their products. This will allow customers to choose models that fit their budget, from a basic version with simple sensors to a full-fledged IoT solution. This approach not only enhances their product value but also expands the adoption of posture-monitoring technology in work and home environments. Second, I will target healthcare professionals, including hospitals and physiotherapists. Posture Manager can be customized for medical needs and promoted as a support tool for patients with back pain or incorrect posture. This will help in the rehabilitation process and increase awareness about the importance of good posture among patients and healthcare professionals.

c. Significant Elements

- The Posture Manager is a portable ergonomic support device designed for universal chair compatibility. Its modular hook allows for adjustable length, accommodating varying backrest heights. Furthermore, the integrated ultrasonic sensor(s) offer customizable positioning to align with individual user anthropometry. Expansion

capabilities include the integration of supplementary ultrasonic sensors to enhance posture monitoring precision. Upon installation, the device is immediately operational with the insertion of the power source.

d. Relevant Elements

Not applicable.

8. Recognitions Received

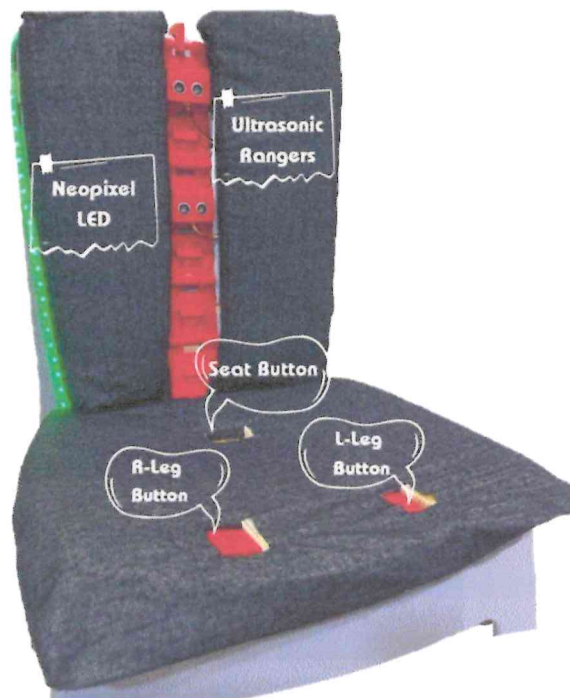
Posture Manager has received several recognitions:

Coollest Project Malaysia 2023 – First Runner-Up

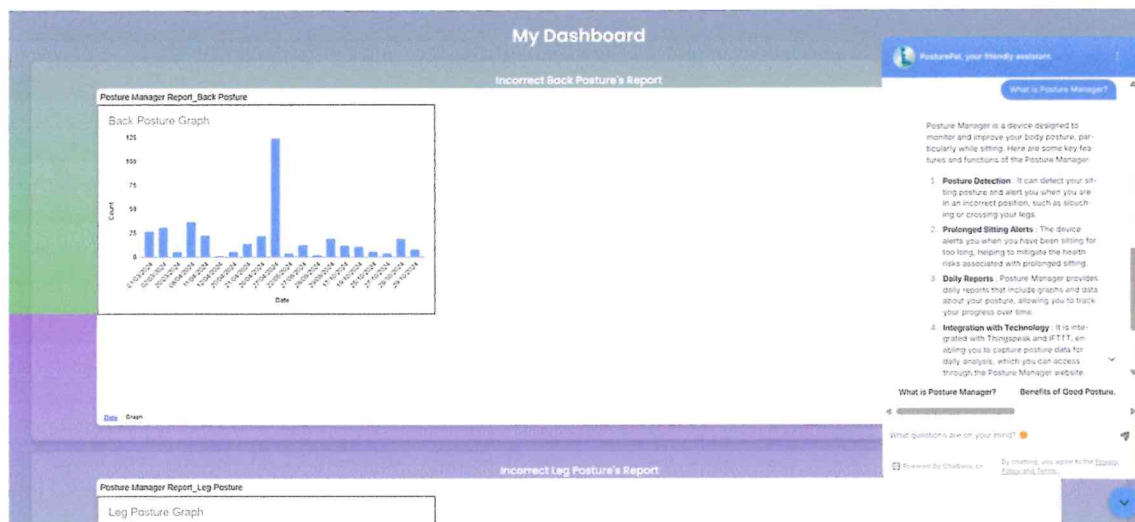
International Creativity and Innovation Award 2024 – Titanium Award and Grand Award

World Youth STEM Invention Innovation 2024 – Gold Award

9. Related Images



Posture Manager sensor and components image



Posture Manager Website dashboard with graph report and AI chatbot images

Conclusion

Posture Manager is an innovation that integrates smart technology to help users maintain proper posture effectively. With a practical and user-friendly approach, it has the potential to make a positive impact on individual well-being while increasing awareness of the importance of good posture. I hope this innovation can be further expanded, contributing to a healthier and more productive environment.

Prepared by:

Name: Tan You Han

Phone: 012-262-9907

Email: youhan.tanyh@gmail.com