INITIAL REPORT FOR DESIGN THINKING PROJECT SECP1513-01

1.0 GROUP MEMBERS (GROUP 12)

1. Balqis Nabilah binti Muhammad Azwan (A23CS0054)
2. Huwa Jia Sheng (A23CS5005)
3. Tay Ching Xian (A23CS0307)
4. Mathan Rao A/L Ramavijayan (A23CS0109)
5. Hamdan Saleh Omar Al-Mohamadi (A22EC4027)
6. Seifeldin Taha (A19EC3030)

2.0 TITLE OF PROJECT

IntelliStep - Innovation of Shoe Sole

3.0 DESCRIPTION OF PROBLEM

- Lack of cushioning can cause discomfort, especially during activities that involve impact, like running or walking on hard surfaces.
- Insufficient arch support can lead to discomfort and foot fatigue.
- Soles that are too stiff or too soft can cause discomfort or lack of stability.
- Soles that wear out quickly can lead to discomfort and may require frequent replacement.
- Incorrect pronation (overpronation or underpronation) can lead to foot and leg pain.

4.0 SOLUTION

1. **Cushioning:**
    - Provide sufficient cushioning to absorb impact during walking or running.
    - Adjust cushioning levels to accommodate the comfort preferences of different age groups.
2. **Flexibility:**
    - Balance flexibility to allow natural foot movement while maintaining support.
    - Consider the varying flexibility needs of children, adults, and seniors.
3. **Material Selection:**
    - Choose materials that are durable, breathable, and suitable for sensitive skin.
    - Address potential allergens in materials to cater to a broad range of users.
4. **Size and Fit:**
    - Develop a sizing system that accommodates growing feet in children and considers potential changes in foot size for adults and seniors.
    - Offer width options to accommodate different foot shapes.
5. **Impact on Joints:**
    - Minimize impact on joints, particularly for older individuals who may have joint sensitivity.
    - Consider shock absorption and pressure distribution.
6. **Aesthetics:**
    - While focusing on comfort, ensure the design is aesthetically pleasing to appeal to different age groups.

Testing and Iteration:

- Conducted thorough testing with individuals to gather feedback.
- Iterate the design based on the problems.

The challenge lies in creating a versatile and comfortable shoe sole that caters to the dynamic needs of individuals across different age groups. By addressing arch support, cushioning, flexibility, materials, size, impact on joints, versatility, and aesthetics, the goal is to develop a universally satisfying and comfortable shoe sole.

5.0 EXISTING TANGIBLE/NON-TANGIBLE PRODUCT

For our prototype, we created a shoe sole that is made from rubber through reference from different brands such as Adidas, Skechers and Asics. The prototype turns out to be similar to Skechers as walking is natural in our daily life. Aside from that, our prototype is similar to Skechers shoe soles as both shoe soles are designed with Goodyear rubber, allowing the shoe soles to cushion the feet and reduce pressure exerted on the feet. Lastly, Skechers shoe soles also consist of memory foam, causing the shoes to be lightweight, breathable and reduce arch pain. It will also help in daily life activities such as walking and jogging.

6.0 DIFFERENCES AND UNIQUENESS

Firstly, environmental sustainability is the factor we prioritized. We use recycled materials and biodegradable materials to be the material of shoes. For example recycled rubber or other recycled polymers. These materials are eco-friendly. It is because they explore options for using biodegradable materials to reduce the environmental impact at the end of the product's life cycle. On the other hand, adaptive and responsive soles are also one of the uniques of our product. It is a cutting-edge technology in footwear design, aiming to enhance comfort, support, and performance by adjusting to the wearer's movements and changes in pressure. Furthermore, we are adding smart technology into shoe bottoms, such as sensors and pressure-sensitive polymers. Real-time data on foot movement, pressure points, and gait can be obtained using these technologies, which can help athletes and individuals to avoid injuries and enhance their performances. We believe those uniqueness will bring an impressive experience to customers.