

Medical Bio-Mechatronics Task

Part A

Intention:

I intend to make a heart rate monitor watch for Vivian who is continuing to play volleyball everyday. This watch will vibrate whenever she has been training for too long and will tell her to take a little break. If this break is not taken, it could potentially be life-threatening.

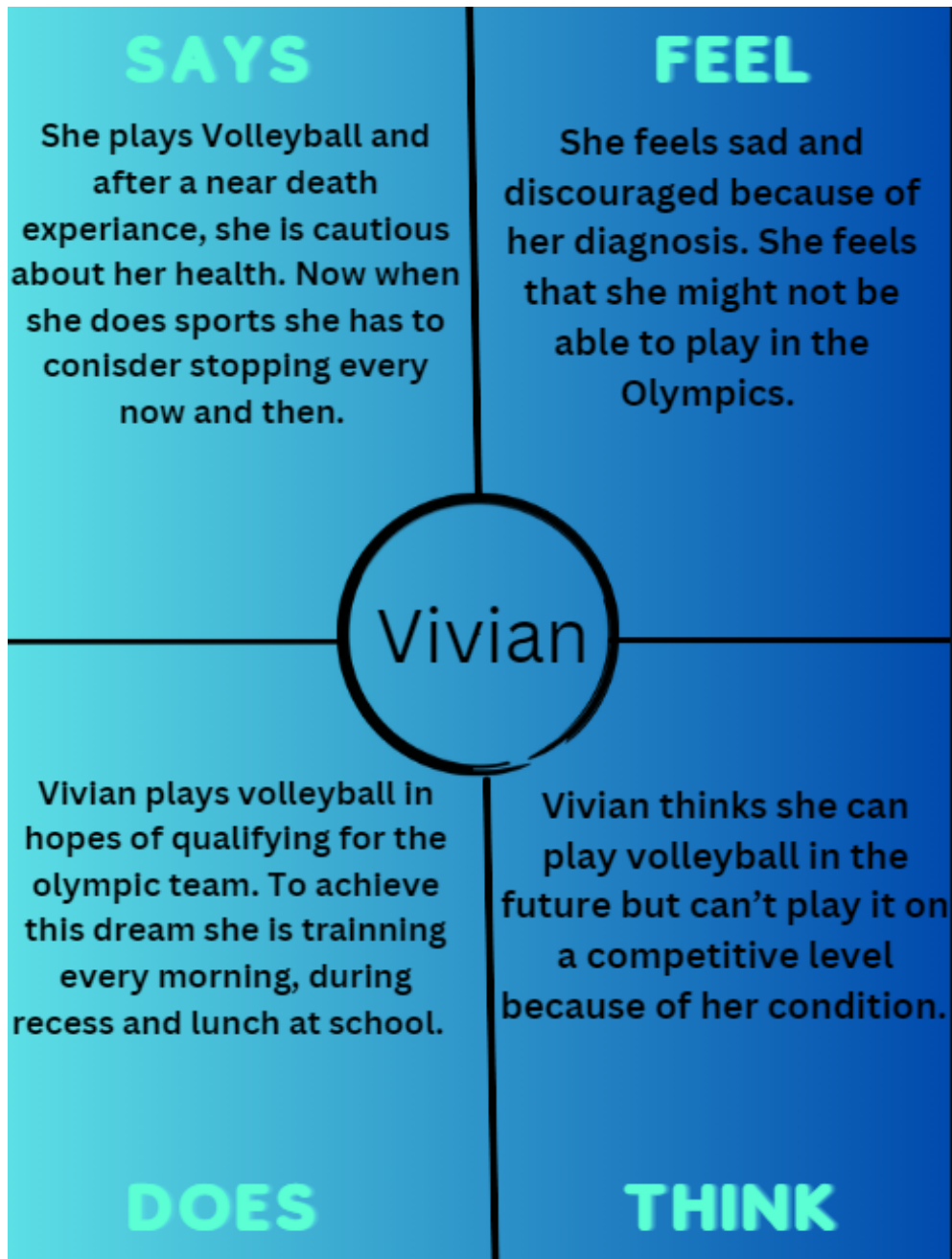
My Plan:

I will be designing a wrist sensor watch which will monitor her pulse rate whenever she is doing sports. This sensor watch is equipped with a **Vibration Sensor and Sound Sensor** that alarms whenever her pulse reaches beyond the normal range. I will be using a **Finger Strap Heart Rate Sensor** which will be wrapped around her wrist. I will be using a **Built in LED** which will display her pulse rate.

In the future:

In the future I want to be able to have this available for everyone around the world that is suffering from her condition. I want to make sure that people can connect this watch to different electronic devices such as Phones, Computers, Desktops, etc. This will make accessing information about the user easier. I would also like to ensure people have access to it offline, as it would be more convenient than connecting to the internet.

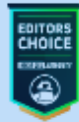
Empathy Map



Evaluation of existing Ideas

Fitbit Charge 4

MSRP: \$149.95



This product is called 'Fit bit Charge 4'. This watch has a sleek, custom design, good battery life and has built in GPS. The nega tives about this watch is finicky inductive button, GPS can take time to lock on and the heart rate sensor can be inefficient which makes it hard to read what's on display.



This product is called 'Strap-free Heart Rate Monitor' for sports. It offers continuous 24-hour heart rate monitoring and can seamlessly connect to Bluetooth and ANT+ compatible devices. However, the downside lies in its somewhat complex removal process.

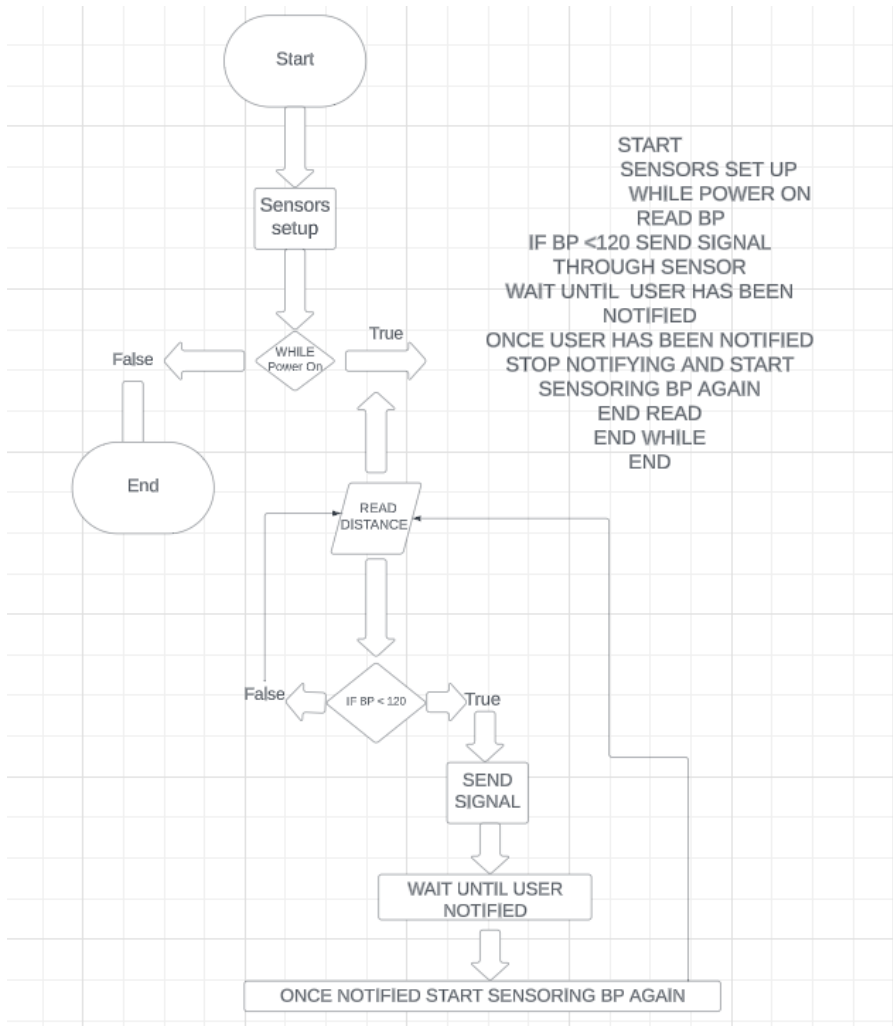


This product is called a 'Sleep Oxygen Monitor'. It provides continuous monitoring of your blood oxygen levels and pulse rate for a duration of 16 hours, with a built-in alert system that vibrates upon detecting abnormal body indices. Nevertheless, one drawback is the need to recharge it nightly, potentially impacting your sleep. It could also potentially get stuck in your fingers and could damage them.

Communication Log Chart

Date	Person	Type of Communication	Subject talked about
13/10/2023	Vivian	In person	Vivian wanted to see how good her device was going so I demonstrated how her gadget works after she gets it.
9/10/2023	Vivian's Father	Email	Her father wanted to check up on her appointment and see if she is up to date with them
14/10/2023	Vivian's Mother	Call	Her mum wanted to see how well Vivian was adapting to the product she was using.
12/10/2023	Vivian's sister	Email	Her sister wanted to see how effective the product is and to see if it isn't dangerous.

Pesudocode and Flow Chart



Pictorial

