PART 4

Perform a user AT assessment for your ideal client employing the five-point strategy discussed during class (A. B. C. D. E.). Thoroughly describe the specific activities that you intend your hypothetical client requires from this AT solution, the environment, and any other contextual information for a detailed user assessment. You do not need to supply a lot of details that is irrelevant for that user or personal information that you don't have. This section is worth 30 points, 6 points for each part.

5-point strategy rule:

Phase A: Identify the need for AT Implementation:

For this part, I will be using Joseph Leach as my Ideal client as I have conversated with him earlier and got some ideas of the what if hypothetical case:

- Name: Joseph Leach
- Age: 27 years
- Occupation: Student
- Nature of Disability: Blindness caused by accident during the teenage years.
- Potential Funding Sources: Self-funded, proposal for Grants from the Government like 'Access to work' and there is some allowance for students to purchase extra equipment for their aid.
- Consumer's Goals: The primary goal according to my hypothetical project is to offer the best possible options for the disability of the patient.
- Desired Outcomes: Since my research is on the technological devices which can aid the individual in path planning and detecting obstacles. So as for the client's desired outcomes, the most important outcome will be to be sufficient for the customer.

Phase B: 8 steps in the entire assessment process

a. Gathering information through interviews:

   PERSONAL INFORMATION:

- Client's name: Joseph Leach
- Address: -N/A-
- Date of Birth: July 6th, 1996
- Physicians: Family doctor, Specialist and Therapist.
- Referral source and reason: Shefali Roy and can get comfortable with the new technological devices with the patient's consent/wish
- Team members: Personal family and others' information are not shared

- Existing medical and therapeutic regimes: Dermatologist treatment for the scars from the accident, ongoing physician for the optical aid, ortho specialist for the slipped disc injury, therapist and psychiatric medicines and therapies for the anxiety and clinical depression after the accident. Visiting support groups twice a month.

FUNDING:

- Funding sources for assessment, equipment, follow-up, training is given to him after his proposal has been accepted by the university and the request has been on conditional acceptance from the government organizations.
- Family support is plenty as both the parents are in medical line, so the referral and priority are easily informative.
- Most of the personal details aren't confirmed because of confidential reasons.
- There is a backup alternative of taking help from the organizations who support their clients with disability with loans with very less interests.
- DIAGNOSIS AND MEDICAL HISTORY:
- The initial diagnosis was done by the onset of the disability along with many other injuries.
- There is a minute precautionary issue with psychological motivation.
- Past surgeries have been recommended for the back but the final conclusion still needs to be given.
- There has been a series of prescribed pain killers for the continuous post accidental back injury and the drugs for psychiatric anxiety for the mental clarity.
- One of the main concerns of the healthcare authorities is that even a strong and young person can lose motivation anytime of the day so having a support structure and group is a great way to be inspired.
- There hasn't been an oral dysfunctionality that has happened that the record holds.
- Due to a sudden change in the lifestyle, there has been a severe reduction in the stamina of the client.

PSYCHOSOCIAL STATUS:

- There has been a decrease in the social life of the patient and an increase in self isolation due to drastic changes in life.
- Overall productivity has been shaken up since the accident.
- The individual has been mature enough to accept the mental status of self.
- There has been an increase in the mood swings by the individual especially after any long social gatherings.
- Overall, the personality of the user pre years has been very active and optimistic.
- The client truly believes in the advancement of new technology and as a grad student themselves, it understands the importance of researching for others' aid.
- It is at the client's request that they have been selected for this new device.
- The living situation for the individual is pretty same as any other family in Scotland. Starting with both the parents being in medical field with one younger brother being an aerospace engineer and the sister being a law practitioner. The culture of Scotland is very enthusiastic, and they used to enjoy every moment of its presence.

- The client is a graduate student with various research collaborating with companies, was a fan of football and still enjoys listening to it.
- The day now starts just like any other college student with some differences of needing some help for them to get ready.
- At present, the client has been using music as a source of peace in his mind. There has been a decrease in the client's own necessity for recreational activities.

NEUROMUSCULAR AND MUSCULOSKELETAL STATUS:

- Height: 6'2''
- Weight: 180 lbs.
- The general motion and primitive reflexes of the client is not disturbed but the posture control, especially at the beginning of the initial stage, has been a bit different.

SKIN CONDITION:

- Multiple scars from the accident.
- There is no existing history of pressure sore, decubiti etc.

SENSORY FUNCTION:

- Apart from the visual impairment, there is no other significant issue that is permanent.
- Hearing and sensory perception is at the normal range.

SPEECH, LANGUAGE AND COMMUNICATION:

- The expression and reception of the communicative devices and other people is completely at the normal range.
- The cognitive level and the learning ability is same as the average students of his program.
- There is not a speech generating device in use.

FUNCTION, SKILL, AND TASK PERFORMANCE:

- As per the records, there was a need for assistance at the initial stages through his family and healthcare workers to work through catching up to the basic devices like canes and knowing the new unexplored places.
- Nowadays, the individual can themselves fulfill most of the Activities of Daily Living (ADL).
- There is a decrease in the outside work or getting out by themselves.
- They have been using a decent amount of public transport and the person themself prefer to be around people while travelling.

PERSONAL MOBILITY:

- There hasn't been any use of assistive devices for mobility.
- A wheelchair was used in the first week after the accident but there hasn't been any use of any other assistive device since then.

COMMUNITY TRANSPORTATION:

- The client has a personal car but hasn't used it since the accident. They have been assisted since then to travel in case of car and personal vehicle. But the individual prefers to travel by public transportation.
- They have been helped by the bus conductor to know the bus stops and where and when to get off.
- Has been a very good and experienced driver before but after the accident, psychological trauma has lowered the confidence to travel by themselves.
- Does not own any private boat or airplanes.

ENVIRONMENTS:

- The home and family environment has been the greatest support for the client.
- The university has a very good guidance system with automated voice and universal design for students with disabilities.
- The client tends to isolate himself especially in crowded environments.
- As for the psychosocial environments, the person has shown a great and healthy lifestyle.
- The person is young and up to date with the recent technologies and adapted quickly with the new introduction in their lifestyle with the technology.

HISTORY OF PAST EQUIPMENT:

- The initial suggested device was the normal white cane and a guide to travel inside the house and outside.
- It upgraded to device a bit like ultra-cane with less features to see the increase in confidence and productivity.
- Presently, they have been using a bit more advanced assistive device.
- The client has shown an extreme adaptation with the ongoing device that they have been suggested.

PRESENT EQUIPMENT:

- Features: The present device is very similar to the ultra-cane that has been suggested. It uses haptic feedback for the obstacles detected in front of the individual with the limited distance of 4ft to 6ft.

- Goals: Has shown a very adaptive change while accustomed with the new device. So, this has been suggested to see if the user needs more modifications.
- Changes requested: The use of cane even though enough has an issue of having just one free hand. Being a university student and having a busy lifestyle with lots of research work, they prefer if they get a device which has more flexibility and compact which was the main reason to be referred for a wearable technological device.

b. CLARIFY THE PROBLEMS:

Problems:

- It is very difficult to move around at a normal pace holding a cane.
- Cane causes issues in the lab where they work with denser environment of accidental bumping into things.
- The research work deals with expensive and delicate devices, so having a cane to move around can cause damage which they might have to give back as a fine.
- The stick sometimes acts as a constraint to them while moving which causes them psychological trauma.

Problem Clarification:

- One of the most important instant resolvent is to make sure that the person's mental health stays healthy as it is the most important thing when comes to adaptability and motivation.
- Using one of the new ongoing technologies can help the developers figure out the constraints and get the best feedback.
- Developers do need new users as beta testers to see the updates and glitches and where to put effort to make it more efficient. For present, they are creating customized request devices and features but eventually, they plan to release it into the market with more convenient and commonly needed features.

c. LIST OF GOALS AND DESIRED OUTCOMES:

- Ease in movement around the environment.
- Easy adaptable features.
- Better comfort.
- Fulfill most of the tasks the consumer wants to finish.
- Can help get back the user to increase their pace in walking.
- Can help the user navigate more easily to reach places.
- More accurate obstacle detection and waiting time frames.
- Accepts feedback from the user.
- Help the user to get assisted with the device.
- Keeping tabs on the requests and help from the user.

- Assisting them with the technical expert 24x7.

d. DESCRIBE THE ATTRIBUTES OF THE SOLUTION:

- According to the existential method, they should have been suggested with a very low tech assistive technological device like canes to get with the flow of devices. It has shown significant results in the first few months from any user in the world, both positive and negative, which is enough time to create customizations in their existent devices.
- After a year or so, as per the records, they have been suggested to use a smart cane which uses ultrasonic waves to detect obstacles and give them feedback.
- From the given smart cane, we figured out one way of betterment can be done with the vary in signals with the distance. As something of closer objects with more haptic vibrations than further objects which can also differ by the height from the ground or if they are static obstacle or moving obstacles.
- Then there was a request by the customer with the flexibility in the device that can free both hands. So, the final decision was to suggest the present device that the developers are making as a wearable device.
- This new device will change their movement in the lab and catch up with their normal pace.

e. INTERVENTION OPTIONS:

- As per written before, they have tried using a low-tech device before suggesting a more technological device.
- The developers are requested to put more accuracy with the wearable technology.
- The trials should start from the issue of the device with every two months feedback taken into consideration to a whole of one year use and a proper review on the supplied product.
- An extended long trial run is considered to understand how day to day improvisions are done by the user to better understand the existing device and to add on features and continuous use of the device will show the defects and glitches after a long time of use.

f. RESTATE THE PRELIMINARY GOALS:

- The former goals have been considered.
- The most important goal is to make sure that the user can move around freely and independently.
- There is a high need for accuracy in detecting the objects around the user.
- Multiple feedback in the form of vibrations that will help the user to decide the distance of the object from them.
- We have decided to train the employees and trainers with the development of the model so that they will be fully prepared for the training of the user and keep tabs on them.
- There will be a list of pre-train goals as introducing the new device and explanation of the user manual more clearly with all the features.

g. SELECTING THE DESIRABLE INTERVENTION OPTIONS:

- While in the training process, the team should be alpha testing it with each of the new added features and compare it with the first basic model and calculate and analyze the increase in efficiency of the desired goal.
- They can simulate the effectiveness of adding customized features such as image processing and can check if that can make the entire efficiency of the base model to the new model.

h. MAKE RECOMMENDATIONS:

- We will be making a detailed plan for creating a list of events that will be occurring including visits to the focus groups to help others identify the need for the new device.
- Training will be given to the user from the start of the use.
- The consumer should be calm and acceptable when using the device so we should be having therapist by the side in case of need.
- All the features, both basic and new, will be introduced with time. Facial recognition and object recognition will be added at the request of the user eventually.
- A trainer will always be provided in case of need along with technical support help 24x7.

Phase C: Develop Implementation Plan

- So as far we know, the requested device is not completely commercially available. They are made only at the request of someone.
- Since blindness is a permanent disability, the device will be used for a very long period which means it should be bought.
- The technology we decided on is sensors to detect obstacles, preferably ultrasonic sensors as it can detect transparent objects too. Then we will be using image processing with vision to detect objects and people with the input of the data. We will be using path planning algorithms to suggest to the user which path to take, also giving them the current status of the entire path through GPS.
- The consumer is a research student with very high motivation in academics and leading a healthy lifestyle. Their ability is shown to be extremely good. They can adapt to the new technology and worked with the trainers to help them visualize the parameters that could be taken into consideration. The user sometimes needs therapeutic help for their anxiety attacks, but it is plausible for someone to cope with tragic trauma.
- The funding is more from the family but there would be a considerable percentage of funding from the government organizations.
- The team has decided to distribute the funding in a certain pattern as the maximum percentage of the government fund will be used to create the custom-made device whilst the family funds will be using when in need such as repairs, design, and initial down payment.

Phase D: Implement the Plan

- Funding is on conditional acceptance which will be most likely to be accepted. Family fund for down payment is already received.
- The AT device of the base model is already there, so the developers are adding features and soon will be tested for efficiency and bug fixing.
- Components will be assembled after the design is confirmed and fabricated.
- The team will be visiting the consumer to set up the device and explain the set-up in case of any future needs. The team will also be explaining the entire process to the trainer who will be helping the user to get used to it.
- We will be training the trainer, the consumer, their family, and friends to know the functioning in case of need. We will be having extra lessons for the consumer and the trainer.
- We will be holding feedback sessions weekly at first, then monthly to quarterly to yearly. We will be having review sessions to see how the outside environment affects the user's mindset with the device and how improvisations on the user's part can help us with new ideas.
- We will be analyzing the feedbacks and start on modifying the features or add extra features if needed and see if there will be modifications done on the given device or to make some alterations on the device i.e., adding new parts or removing some old parts.

Phase E: Evaluation Plan

- We will be continuously accessing the review and feedback to make sure that the desired goals are met.
- We will be checking if the recommended intervention solution is making any positive output.
- We will be forecasting the future outputs from the given reviews and helping the other customers with their selection of the AT device.
- We will be considering the problems which occur suddenly into account so that they will be recorded as possible issues that can come up in the future models.