

User Experience

The contribution of many people has been very pivotal for the evolution of Torch-It. It is they who have found the device very effective in detecting range of obstacles like tree branches, air conditioners, open window panes, banners, table, door, etc. The list of most common objects that obstruct visually impaired people and what Torch-It users successfully dodge while using the device in familiar environments are listed as follows:

- Glass Doors and Gates.
 - Underside of Luggage Carriers, Trunks, Buses etc.
 - Street Animals.
 - Cloth Drying Ropes and Strings.
 - Electric Poles and Low Hanging Wires.
 - Hanging Banners, Hoarding Sign Boards.
 - Horizontal bars and Railings.
 - Tables and Chairs.
 - Open window panes.
 - Parked vehicles: Bikes, Scooters, Cars, Auto Rickshaw, etc.
 - Big Flower Pots and Plants.

 - Dustbins.
 - Tree Branches and Trunks.
 - Coolers and Protruding AC.
 - People walking as well as standing.
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- ❖ The device also aids them in improving their self-esteem and dignity by often supporting them in avoiding socially awkward situations.
 - ❖ In a variety of circumstances, this device has been tested and has proved to be advantageous in the following ways:

1. *Walking in a park:*

Feedback: I am very happy using this device because now I am able to walk in parks comfortably,

as the Torch-It device is able to inform me about the benches and the tree branches which were impossible to detect earlier with the white cane.

2. *Detecting a passage through people:*

Feedback: I have very limited vision and can perceive things only during the day time. I face major mobility issues when it gets dark. I had often collided with people who would be standing quietly on pavements and bus stops. But since the time I am using this device, I detect people standing in my path. Now, so many times it happens that upon detecting people I instantly say ‘excuse me’ and move with grace. This leaves them in total amazement.

Feedback: The device allows me to detect and find path particularly when people are standing in a group.

3. *Proper Follow-Up in a Queue:*

Feedback: I am able to maintain a regular distance from the person in front of me in the queue and know when I have to move forward when the vibration pattern changes. I am able to avoid poking the person in front of me with my cane.

Feedback: apart from extremely helpful in detecting obstacles ahead, the device is fun to use. I walk with my friends while chatting with them. I do not hold their hands to maintain pace. I simply switch my device on and follow the vibratory pattern to walk behind them by easily maintaining an arm distance.

4. *Determining the door:*

Feedback: At my office, I have to locate the door to my cabin every morning. The door is open most of the times however a person with visual impairment like me needs to trail along the wall to reach.

5. *Enhanced self-confidence:*

Feedback: when I have the Torch-It in held, I feel confident; it feels that I can walk alone without anybody’s help

Feedback: It builds confidence. Now we know more get into any embracing situation by bumping into people while walking.

Feedback: my initial experience with the white can was like gosh! And now with Torch-It its like know. I walk faster and I am more confident now. Just one word for the device, it's wonderful.

Feedback: Earlier, I was apprehensive of colliding with any waist-above obstacles and feared of bumping into people. But now with timely vibratory responses from Torch-It, I get to know about the presence of any object or person from a distance. My stick does not bang with any one and it feels good.

6. *Improvement in Regular Walking Pace:*

Feedback: my walking speed has increased. Whenever there is an object on my path I walk cautiously by estimating the distance through the vibratory responses from the device. And when there are no vibratory responses I walk faster and confidently.

Feedback: our travel time to walk has decreased with the use of this device. We walk faster now.

7. *Spotting the glass panes:*

Feedback: I have very limited vision. Earlier, I had trouble in detecting glass doors in shopping malls. I would often collide which led to a lot of embarrassment. With the Torch-It I successfully detect glass doors and prevent from such awkward instances.

8. *Increased Participation and Inclusion:*

People also shared that dependency on others has greatly reduced. The device has enhanced their self-esteem. Owing to which they now freely participate in community and other group gatherings.

Feedback: It feels great to be able to move around alone. I no more take help from people to move around. I now enjoy being all by myself. Family and friends now have the confidence in me that I can travel independently without getting hurt or injured.

9. *Harm and Collision Prevention:*

Feedback: The Torch-It device is very beneficial. It protects me from a lot of upper body injuries which I earlier used to encounter on a daily basis while using the regular white cane.

Feedback: now there is lot of relief, with Torch-It we can detect objects from safer distance and prevent ourselves from getting injured. Now, I am able to detect a lot of obstacles on pavement of the city like branches, etc. Due to the vibratory responses from the device, now we are able to feel the presence of other objects in the surrounding. Earlier we walked with the fear of getting injured especially in the eye or head.

Feedback: it is very useful device because earlier with a regular cane, I quite often collided with vehicles like trucks, tractors or bus. This was because my cane would pass beneath these big vehicles and I would collide abruptly. I have got injuries on my forehead due to such incidents. With this device I get a pre-warning of such dangerous obstacles through vibrations. This also helps me in detecting street animals as a cow.

10. *Detects Quick Approaching Obstacles:*

Feedback: It is nice to have device which gives you that extra bit of information even though it is just a probability. One day I was standing with the Torch-It waiting for my car to come. The collusion alarm triggered while the driver drove past me. I immediately got to know that he came close and there was something to watch out for.

11. *Enhanced Safety and Security:*

Feedback: with the use of the device, we get to know about any raised obstacles coming in our way and hence we change direction and walk uninterrupted

Feedback: since the time I have started using Torch-It I am not getting injured any more. My safety in travel has increased a great deal.