

# Designing an Assistive Garment for Visually Impaired with Braille Touch

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## Abstract

The basis of this project is to create a garment using braille touch specially designed with complete details and a guide to wearing clothes. This study aims to analyze the use of braille on clothing, identify the use of easy-to-wear materials, and overcome the challenges of buying and wearing clothes amongst visually impaired consumers. This study is carried out with methods of interviews focusing on the target age range of 18 – 30 years of the visually impaired people and concentrated in areas of the Federal Territory of Kuala Lumpur. In total, an estimated 5% (1.37 million) are visually impaired and disabled persons, and has a record of 55 persons received the Malaysian Blind Association (MAB) Excellence Achievement Awards 2016/2017. With the assistance provided, this visually impaired community can learn to live independently in their daily activities. This paper is conceptual.

*Keywords* - Assistive Garment; Visually Impaired; Low Vision; Blind; Braille

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## 1. Introduction

A person with a disability (visual impairment) is someone incapable of self-determining to acquire in whole or in part of the ordinary needs of an individual due to lack of physical. This group is part of society. Therefore, they have the right and the opportunity to live a life like any other society. As we all know, the main necessities of the day are clothing and this is one of the difficulties for them to buy clothes or to match them. Now, there are no facilities available for these people to buy clothes with the help of complete details of the clothing itself. When there is complete information on the clothing with appropriate material for visual impairment people, it makes it easier for them to wear it. This can help them to be more independent, have their privacy, and get closer to the fashion world. There are still too many things to do to enable these visually impaired people to enjoy life as a normal humans. This paper will determine the need for people with disabilities to live their daily lives in terms of clothing.

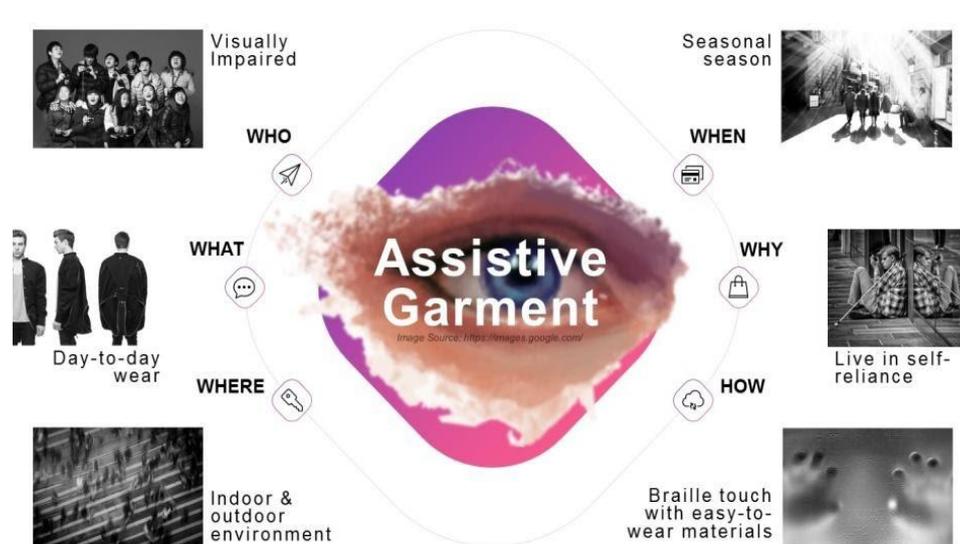


Figure 1. The key elements of 5W and 1H about the Assistive Garment (Source: Khairi Asyraf, 2019)

### 1.1 Background

Visual impairments can occur among various ages with varying levels of disturbance. Vision disorders may be at a low level to the level of the blind. In Malaysia, blindness to all levels covers 0.2% and low visibility covers 2.44% (based on National Eye Survey 1996). Most visually impaired people can still see a little bit (in a state of vague or blurry). Although they use the wand (blind cane), this does not mean they cannot see anything at all.

Nowadays, many challenges and obstacles are faced by the blind in competing with the rapidly growing world. Especially in the form of clothing, there are not many facilities for the visually impaired community with shopping help in terms of complete detailed information about the clothes in Malaysia. Additionally, no labels that can help them in terms of care and how to use it. Furthermore, the appropriate design criteria should take precedence for the comfort and convenience of their activity anywhere. In this study, a touch of braille plays an important role in assisting these problems to facilitate their daily lives.

The statistic shows the population of people with disabilities in Malaysia is growing. However, existing facilities do not fully meet the needs of these people, especially visually impaired people. As reported by R. Bradley, T. Hopkins, and J. M. Ba. (2000), a total of 75% of visually impaired people from 75s are often outside, 33% of them out alone and on foot. The desire for independent mobility is higher in younger groups, with 90% of 16-59 year who like to go out (58% of them out alone). It has been shown that people with visually impaired do not like to be helped and are more likely to live independently.

Clothing is one of the requirements that everyone will wear every day and this is one of the difficulties faced by visually impaired people to buy clothes or to match them like ordinary people. Based on Raghad Alali (2017), visually impaired individuals have barriers in their lives that make them feel less independent and equal to those who can see. In particular, those who suffer from this visual impairment problem cannot see the details of the clothing they want to buy in general and make these people depend on the help of others or should choose the same color and pattern for all their clothes.

A special price tag and care label are the elements that need to have on the garment for visually impaired people.

As mentioned by Alicia Aledo (2002), those who are visually impaired have difficulties in dressing without the help of others. Additionally, the label does not describe the colors, cuts, styles, etc. that relate to clothing, as this information is easier to view for people who do not suffer from impaired vision. Incorporating fashion elements and components on a garment that focuses on Braille touches is a special solution for this visual impairment.



Figure 2. Industrial Revolution: Timeline from 2005 to 2017 (Source: Khairi Asyraf, 2019)

Various technologies are available to help these blind people. For example, Voxcom Message, Penfriend, Touch Color, Finger Reader, Blind Memo, and others. But not all these visually impaired people can have it and not all countries acquire this sophisticated technology. Only some societies and countries are exposed to this.

## 1.2 Description of Issue

In the life of people with disabilities, the daily management of each individual varies. It depends on a person's way of life, blending in the relationship among humans, the social situation of a place, and the State of itself. Referring to internet surveys, in the West, people with visual impairments are asking for help from shop workers or their family members or friends in choosing clothes during shopping or dressing. Not only that but they are also exposed to today's technology that can provide information by simply scanning the items. Additionally, purchased clothes will be encoded using a patterned button, pin, or sticker to differentiate the colors of each clothing. Here we can see the difference in the way visually impaired people live with various methods. But every manual way used is its advantages and disadvantages. In this study, creating a garment design that is effective and uses auto-ways can help visually impaired people to live a better life in the future.

### 1.3 Product Review



Figure 3. Self-navigating designs by Chiriboga in June 2017 (Source: <https://www.metropolismag.com>)

Camila Chiriboga, a graduate of Parsons School of Design in 2017, began researching and designing special clothes for the blind. She joined the ‘Disrupt Aging Design Challenge and American Association of Retired Persons (AARP) in exploring designs that leverage, rethink, and incorporate the needs of fashion users to inspire a problem-solving-based design concept. She designs various types of jackets and sweaters, everything is reversible and can be matched with any outfit. She also created a tagging system, where each tag of clothing contained a color code (in braille) and a QR code that can be scanned to produce an audio description of the clothes. Eventually, she won the Disrupt Aging Design Challenge competition with an award gift \$5000.



Figure 4. Each tag contains a color code and a scanned QR code (Source: <https://www.metropolismag.com>)

## **2. Methods**

In this study, the researcher has chosen the Malaysian Foundation for The Blind, the National Council for Blind Malaysia, the Malaysian Association for The Blind (MAB), and the Society of The Blind in Malaysia as a location to get some factual information. There are various artifacts in the fulfillment of the required information. In Malaysia is very limited people with visual impairments and their groups are difficult to find. Before making an appointment, the first made is researching this issue through the internet to provide the questions that would be asked about the current problems in Malaysia. Through these methods, it will depend on data collection for interpreting the results. The selection of this method is because the collection data is easier to understand and interpret the existing facts. It also makes it easier in terms of explaining and analyzing.

This study uses Primary and Secondary Data. Both methods were used to collect the required information. For primary data, the observations by doing a case study on the challenges faced by visual impairments in buying clothes and how they wear clothes. The qualitative method with interview the visually impaired people aged 18 to 30 years old with a distinctive career. Concentrated in urban areas due to the population is larger than in rural areas.

In secondary data, the collection of information is used through books, journals, articles, websites, and blogs. Most of the books, articles, and journals are from Tun Abdul Razak Library, Raja TunUda Library, and UiTM Online Library. Lastly, from the website and blog to look into the images and the discussion among the society. This method has not yet been implemented.

## **3. Analysis & Findings**

Based on this study, visually impaired people experience a variety of difficulties in living a life like a normal human being and in relation to clothing, its use encompasses in human daily activities whether those who may have eyesight or who are visually impaired. So, in general, it seems that for those who experience visual impairment is more difficult in facing daily life in self-dressing, cleaning clothes, and buying clothes to replace old clothes or adding existing clothes. Perhaps the existing facility can help them to identify the whole outfit as an example of the front or back of the clothing, outside or inside of the clothing, price, color, material, and how to care for the clothing. But each of the existing facilities comes from foreign countries, such as in the West, Japan, and China, and it is not disclosed to our country. Therefore, it needs to be purchased online and this will make the cost of the device and the cost of delivery is expensive and not affordable for the visually impaired people to have it personally. Not only that, this community organization or association does not have funds that can accommodate the purchase to provide every one of their members with the device. In this study, in undergoing research on technology related to identifying clothing by visually impaired people, there is no special device designed for them that comes from Malaysia. Therefore, the community still uses a manual method to choose clothes, wearing clothes, and buying clothes until now.

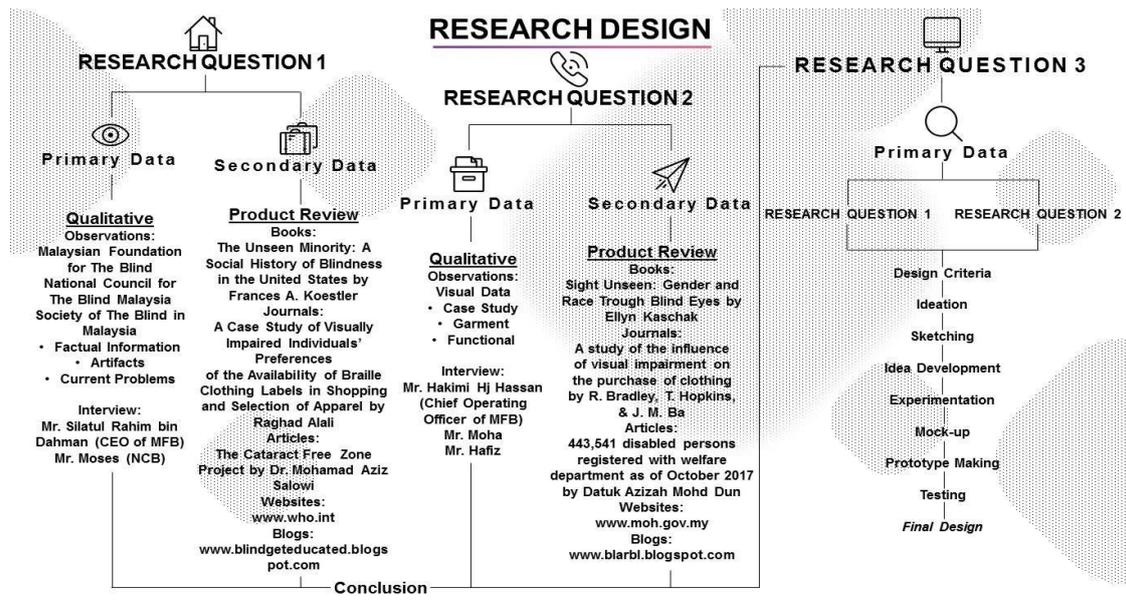


Figure 5. Research design in fulfilling the research process (Source: Khairi Asyraf, 2019)

The purpose of this study is to help these visually impaired people undergo their daily activities related to clothing to facilitate the process of wearing clothes, how to identify clothing, and clothing buying activities. Maybe this study still maintains a manual method to facilitate visually impaired people related to clothing, but it remained closely linked to the latest technology in the manufacturing process. Additionally, it's easier for people with visual impairments to use this method because they've been practicing the manual method ever since, but this method will be designed more effectively than before. Undoubtedly the existing tech device in the market is now introducing auto-method to make it easier, but it's time-consuming to install it, slowing down the process of selecting and scanning and making it difficult to control the device. Not only that, but it also uses the battery and needs to be charged whenever want to use it. There is some device that requires internet control when wanting to use it. So in the ease and sophistication of the device, there are also difficulties in acquiring the tech device as in Figure 2.

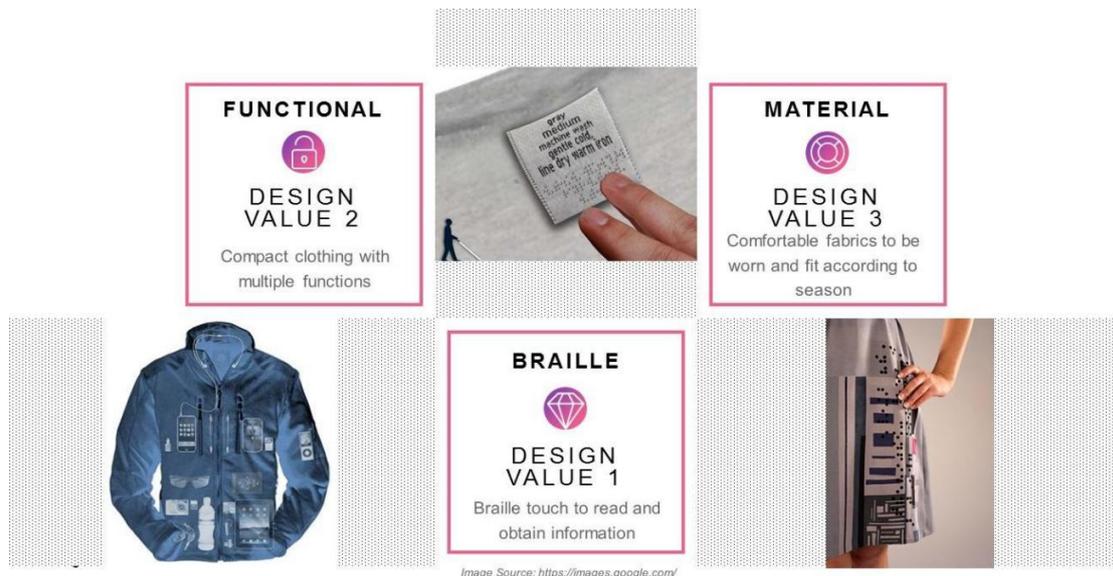


Figure 6. The design value that needs to be on Assistive Garments (Source: Khairi Asyraf, 2019)

This will be used by the visually impaired people for a better understanding of the product they are wearing. With a practical, functional, and wearable garment, it contributes to their daily lives. Practical, functional, and wearable are the elements that need to have on the garment for visually impaired people. Besides, a special price tag and care label is also the key elements that need to have on the garment. Automatically recognizing clothing patterns, colors and materials may improve their life quality. It not only helps in their daily activities, but the garment they wear can provide a function for their use. The value of the garment can also be seen through the texture and material used. It is a very practical approach in helping them to dress and at the same time teach them to live independently in the future.

#### 4. Conclusion

The eye is a primary use on every human body. Loss of vision has a big impact on each individual. According to the World Health Organization (WHO), a person is deemed to be visually impaired when eyesight is better than 3/60 after correction with any current device such as spectacles and so on. The visual field level is less than 10 degrees on both eyes.

Additionally, in understanding the condition of these blind people, adequate facilities should be provided to assist those who suffer from this disease either blind from birth or incidentally blind. In today's modernization, various technologies can be used in overcoming these problems.

Therefore, clothing is one of the foremost being their daily needs and must be taken seriously in terms of purchasing, usage, and care. The material also plays an important role in this study to meet the circumstances of the season in Malaysia. The blind groups are more exposed to outdoor activities and use public transport, so they are always faced with uncertain weather.

In this study, what that is trying to convey is, even though this community is blind, this group has the same rights as ordinary people and with the help of society, these special groups are able to live their life independently as a conventional society. This study is to document for future use.

In conclusion, not only that the assistance needed by this community, various facilities can be undertaken to help the blind regardless of religion, race, and culture. The attention of Malaysians is very much needed to make this community stand as normal people domestically and internationally. Thus, it has also become a model for future generations.

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