



Faculty of Applied and Creative Arts

**ENHANCING USER EXPERIENCE IN HEALTHCARE CENTRES: A CASE STUDY  
OF PUSAT JANTUNG SARAWAK WAYFINDING DESIGN SYSTEM**

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**Bachelor of Applied Arts with Honours**

**(Design Technology)**

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OF PUSAT JANTUNG SARAWAK WAYFINDING DESIGN SYSTEM**

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Bachelor of Applied Arts with Honours  
(Design Technology)

Faculty of Applied and Creative Arts  
UNIVERSITI MALAYSIA SARAWAK

2020

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Final Year Project Report

Masters

PhD

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## **ABSTRACT**

Nowadays, wayfinding system exists in different ways such as signage, road sign, emergency sign, map and digital signage. All of this wayfinding system can be seen at everywhere. The wayfinding system is now playing a big role in our daily life since it can gives information to guide people to the correct path and reach their destination. Although wayfinding system can help us to find the way, but some signage in complex environments such as healthcare centres in wrong placement or unclear instructions will confuse people when they finding their way to destination. Therefore, this study is conducted in healthcare centres especially Pusat Jantung Sarawak to help patients and visitors find their destination more easily by improving the wayfinding design system in the hospital. The research was carried out using qualitative method where interview and observation was carried out inside Pusat Jantung Sarawak. From the analysis of data, obtained that most of the participants are facing problems by using the existing wayfinding design system to find their way.

**Keywords:** user experience, wayfinding design system, healthcare centre, signage

## **ABSTRAK**

*Pada masa kini, sistem pencari arah wujud dengan pelbagai bentuk seperti papan tanda, papan tanda jalan, tanda kecemasan, peta dan papan tanda digital. Semua sistem pencari arah ini dapat dilihat di mana-mana sahaja. Sistem pencari jalan kini memainkan peranan besar dalam kehidupan kita kerana sistem ini dapat memberi maklumat untuk membimbing orang ke jalan yang betul dan sampai ke destinasi mereka. Walaupun sistem pencari arah dapat membantu kita mencari jalan, tetapi beberapa papan tanda di persekitaran yang kompleks seperti pusat penjagaan kesihatan di tempat yang salah atau arahan yang tidak jelas akan membingungkan orang ketika mereka menemui jalan ke destinasi. Oleh itu, kajian ini dilakukan di pusat kesihatan terutamanya Pusat Jantung Sarawak untuk membantu pesakit dan pelawat mencari destinasi mereka dengan lebih mudah dengan memperbaiki sistem pencarian jalan di hospital. Penyelidikan dilakukan dengan menggunakan kaedah kualitatif di mana temu bual dan pemerhatian dilakukan di Pusat Jantung Sarawak. Daripada analisis data yang diperoleh telah menyatakan bahawa kebanyakan peserta menghadapi masalah dengan menggunakan sistem pencarian jalan yang ada untuk mencari jalan mereka.*

*Kata kunci: pengalaman pengguna, sistem reka bentuk mencari jalan, pusat kesihatan, papan tanda*

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

According to Society for Experiential Graphic Design (2014), Environment Graphic Design (EGD) embraces many design disciplines graphic, architectural, interior, landscape, and industrial design and this are all concerned with the visual aspects of wayfinding which related to environment. There are a few spectrums of EGD activity which includes signage and wayfinding that can guide people to reach their destination (Calori & Vanden-eynden, 2015).

Wayfinding system plays an important role in our daily life and it exists in any different ways such as signage, road sign, emergency sign, map sign and digital signage. Although the function of different forms of wayfinding system differs from each other but the main function of wayfinding system is to guide people to find the path and reach their destination.

Although wayfinding system can help us find the way, but wayfinding is an exceedingly complicated cognitive process especially in complex environments such as hospitals, shopping centres and airports. Large and complicated environments can make people become lost very easily if they are unfamiliar with environment (Kim, Wang, Han, & Wang, 2015). According to Yenumula, Kolmer, Pan & Su (2015), people may create confusion under emergency and jeopardize the situation into a chaotic state in a complex building because there are multiple exit signs leading to different directions at an intersection point. According to Mandel (2013), when a user enters a public facility like library, they are having at least two information problems which are the information problem they hopes to address using resource and the spatial information

problem of trying to locate these resource that will help them solve their information problem. Poor wayfinding system in hospital may cause stress and frustration, result in inefficient of staff's care to the patients (TAHPI, 2016).

When it comes to hospital wayfinding systems, the goals of each hospital are similar from each other which are by improving the signage design to help easing the family's difficulties and helping the patient flow of navigation. But achieving these goals is not so easy because it is not only depending on signage design. It is also depends on the hospital's surrounding environment or community (Cooper, 2010). Wayfinding system in hospitals can helps people to find their way, but there are some research or study states that many people facing difficulties when they are using it. According to Gozio Health (2018), there are a research states that there are more than 30% of hospital visitors have to ask staff to guide them although there is a signage in the hospitals. There is also a research state that the hospital's staffs want to help the visitors, but these interruptions during their works will have an impact on the quality care of patients in hospitals. Besides that, there is also a study in New Zealand states that 80% of people preferred straight and direct names of units on signage over difficult and confusing of medical terminology (Woodhead, 2016).

This research emphasises on the problems of wayfinding design system that exists in Pusat Jantung Sarawak. From this research, we will come out an effective wayfinding system to ease the navigation.

## 1.2 Problem Statement

One of the most common problems of wayfinding system in hospitals are the confusing signage and the medical jargon on the signage which increases the frustration and anxiety of patients or visitors (Gozio Health, 2018). According to Campbell & Scott (2014), signage that uses medical jargon is hard to understand by people who do not have experience with medical terminology. Besides that, medical jargons used to name the units on signage in hospitals are quite confusing to the patients or visitors because they are usually long, difficult and similar to each other (Potter, 2017).



Figure 1.5 Example of medical jargon that used in Pusat Jantung Sarawak

Another problem that exists in wayfinding system in hospitals is they are not considering the people who have vision impairment or low vision problems when they design the signage. According to Borges & Silva (2015), they stated that most of the hospitals do not have an effective wayfinding system that adapted to the special needs of the patients with visual impairment or low vision condition.

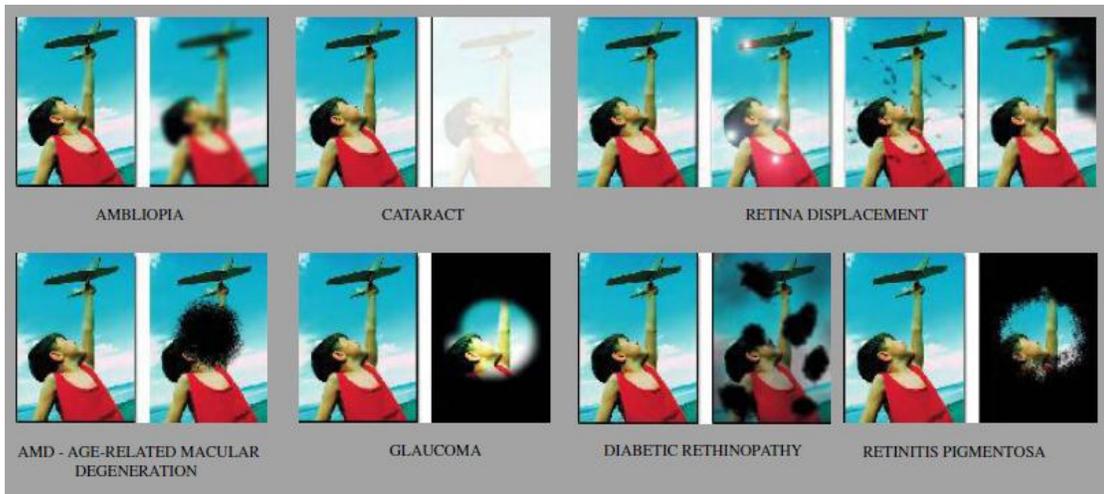


Figure 1.6 Vision of people that have vision impairment problems (Borges & Silva, 2015)



Figure 1.7 Vision towards signage in hospitals by people who has vision problems (Rousek & Hallbeck, 2011)

### **1.3 Research Questions**

In order to provide the focus and to help guide the development of this research, a few research questions are proposed as below:

1. What are the design components that needed in signage design in order to help people to find their way in hospital?
2. What are the common difficulties faced by people or visitors in finding their destination?
3. How to enhance the wayfinding system in Pusat Jantung Sarawak to ease the navigation of the users?

### **1.4 Research Objectives**

In order to ensure the gained information or insight are relevant and useful, three research objectives are proposed at below:

1. To identify the design components that needed in signage design in order to help people to find their way in hospitals.
2. To analyse the difficulties faced by people or visitors in finding their destination.
3. To propose a new wayfinding design system for Pusat Jantung Sarawak to ease the navigation of the users.

## **1.5 Scope of Study**

This research was conducted to identify the graphic elements used on the signage that can help people to find their way in hospitals and analyse the difficulties faced by patients or visitors of hospitals when finding their specific destination. We will also identify the problem through perceptions of patients and hospital visitors by survey and, go-along interview at Pusat Jantung Sarawak to come out an effective wayfinding system.

## **1.6 Significance of Study**

The importance of this research is to identify the problem of wayfinding system and enhance the existing wayfinding system in Pusat Jantung Sarawak to help the patients and visitors to find their path more easily. From this research, we will come out with an effective wayfinding system that can ease the navigation of patients and visitors in Pusat Jantung Sarawak.

## **1.7 Limitations of Study**

For this research, we will only focus on wayfinding system in Pusat Jantung Sarawak but not other complex environments like general hospital in Kuching. Our focus group for this research is only patients and visitors of Pusat Jantung Sarawak or people that had go to hospital before.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter begins with reviews of literature on user experience in the spatial environment especially in hospitals. Through this chapter, we will also define the terminologies such as wayfinding, types of signage and reviews on the design components that are used in signages. This chapter will summarize the literatures from previous research hence develop the conceptual framework for the future study.

#### **2.2 User Experience in Spatial Environment**

In particular, user is an important aspect for wayfinding. This is because all factors that can affect the effectiveness of wayfinding are judged by user experience (UX) (Kim, Wang, Han & Wang, 2015). According to Hassenzahl (2008), he defined user experience as the feeling or mood of the user after interact with the products, services or environment. Therefore, the individual perception and understanding of the surrounding environment are different depends on different users.

Besides that, there are four main contributing factors that are related to wayfinding which are spatial structure, technology, signage and symbols. When the users are in their wayfinding process, the most important key factor to consider is the spatial structure of a building (Zijlstra, Hagedoom, Krijnen, van der Schnas & Mobach, 2016).

### **2.2.1 User Experience in Wayfinding in Hospital**

Apart from spatial knowledge and environmental factors that can influence wayfinding, it also involved spatial experience. Spatial experience includes the act of moving from one place to another place. Movement refers to shift of body's location between one point to another within space. The movement involved in wayfinding is not of any kind but a directed movement. All activity involved in wayfinding like place to place movements has the objective of reaching the destinations (Mustikawati et al., 2017).

According to Verderber (2015), studies showed that when people involved in wayfinding in hospitals, there will be a higher stress level and anxiety of the users. According to Shan & Verderber (2016), hospital circulation zones occupy a vital role in the experience of environment for all of the users. Circulation zones in healthcare facilities are the spaces for the movement of people, equipment and supplies between the departments or units. Public spaces in healthcare facilities were closely related to the overall satisfaction levels of patients and may also impact their mood and physical behaviours.

Besides that, the planning and design of circulation zones may impact user's perceptions and experiences from the perspective of different people. In fact, these spatial zones such as circulation zones contribute greatly to first impressions of the people in any care setting (Jiang & Verderber, 2016). According to Pangrazio (2013), he also pointed out that healthcare public zones can create a memorable and positive experience by providing orientation, enhancing self-actualisation, building self-orientation and therefore furthering the overall healing process.

In addition, effective signage is an important element during wayfinding process. Signs are more than providing directions, they reach out to the visitors to make them feel comfortable with their navigational experience (Sivaji, Radjo, Amin & Hashim, 2016). According to Rousek & Hallbeck (2016), there are some studies have shown that signage has a considerable impact upon wayfinding behaviour that must be included in the overall plan configuration of a building.

One of the study about signage is they conducted some experiments to 25 participants around 18-83 years old in Parkland hospital in USA. There are 60 signs along the experimental route but there only 9 of them detected by 85% of participants and 6 of them by less than 35% of participants detected the signs. This study has shown that missing signage at decision point can cause delay, confusing and stress (Vasiliki, Carl & Mehul, 2017).

Signage also plays an important role in emergency situation to find the exits path. This study is conducted because of the incident of the operating room fire of hospital on 25 Aug 2001 in Shanghai and the hospital fire on 9 Dec 2011 in India. So, to prevent the incident happens again, there is a study about investigation on human evacuation behaviour in hospital in Shenyang, China. As a result, they found out that patients walked slowly at ratio of 70-90% compare to healthy people and about 1/3 of patients usually feel lost when emergency happens. As to the emergency happens so suddenly, almost half of the patients decided to follow the others, almost 20% selected the entering route, 20% try to follow the instruction of exit, while 10% of patients directly ask the staff for the direction. In conclusion, signage is very important to guide the people to find their ways (Jiang, Zhang, Shan & Tian, 2014).

### **2.2.2 User Experience of People with Visual Disability in Wayfinding in Hospital**

Visual disability is not limited to blind person only. It also includes the people who have visual impairment or low vision problems. For example, people that have cataracts, glaucoma, macular degeneration and diabetic retinopathy are also included as visual disability. There are many types of eye diseases that can affect wayfinding capability of the people and the affected number is still continuing increased (World Health Organization, 2002).

In 2011, Rousek conducted a study on 50 participants aged around 18 to 30 to differentiate the vision of signage of normal vision and vision impairment. In this study, they use goggles to normal vision people to play role as people who have vision impairment. In result, 88% of participants walk faster without goggles. This study also states that the major problems for vision disability are the signage. This is because there are 78% of participants had trouble finding signs when they wearing goggles. There are also some problems to recognise the signage in visual disability condition which there are improper illumination (38%), unexpected positioning (36%) and failing to notice (14%).

To conclude, signage that has improper size or not enough colour contrast between the background and the letters are the major problems for the people who have vision disability. Besides that, two colours that contrast sharply to someone with normal vision maybe are less distinguishable to someone with visual disorder.