Understanding Disabled Malaysian Students' Technology Use and Practices in the University: A Social and Relational Perspective

By

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PLAIN LANGUAGE THESIS SUMMARY

What is this research study about?

My research study is about understanding how disabled Malaysian students use technology to support their studies in the university.

Why I did this study?

Many disabled students are going into university to study, but we do not have enough information about them and their use of technology to support them in their studies.

I wanted to find out how and why disabled students use technology to support their studies in both positive and negative ways, particularly from their own perspectives.

What did I do to find my answers?

In my study, I used Pierre Bourdieu's theory to understand and explain how and why disabled university students used technology to support their learning and participate in the university. This theory used the concepts *habitus, field*, and *capital* to understand the behaviours of people and the relationship between people and their social world. To Bourdieu, an individual's behaviour is influenced by their habitus (past and present experiences including family background and education), and capital (economic, social, and cultural resources) within a specific field (social space). It is the relationship between these three concepts that determine or influence the behaviour of people.

I also used Bourdieu's theory to guide me in my data collection. I collected different types of information to find my answers:

- I examined official documents and media information on disability and higher education in Malaysia.
- I asked a group of disabled Malaysian university students about their experiences with technology using an online survey.
- I talked to five Malaysian students, one-on-one, and asked them about their personal experiences with technology in the university. I also asked them about their impairments and medical health conditions, and their experiences with technology before coming into the university.

What did I find out?

Technology made it possible for some disabled students to feel a sense of belonging, be independent, and succeed in the university.

I found that technology was important to these students in the university because:

- it helped them to study and do their university work
- it helped them to build social relationships that are important at university
- it helped them to feel more confident in themselves, and able to ask for support

I also found out what didn't help the students from succeeding in the university.

- some digital study resources could not be used
- felt the lack of support from lecturers
- experienced unfair and disrespectful treatment
- felt they did not belong, and embarrassed about having an impairment and/or medical health condition
- felt out of control, and pressure to do well

Why is my study important?

I found that technology is a social tool. For disabled students, it was important to consider how technology made them feel about themselves, and their capabilities. Technology also allowed them to learn in different ways suited to their needs. It enabled them to do some things they were not able to before having access to technology and the internet.

I focused on listening and speaking respectfully in my interactions with the disabled students. Their opinions and feelings are important to me. My goal was to find out in what ways technology help them in the university from their own personal experiences rather than from other people. Each student is unique, hence also experience technology in different ways. I chose to highlight these unique experiences in my study.

What can we do in the future?

We can use the information I found in this study to further support disabled students in the university. Universities can:

- adopt universal design and access principles

- build a shared narrative of disability discourse and language
- advocate disability rights and awareness among the university and wider community

Ultimately, universities should support their students to:

- access and use digital technology and resources to support their learning and other activities
- be informed and empowered to make decisions and meaningful choices in their use of digital technology and resources
- use digital technology and resources to increase their social, cultural, and political participation in the university and wider community

SUMMARY

My doctoral study sets out to understand the “messy realities” in the disabled university students’ relationship with technologies within a particular case university in Malaysia. I drew on the work of Pierre Bourdieu to make the argument that the relationship between disabled university students and technology is not straightforward, instead being multifaceted, with a complex interplay of structural and individual factors. Bourdieu’s conceptual tools *habitus*, *field*, and *capital* and a three-stage framework provided a systematic approach to data collection, and framed the social-relational analysis. My study benefitted from Bourdieu’s relational framework which bridged structure and agency, connecting and linking human behaviour and practice to social structures. This framework allowed me to interpret and make sense of the data collected in a holistic way, taking into consideration the social, cultural, and political context of the participants.

Examination of policies and media sources, an online survey, and the life stories of five disabled Malaysian university students collectively provided a window into their complex relationships with technology. This thesis critically discussed, in particular, how and why technology impacts disabled students in meeting the academic and social demands of the university. I considered how technology was managed, negotiated, and strategised by the students to participate successfully in the university, including some insight into the barriers to participation. From here, I outlined three implications for inclusive digital practices including some strategies that universities can take as possible ways forward to increase disabled students’ participation and life chances in the university: adopting universal design principles, building a shared narrative of disability discourse and language, and mainstreaming of disability rights in the university.

This phenomenological case study contributed to the field of disability and technology in a number of ways. First, adding sociological perspectives to our current understandings of digital technology use and practices in higher education. Second, focusing on disability and technology as an under-represented area of research on a digitally excluded group, i.e. disabled university students. Third, highlighting and privileging the particularities of periphery experiences within an ethnically, linguistically, and culturally diverse society. Ultimately, a digitally inclusive university should support their disabled students to: 1) access and use digital technology and resources that have direct impact in supporting their learning and other academic activities; 2) be informed and empowered in making decisions and meaningful choices in their use of digital technology and resources; and 3) use digital technology and resources to increase and encourage their full social, cultural, and political participation in higher education and wider community.

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: Helena Song
Date: **15 January 2024**

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**From the mountain tops where the tree grows;*
Where the snow melts and our river flows;
Where the sky kisses the ground, and the ground hugs the sea;
We would like to acknowledge country.

*from a community greening event by the Royal Botanic Gardens Sydney

CHAPTER 1: INTRODUCTION

> *In choosing to study the social world in which we are involved, we are obliged to confront, in dramatized form as it were, a certain number of fundamental epistemological problems, all related to the question of the difference between practical knowledge and scholarly knowledge, and particularly to the special difficulties involved first in breaking with inside experience and then in reconstituting the knowledge which has been obtained by means of this break.*
>
> (Bourdieu, 1988, p.1)

1.1 Setting the scene

Disabled students' participation and access to higher education in Malaysia have proven to be complex and lacking in empirical investigation. Legislation, policies, and guidelines governing disability within the university context remain vague and unregulated. By law, university students are seemingly protected by the ambiguous and subjective definition of "reasonable accommodation*"* of the Akta Orang Kurang Upaya 2008 (Persons with Disabilities Act 2008). The most recent official guidelines from the Ministry of Education, Malaysia (2019) is the publication of Garis Panduan Pelaksanaan Dasar Inklusif Orang Kurang Upaya di Institusi Pendidikan Tinggi 2019[1]. This is a visible positive initiative from the Malaysian education department to protect the rights of disabled university students. However, the implementation of this guideline into practice has been piecemeal at best. The enactment of the Persons with Disabilities Act (2008) and the recent disability policy guidelines (2019) in Malaysian higher education are still fully reliant on the discretion and interpretation of the respective university. In other words, the management of the universities decide what and how reasonable accommodation is deemed appropriate for disabled students based on 'good faith'. The university management decides what are "necessary and appropriate modifications and adjustments not imposing a disproportionate or undue burden, where needed in a particular case" (Persons with Disabilities Act 2008). Crucially, non-compliance does not lead to punitive measures as there are no legislative sanctions or penalty clauses to this disability act. There is no avenue for disabled students to seek redress when discriminated against and/or when their rights are being infringed.

On the 8th of April 2008, Malaysia signed the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (United Nations, 2006) and later ratified the Convention on the 19th of July 2010. As documented in the UN Treaty Collection (2023), in 2008, the Malaysian government announced that:

[1] Guidelines to the Implementation of Disabled Persons Inclusive Policy in Institutions of Higher Education 2019 (Ministry of Education, 2019, https://www.moe.gov.my/pekeliling/2785-garis-panduan-pelaksanaan-dasar-inklusif-oku-di-ipt/file).

> *Malaysia acknowledges that the principles of non-discrimination and equality of opportunity as provided in articles 3(b), 3(e) and 5(2) of the said Convention are vital in ensuring full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity, which shall be applied and interpreted on the basis of disability and on equal basis with others. Malaysia declares that its application and interpretation of the Federal Constitution of Malaysia pertaining to the principles of non-discrimination and equality of opportunity shall not be treated as contravening articles 3(b), 3(e) and 5(2) of the said Convention. Malaysia recognizes the participation of persons with disabilities in cultural life, recreation and leisure as provided in article 30 of the said Convention and interprets that the recognition is a matter for national legislation.*

The signing of the UNCRPD has led to the enactment of the Persons with Disabilities Act 2008, which came into force on 7th July 2008 in Malaysia. Despite this historic watershed moment as a significant way forward in advancing the rights of disabled people in Malaysia, services still largely operate through the medical and welfare-charity models. Disabled people's affairs predominantly function under the purview of the Department of Social Welfare in the Ministry of Women, Family and Community Development, Malaysia. On the ground, a snapshot from the United Nations Children's Fund (UNICEF) Malaysia report (2014) revealed the limiting views of the general Malaysian population in relation to disability – one in three Malaysians believed that disabled children should be kept hidden, while 43% felt they would be disruptive in a mainstream class.

Hence, Chin (2018, para. 1) claims that "laws for the disabled lack bite" in Malaysia. This statement is supported by Abdullah et al., (2017) who found that over a period of 8 years (2009-2016), only 1 out of 11 registered legal cases of disabled people made reference to the Persons with Disabilities Act 2008. Even then, this sole case merely referred to the Section 2.0 statute – the definition of "person with disabilities". In its present form, it is like a "toothless tiger" (Priya, 2019, para. 5). Absent of judicial remedies or penalties, the Persons with Disabilities Act 2008 is in clear need of reform for it to be effective in protecting the rights of disabled Malaysian people. Certain civil societies and non-governmental organisations in Malaysia have even called for the abolition of the act, to be replaced with a disability discrimination act (Tan, 2018).

Additionally, the Disability News and Information Service (DNIS, 2013, para. 2) observed the following scenario in Malaysia: "The rapid development of Malaysia belies the fact that disability issues were never in the scheme of things of the policy makers. Therefore, despite world class infrastructure, near about nothing is accessible." Harsh as this criticism may sound, this is still the reality for most disabled people. Despite Malaysia being significantly more developed in comparison to other Southeast Asian counterparts (other than Singapore), there is a lack of awareness of, and attention on, disability rights among the general public, including from government ministries, non-government agencies, education institutions, and other private sector

entities and industries across the country. Unfortunately, the very idea of having any form of rights is far from reality for the majority of Malaysian disabled people and their families, particularly in the rural parts of the country. As Meekosha and Soldatic (2011) rightly pointed out, the everyday lives of disabled people in the global South is far removed from the concept of the so-called 'universal' disability rights of the global North that we know. Hence, western conceptions of disability and impairment might not be adequate to advance our understandings of those in the periphery in more conservative communities.

Limiting conceptualisations of disability in the Asian context have played an enduring role within the disabled community, often without their awareness, as they tend to distance themselves from their own feelings and opinions, and their identity as an individual person. Ableism, or what Siebers (2008, p. 7) called the "ideology of ability", is dominant in this part of the world. This has perpetuated a preference for able-bodiedness, assuming that some people (and bodies) are 'normal' and superior while other people (and bodies) are 'abnormal' and inferior (Berger & Lorenz, 2015). To the extreme, it "defines the baseline by which humanness is determined, setting the measure of body and mind that gives or denies human status to individual persons" (Siebers, 2008, p. 8). For example, Stone (1999) found that the strong notion of a separation of body and mind in Western societies is practically non-existent in non-Western countries. In contrast, the mind, heart, and body are taken as one and inseparable in some cultures, particularly in Chinese cultures. These differing instances affect how impairment and disability are perceived and socially regarded in people's consciousness. In another example, Miles (1995, p. 52) found that within the eastern religious context, impairments are commonly linked to "misfortunes, sent by deity, fate, karma; and often associated with parental sin". The socio-political climate is another strong determinant of what it means to be disabled and living with an impairment. A disability activist from Thailand, Danilo Delfin noted that "Disability rights advocacy in Southeast Asia is very hard. Children are taught never to argue with the teacher. It is a long socialization process" (cited in Charlton, 1998, p. 33). It is against this backdrop, coupled with the intricacies of an ethnically, linguistically, and culturally diverse society such as Malaysia, that I sought to conduct a multi-faceted study.

1.2 Bourdieu's theoretical framework

This thesis is based upon a series of phenomenological case studies involving a group of disabled university students in Malaysia. These are personalised and localised stories of struggles and triumph, and the messy realities of navigating their academic lives in the Malaysian higher education field while having to deal with the effects of their physical, mental, intellectual, and/or sensory impairments. My deep engagement with a small sample of participants, and the analysis and emergent findings, however, are not representative of all disabled students. Rather, my motivation has been to highlight the individual particularities of this cohort of Malaysian students'

experiences amidst the broader historical, political, social, and cultural context they inhabit. As Goodley et al. (2006, p. ix) suggest, researching life stories "tell[s] us much about individual and collective, private and public, structural and agentic, and real and fictional worlds." With these nuanced findings, we can then propose situated changes to policies and practice to better support Malaysian students more equitably and justly in our local universities.

To understand the participants' stories, I used Pierre Bourdieu's theory of practice and his conceptual tools of *habitus, field*, and *capital*. These key concepts of Bourdieu's work are reviewed in Chapter 2, with a particular focus on how they were applied to my study. This set of inter-related concepts has been used by countless scholars and researchers to understand how academic institutional structures maintain and reproduce social and cultural inequalities within any society across generations (Naidoo, 2004). Fundamentally, Bourdieu's framework focused on the reproduction of inequalities, power relations, and social practice. To him, the social world is seen as structural, relational, and dynamic in nature – "its cornerstone is the two-way relationship between objective structures (those of social fields) and incorporated structures (those of the habitus)" (Bourdieu, 1998, p. vii). In this study, I was interested in 'the real', and to Bourdieu, "the real is relational" (p. 3).

Given that disability is often multi-factorial – a complex interaction of factors – Bourdieu's relational approach allowed me to critically examine the complicated social reality of disabled Malaysian university students. Specifically, Bourdieu's three-stage framework systematically guided me in collecting the data and exploring the complexity of the relationships between the disabled students' *habitus* (disposition, family and educational background, trajectory, positioning, etc.), *capital* (economic, cultural, and social), and their contextual *social* field (university, Malaysia). In other words, Bourdieu's framework provided a comprehensive scaffold for me to understand the complex factors that supported or hindered these students' full participation in university life. Bourdieu (1992, p. 127) speaks of *habitus*, often termed 'culture', as below:

> *… social reality exists, so to speak, twice, in things and in minds, in fields and in habitus, outside and inside agents and when habitus encounters a social world of which it is the product, it finds itself 'as a fish in water', it does not feel the weight of the water, and takes the world and itself for granted.*

Specifically, to make sense of the participants' stories, I used Bourdieu's analogy of 'as a fish in water'. This is further elaborated upon in Chapter 6. This analogy provided me with an overarching frame for telling a cohesive story, enabling me to highlight the similarities and differences collectively within a contextual social space, without losing the individual subjective accounts of the students' experiences. For Bourdieu (1998), to understand any social behaviour or practice, we need to examine the interaction and relationship between the *field* (the objective elements of the social environment) and the *habitus* (expressions of subjectivity). Cognisant that the world is

infinitely complex, Bourdieu's approach to investigating the social world focused on "the changing structures and institutions of this world (as external objective readings), all the while analysing the nature and extent of individuals' participation in (an internal subjective reading)" (Grenfell, 2012, p. 214). Hence, this study has benefitted from the strength of Bourdieu's theory in bridging structure and agency, connecting and linking human behaviour and practice to social structures, thereby dispelling the false dichotomy of the two. At the heart of this is Bourdieu's commitment to "make sense of real, living, practical context" and "to uncover the generating processes of social situations and to restore to men the meaning of their actions" (Grenfell & Lebaron, 2014, p. 2). Like Bourdieu, I began my research within a practical context.

1.3 Privileging and listening to disabled students' voices

Engaging and listening to the disabled students' stories was the most fulfilling part of my PhD journey. Their openness in sharing parts of their lives with me remains something that I cherish tremendously. Being entrusted to retell their stories, I needed to ensure that I was attentive to their narratives beyond what was spoken during the interviews. Voices and stories do not happen in a value-neutral vacuum – they are politically, socially, and culturally constructed. Again, the use of Bourdieu's theory of practice allowed me to critically explore and analyse individual and contextual factors as inter-related constructs rather than in isolation. I was interested in the complex and nuanced social relationships of the disabled students in a real situational context, and how it influenced and impacted their behaviour and practice.

I was aware that being a non-disabled person researching disability issues and taking the academic liberty to speak on the students' behalf was a daunting and risky task. Historically, in most cases, researchers tend to gain more than the researched. The academy was, and still is, strewn with "symbolic violence"[2] against the marginalised and subaltern communities, all in the name of seeking knowledge. As a former academic in Malaysia for 20 years, I had personally witnessed how unequal power relations were played out in this field – between lecturers and students, researchers and the researched, supervisors and supervisees, and heads of departments and subordinates. Higher education spaces are wrought with power struggle narratives. Unfortunately, many of these important narratives are hidden as "subordinate people do not have the privilege of explicitness, the luxury of transparency, the presumptive norm of clear and direct communication, free and open debate on a level playing field that the privileged take for granted" (Conquergood, 2013, p. 34). Through the participants' stories in this study, I sought to

[2] bell hooks (1990, p. 343) speaks of symbolic violence in the academy: "*No need to hear your voice when I can talk about you better than you can speak about yourself. No need to hear your voice. Only tell me about your pain. I want to know your story. And then I will tell it back to you in a new way. Tell it back to you in such a way that it has become mine, my own. Re-writing you I write myself anew. I am still author, authority. I am still colonizer the speaking subject and you are now at the center of my talk*."

privilege and make visible their hidden voices. I also sought to highlight their stories of resilience and resistance.

As a researcher, I was confronted and challenged by Tuck and Yang's (2014, p. 224) bold statement that social research "often works to collect stories of pain and humiliation in the lives of those being researched for commodification". Bearing this in mind, I was cautious and strived to ensure that my research process was ethical, meaningful, and useful for the individuals involved in my research. The commitment to the spirit of "*Nothing about us, without us*"[3] kept me focused on prioritising the participants, their needs, and sometimes, their silenced voices. Some disability studies scholars reported that these voices had been lost in the production of the knowledge that claims to seek to understand them (Barnes & Mercer, 2006; Stone & Priestley, 1996). I acknowledged this unequal power that exists across the entire research process, particularly during the data analysis where participants have little or no control. Ultimately, I was the one who chose which part of the interviews to focus on and what quotes to select to be used as evidence. Despite all possible attempts, the relationship between the researcher and the researched is, and will always be, unequal. Social experiences are so complex that I can never claim to have captured the participants' voices completely authentically. As Mauthner and Doucet (1998, p. 145) stressed:

> *We can never claim to have captured the 'pure', 'real', 'raw' or 'authentic' experiences or voices of our respondents because of the complex set of relationships between the respondents' experiences, voices and narratives, and the researcher's interpretation and representation of these experiences/voices/narratives. However, there are ways in which we can attempt to hear more of their voices, and understand more of their perspective through the ways in which we conduct our data analysis.*

To lessen the power imbalance, I attempted to listen more during the interviews. I found the interview part of the research process to be the most collaborative. The interview conversations were guided by both the researcher and the researched, bouncing off each other; therefore, the interviews were in some way a joint production. During the interviews, my identity was more than a researcher seeking data to answer my research questions. I entered each conversation prioritising active listening – listening to learn and understand. I made the conscious effort to explain to the participants my intentions before each interview. I assured them that while this was predominantly an academic exercise for me, I was here to listen to their stories. Their personal experiences, good, bad, and the in-between, were important and valuable to me. I also pointed out to the participants that our conversations during the interviews could contribute to the wider community, particularly in advancing a more inclusive university environment for their disabled peers and future

[3] The English term of this phrase was first used by James Charlton (2000) in his book entitled: *Nothing About Us Without Us: Disability Oppression and Empowerment*. This phrase is often used as a slogan to communicate the idea that no policy should be decided by any representative without the full and direct participation of members of the group(s) affected by that policy.

students. I was upfront and shared with them the goal of my study – to ultimately facilitate social change and practice in the university.

For me, listening was the easier part of the research. However, the space between listening to the participants' stories and writing their storied accounts was filled with tension and struggle. I am not alone in this struggle. Van Manen (2017, p. 779) observed that data analysis, "generating insights into the structures of lived human experience", is the most difficult part of phenomenological research. It is a space that is rarely talked about or reported upon in academic research. According to hooks (1990), marginality is far more than a site of deprivation, wounds, and pain, or even oppression. A site of marginality can be a space of resistance. Sites of resistance are where "it is not just important what we speak about, but how and why we speak" (hooks, 1990, p. 343). I chose to enter this space of resistance. Gilligan's (2015) voice-centred relational (VCR) method of analysis provided the means for me to do so. It enabled me to situate and frame my analysis within a site of resistance. The *Listening Guide* (Gilligan, 2015) gave me a systematic structure to understand and hear more of the participants' perspectives. It allowed me to interpret the participants' stories that were attentive to the body, relationships, and the socio-cultural context. The *Listening Guide* allowed those who struggle to speak within the current patriarchal, androcentric, and ableist framework to be heard, or at least, partially understood. This method was said to be beneficial, particularly to access and understand marginalised and under-studied experiences. Sorsoli and Tolman (2008, p. 498) noted that:

> *… the method is predicated on the need to be 'resisting listeners' (Brown & Gilligan, 1992); that is, to listen under parts of narrative with an ear to how marginalized and oppressed people negotiate their lives on the flip-sides of power (Miller, 1976).*

The *Listening Guide* was particularly valuable because it helped me to identify and pick up unspoken issues in the participants' narratives. For the participants in my study, the socio-cultural pressures of simultaneously being a university student and having a disability may result in difficulties in expressing complex social and emotional experiences. For example, within Asian cultures, there is an internalised conflict in speaking one's mind or having an opinion, especially when it is a negative or a challenging experience, for fear of being seen to be disrespectful or challenging authority (Chang, 2000; Ozano & Khatri, 2018). The *Listening Guide* acknowledges this tension and struggle of the ability of participants to provide straightforward accounts of their experiences due to socio-cultural norms and pressures. The process of using the *Listening Guide* in analysing the interview data will be explained in greater detail in Chapter 3, Section 3.9 – the methodology chapter.

Fundamentally, my study is underpinned by the transformative philosophical framework. While the aim of employing a transformative inquiry was to ensure that marginalised voices were privileged and listened to, the students' storied accounts in my thesis were essentially authored by myself,

with their stories interpreted through a Bourdieusian lens. Thus, while seeking to listen to, and understand, the disabled university students' lives on their own terms, these stories or voices were mediated through my voice and my own habitus. They formed only one perspective, i.e., my interpretation of their experiences. I had the privilege of choosing, and telling, parts of the participants' realities. In composing the students' stories, I need to stress that I am not giving my participants their voices. They are not voiceless. Rather, my intention was to make visible their voices in a space where their voices were most likely silenced or missing. After all, as Gilligan et al. (1990, p. 95) pointed out, "people have more than one way to tell a story and see a situation through different lenses and in different lights". I established trustworthiness and rigour in my case stories through open dialogue and communication with my participants. Through this period of open communication, I attempted to provide a collaborative space for the participants to actively and critically review their own stories authored by another person. Written biographies and transcripts were sent to all participants and feedback was encouraged and sought. They clarified and added what they thought I had left out. I also sought consent and confirmation on the final biographies I used and included in my thesis write-up. This was one effort among others on my side to work 'with' my research participants rather than 'on them'. Bourdieu understood this very well when he cautioned about the intellectualist trap: "I was aware from the outset that my task involved not simply telling the truth of this world … but also showing that this world is the site of an ongoing struggle to tell the truth of this world" (Wacquant, 1989, p. 35). Thus, it is critical that the researcher reflect on their own dispositions and feelings in order to make sense of their research participants and their narratives. Bourdieu (2003, p. 282) called this process of reflexivity, "participant objectivation".

In the spirit of Bourdieu's reflexivity, my own story is shared in the following section, with the intention of clarifying my interest in this particular area of research and in the lives of disabled university students. Sharing my story will also provide the reader with glimpses into the events in my personal and professional past that shaped the research path of this study, and how it intertwined with the participants' lives and their stories.

1.4 My story

I grew up and have lived most of my life in the city of Ipoh on the west coast of Malaysia. Although I was born in Malaysia, I am of Chinese descent. My ancestral roots can be traced back to the Guangdong province of China, where my forefathers migrated to what was then, Malaya. Other than the indigenous people, most Malaysians would have ancestors in Indonesia, China, and India. Today, Malaysia's population is estimated to be 32.7 million (Department of Statistics Malaysia, 2022), with the major ethnic groups consisting of Bumiputera (Malays and indigenous people) at 69.9%, Chinese at 22.8%, and Indians at 6.6%. Other minority ethnic groups make up 0.7% of the

population. The fabric of Malaysia's citizenry, due to the nation's historical past, is multicultural, multiracial, and multilingual.

The Malay language is widely used and spoken across Malaysia through compulsory education in the nation's schools. As a former British colony, the English language is deemed important and regarded as a formal second language. As ethnic Chinese and ethnic Indians retain their mother tongue, it is also not unusual to hear various Chinese and Indian dialects being spoken in the country. The average Malaysian is, at the very least, biliterate – as are the participants in this study. Two of the participants are triliterate (Malay, English, and Mandarin). I myself am biliterate (Malay and English), trilingual (Malay, English, and Cantonese), and speak rudimentary Mandarin (Putonghua - **普通**话).

Modern Malaysia is made up of 11 states and 2 federal territories – Kuala Lumpur and Putrajaya – in the west of the country, collectively known as Peninsular Malaysia (Semenanjung Malaysia) or West Malaysia; while in the east, there are 2 states – Sabah and Sarawak – on the island of Borneo, and the remaining federal territory of Borneo – Labuan, collectively referred to as East Malaysia or Malaysian Borneo. While it was not intentional, the participants in my study came from both West and East Malaysia. My formal schooling years (12 years) were spent in the national schools of West Malaysia. Interestingly, my undergraduate studies brought me to East Malaysia. I spent four years at a local public university in Sarawak for my bachelor's degree with honours. In a campus situated in the small rural town of Kota Samarahan, I lived and learnt about the culture of the east part of Malaysia that remains elusive to many west Malaysians. Here, I interacted with many indigenous university peers, friends and staff from different tribes and clans, and was exposed to very different types of food, culture, and languages from that of West Malaysia.

Coming from a typical middle-class family in urban Malaysia, education is highly prized as a pathway towards upward economic and social mobility. There is a common phrase around our community: "study hard, or you'll end up being a road sweeper". As discriminatory as this narrative may sound, it is meant to drive home the point that good education or academic success is the ticket, perhaps the only ticket, to a better life. For many Malaysians, particularly of Chinese descent like myself, and a few of my participants, this has become our way of behaving, thinking, feeling, and being, so much so that in our growing up years, our self-worth is based on how well we do in exams. For most middle-class people across the country, academic excellence has become our self-esteem yardstick. This includes gaining entry into university, or even better, an overseas Western university. A higher education qualification, at least in Malaysia, represents cultural capital that can be converted into decent employment, financial stability, and more importantly, respect from family and community. These are the aspirations of many young Malaysians, including our disabled young people.

1.5 Using technology in the university

Until now, I have not mentioned technology, although it is one of the core foci of my thesis. This was a deliberate decision. I have chosen to foreground the political, cultural, social, and geographical aspects of the study initially, as I believe that technology is a socially constructed tool. I concur with Selwyn (2010, p. 69):

> *Gaining a full sense of how and why educational technologies are being used in ways that they are is therefore underpinned by understandings of how these technologies are socially constructed, shaped and negotiated by a range of actors and interests.*

In this section, I would like to share my past professional practise and research journey into technology use in the university, and then later, specifically into disability and technology. I was an academic for almost 20 years at Multimedia University, Malaysia's first Government-linked private university, established in 1999. This fully ICT-based institution was tasked to produce knowledge workers for the government initiative and development of the multimedia super-corridor project in Cyberjaya, dubbed as the Silicon Valley of Malaysia. What this meant was that a technology-based teaching and learning environment has been stressed since its inception and has remained a core focus until the present. The medium of instruction at this university is English, as we have a substantial number of international students from neighbouring countries as well as from China and the Middle-East.

During my time as an academic, I found technology to be a bridge to my students in my teaching practice, both in delivering courses and in communicating with them. Learning content-heavy courses in English was particularly difficult for our students as they are not native English speakers. I found them disengaged during lectures, and their assessment tasks lacked critical perspectives. This led me to undertake research into technology-based teaching strategies and effective learning technologies to support my students. I had also carried out several research projects which looked into undergraduate students' perceptions and experiences of using technology in the university, particularly social media and mobile technologies (Song & Yuen, 2008, 2009; Rahimi, Song, & Agharazi, 2011; Song, Murphy, & Farley, 2013; Song & Farley, 2015). What stood out for me was that I found these online spaces provided a safe space for my students to interact and communicate in English far more than they would in the face-to-face classroom setting. For example, among the 104 first-year university students, group blogging was perceived to be "a useful and effective learning and assessment tool as well as a reflective and communication tool" (Song & Yuen, 2008, p. 962). Blogging increased interaction and engagement among the students where the main advantage was providing an alternative avenue for those who may be embarrassed and lack self-confidence to speak in large classes. Many students suggested they were more comfortable to voice their opinions online among their peers and lecturers compared to speaking in public spaces. These findings were quite consistent in my subsequent

research, particularly in relation to the technologies used, such as online discussion forums, social media sites, and mobile technologies.

Similarly, Al-rahmi, Othman, and Musa (2014) found social media technologies to have a positive effect on Malaysian public university students in terms of interaction, engagement, and perceived ease of use and usefulness. Researchers from the UK, the USA, Canada, and Australia also had similar observations where social media technologies were effectively used to support engagement and learning among university students in their respective countries (Dyson et al., 2015; Megele, 2014; Minocha, 2009; Tess, 2013; Vivian et al., 2014). In another large-scale survey, Australian researchers from three universities (Russell et al., 2014) reported that students felt technology enhanced their learning, particularly in terms of accessibility and flexibility. Additionally, my informal discussions and formal end-of-semester course feedback from students consistently and continually revealed that with technology, they connected better with me and their peers, and crucially, with the course content. General student experiences within the university also improved. Hence, in my own teaching practice, I have always used technologies familiar to my students as a bridging tool to support their learning environment.

Pertinent to this thesis, however, was an eye-opening encounter with a final year student, Iris (pseudonym). Iris was a dyslexic student with attention-deficit/hyperactivity disorder (ADHD). She came into my office looking visibly distressed. Prior to this meeting, an email was sent by the deputy dean of the faculty to all the lecturers involved with a note stating: “if possible, please give her more flexible time for her submission”. I’ve asked her to come see me as I wanted to discuss with her how best to move forward. In that email, Iris wrote:

> *I'm Iris, a final year student from Multimedia Arts. I suffer from ADHD and Dyslexia since I was born. It means I also have some difficulty in my studies especially in submitting assignments on time. I have been keeping on myself all this while because I don’t want to make my "disability" as an excuse. But I’m getting sick of it because some lecturer might just think I’m lazy or stupid. While they don’t understand the struggle I’m facing, I hope you can help me by informing the lecturers of the subjects I’m taking this semester. I hope this sem[ester] I can perform the best by telling the lecturers my condition. I’m sick of keeping it myself. I have attached my subjects schedule below. Your assistance in this matter is much appreciated.*

This was my first encounter with disability in my 15 years in this university. As there was no official university policy in place, accommodation was not mandatory and entirely up to the individual lecturer’s discretion. In Iris’s case, she had to approach five different lecturers of each respective subject she was enrolled in that semester to explain and request an extension for her submissions. In our conversation, I asked her how I could support her and what her needs were. I frankly informed her that I had no prior knowledge, experience, or training to handle such a situation as a lecturer. Interestingly enough, when I asked her how she had managed to get through this all since

first year without disclosing her disability diagnoses, she said without a doubt, YouTube and social media sites such as Facebook and Twitter. Iris specifically told me that the videos that I uploaded on my course Facebook page were particularly useful as she could pause and replay them as many times as she needed. The flexibility of the 'anytime, anywhere access' of the course content was extremely useful for her due to her difficulty in sustaining focus in class during lectures.

As our conversation continued, I recalled instances in the past where students had exhibited similar behaviours but would have fallen through the cracks. While the university had no disability policies and practices in place for supporting disabled students such as Iris, technology made things possible for her to survive and continue participating in her studies. She eventually graduated, but I felt that with proper support from the university, Iris would have achieved better grades to fulfill her plans of continuing her Master's degree. I also thought of other disabled students who had to manage on their own, but failed and did not graduate. I believe it is not unreasonable to suggest that in Iris's case, we failed her as a university. I felt as a senior academic, that I was ill-equipped to support her appropriately. This meant that disabled students at my university depended on the benevolence of their course lecturers to provide, "if possible", the accommodations they needed to successfully participate in the university – if and when they disclosed their disability. Critically, it is highly problematic when understandings of disability are limited and stereotypical among academic and management staff. In my time at the university, there was no training or workshops in our professional development related to disability or diversity, nor in providing accessible practices and content.

It is reasonable, then, to anticipate that technological affordances and barriers experienced by the disabled community in low- and middle-income countries such as Malaysia would likely differ from those in affluent high-income countries. As observed by Grech (2015, p. 6), disability studies in the global South is "often simplified and generalised in a dynamic of homogenising, decontextualised and dehistoricised discourse". Taking into consideration how disability has been framed and understood within the Malaysian community would further advance how digital inequality and inclusion is experienced locally. More importantly, these nuanced contextual accounts would reveal how disabled students are digitally included or excluded in their participation in the university and within the community at large.

My first meeting with Iris would change the course of my research in my academic career. From then onwards, I sought and read up on disability and higher education, kept my eyes and ears open, talked to people, and got involved in inclusive projects and advocating for those who could not advocate for themselves. I also attended and presented at conferences, conventions, and forums on disability. I had several more conversations with Iris to understand how and why she used certain technologies to cope with the demands of her academic career. These in-depth interviews with Iris culminated in a peer-reviewed journal publication (Song, 2016). What became

clear here was that Iris depended heavily on the Internet and her mobile device to navigate, negotiate, and manage the effects of her impairment in the university setting. On my part, this led me to wanting to find out on a deeper level the relationship that university students with various disabilities had with technology. This knowledge would assist universities to enact and enhance policies and strategies related to technology that would foster an inclusive environment where the affordances of technology could be harnessed by the universities to support diverse students, especially disabled students. Technological barriers are highly likely to be addressed faster than disability-related barriers, particularly in universities where disability policies are not in place.

Before I continue to introduce the research aim and objectives of my study, it is imperative to note that I started this research before the COVID-19 pandemic, including the data collection phase. As Park (2017, p. 9) noted, ”technology is a moving target” in itself. This is even more the case after the onset of the COVID-19 pandemic. The digital divide chasm after COVID-19 was found to be deepening and more differentiated, particularly among disabled people. World-wide, the stakes of being digitally excluded became more pronounced than ever, clearly exposing the complexities that arose from unequal access to, and engagement with, digital systems since the pandemic (Chadwick et al., 2022; Kubenz & Kiwan, 2023; Seale, 2023). Within higher education, teaching and learning practices had to change rapidly; in many instances overnight, to address and accommodate the new crisis (Ewing, 2021). This meant that academics, among others, were forced to reskill quickly to move their classes online immediately. As you will see in the later chapters of this thesis, the empirical findings from the pre-COVID environment suggested that taking a disability perspective for reconsidering digital delivery and online practices in the university would prove to be beneficial as a way to holistically understand the unanticipated digital considerations during the pandemic. Goggin and colleagues (2019, p. 298) rightly projected:

> *For the future, it would be especially timely to confirm that, not only is disability a key axis of social exclusion and digital inclusion, but also that disability is a rich and indispensable site and ‘test bed’ for how societies can confront technology for better futures. This will involve acknowledging and understanding unfolding concepts, institutions, and realities of disability rights in relation to technology, as a bedrock for charting and addressing digital inequality and inclusion challenges.*

1.6 Research aim and objectives

This study is an intensive exploration of individual accounts and narratives of disabled students’ use of technology within a case university. The main research aim of this inquiry is to explore the complex relationships between these students and their digital technologies in supporting their participation in the university through a socio-cultural lens. To achieve this aim, this study has the following objectives:

- collect, analyse, and examine multiple sources of evidence on technology use among disabled university students guided by Bourdieu's socio-relational framework.
- explore the use of the voice-centred relational (VCR) method through the *Listening Guide* (Gilligan, 2015) as a systematic and relational way of working and interpreting the disabled university students' voices and stories, and the experiences of their use of digital technologies.

Through these objectives, this study sought to contribute to the existing research gaps in a number of ways. First, through adding sociological perspectives to our current understandings of digital technology use and practices in higher education. Second, through expanding the notion of the digital divide to include differential levels of access and use of technology. Third, focusing on disability in understanding digital inequality and digital inclusion as an under-represented area of research. Fourth, prioritising disabled students as a digitally excluded group in higher education, and privileging the particularities of their periphery experiences within an ethnically, linguistically, and culturally diverse society. These research gaps are elaborated further in a separate section in Chapter 2, Section 2.4: Addressing research gaps.

1.6.1 Research Questions

Drawing from the research objectives, this study attempted to answer one main research question through its corresponding sub-questions:

What are the lived experiences of disabled Malaysian students in using digital technologies to participate in the university?

1) What forms of digital capital do disabled students have access to and use?
2) What are the disabled students' dispositions and habitus on using digital technologies?
3) How do disabled students access and use their digital capital to participate in the university?
4) How might disabled students' digital capital impact their participation in the university?
5) How might the dominant structures of the university culture, practices, and mechanisms perpetuate digital exclusion and barriers among disabled students?

1.7 Summary

In this introductory chapter, I have shared what I believe to be a significant and valuable context to my doctoral study. By sharing specific facets of my country's historical and cultural make-up, and that of my own story, I hope to orientate the reader to the broader social and political context within

which my research sits. I have also explained in general terms, the overarching philosophical, theoretical framework and the methodological assumptions that have guided this study. The research aim and research questions of the study were also provided.

In the following chapter (Chapter 2), the distillation of other scholarly research on the digital divide and inequality, digital technologies used in higher education, and digital inclusion among disabled university students, will be explored critically. I will also spell out the conceptual framework for this study, articulating the important underpinning conceptual tools that have guided my investigation. Before this, I would like to highlight some key terms used for clarity and shared reference throughout the thesis. This is important, as words and terms are tied to their historical, sociological, and cultural trajectories. Language is often overlooked as being neutral and taken-for-granted expressions of 'common sense' (Bourdieu & Wacquant, 1989), when they are not.

1.8 Important note on terminology

This study encompasses the intersection of three fields, disability studies, higher education, and digital technologies. While terms such as higher education and digital technologies are less contentious, terms such as disability, accessibility, and assistive technologies are highly contested. It is, therefore, beneficial to clarify the key terms used in this thesis early on to establish a shared understanding and reference for the reader.

1.8.1 Disability and impairment

Disability is an evolving and contested concept. There are significant differences over the definition of disability and the debate is still ongoing. Opinions are split, stemming from different social and theoretical underpinnings. The individual or medical model of disability views it as a medicalised condition that is located within the individual and which needs to be fixed or rehabilitated. Within this model, terms such as disability and impairment are used congruently and interchangeably to mean the same. The medical model of disability dominates in most disability-related educational research, policy, and practice (Miskovic & Gabel, 2012). In contrast, influenced by the disabled people's movement and disabled activists in the UK, the social model of disability separates the term disability from impairment (Oliver 1990). The social model uses identity-first language, i.e., 'disabled person'. Disability, a socially constructed experience, occurs when a person with an impairment is disabled by the structural barriers within society. By using the term 'disabled person', the focus shifts from an individual medicalised problem to a problem of social inequality and the disabling structures of society.

The person-first language, i.e., 'person with disabilities', is preferred and widely used in North America, Australia, Malaysia, and other Asian countries. The 'person-first' form suggests that the person is put first and is emphasized before their disability. Some disability studies scholars have argued that the 'people-first' approach implies that the students' impairment causes them to be

‘disabled’, and therefore, they are individually responsible to fix or overcome it (Oliver, 1990; Phipps, Sutherland, & Seale, 2002; Oliver & Barnes, 2012). Others suggest that while the person-first language was created as a leveller and equaliser, in reality, it appears instead to stigmatise (Gernsbacher, 2017). Despite good intentions to reduce stereotyping and prejudice, the nomenclature use of person-first language was also criticised by disabled people and their advocates for creating disability euphemism – reinforcing that disability is a negative and undesirable state (National Federation of the Blind, 1993; Brueggemann, 2013; Dunn & Andrews, 2015; Andrews et al., 2019), and therefore requires apology, disguise, or avoidance (Bickford, 2004; Miskovic & Gabel, 2012).

Recent developments are increasingly showing that disability studies scholars, disabled people, and disability rights advocates are choosing identity-first language, both in scholarly (Dunn & Andrews, 2015; Gernsbacher, 2017; Bogart, Lund, & Rottenstein, 2018; Andrews et al., 2019; Andrews et al., 2022) and media spaces (Forber-Pratt, 2020). ‘Disabled person’ is used collectively as an expression of pride and as an act of reclaiming the disability identity within the community. I also acknowledge the danger of using Western-centric nomenclature without addressing contextual and situational conditions (Panicker, 2019). However, while the term ‘person with disabilities’ is commonly used in Malaysia, as in most surrounding Southeast Asian countries, the choice of using identity-first language in this study is purposeful. The term ‘disabled students’ is used intentionally because:

1) The focus of this study is to expose the structural aspects of the university and technology from the perspectives of the disabled students. Using the term ‘disabled student’ suggests that the student is disabled, not by their medical condition or individual impairment, but by the socio-cultural, environmental, and technological barriers within the institution and society (Oliver, 1990; Titchkosky, 2001; Phipps et al., 2002; Shakespeare, 2010; Miskovic & Gabel, 2012; Oliver & Barnes, 2012; Dunn & Andrews, 2015). It is a deliberate shift from medicalised and welfare-charity positions that still dominate in Malaysia. The collective and individual conceptualisation of disability in Malaysia is still very much constrained by limiting socio-cultural perceptions and consciousness. This shift is needed, at least for now, to privilege individual rights, and to respect the uniqueness of each student in this study.

2) It also positions disability as a form of identity such as race, gender, or sexual orientation (Andrews et al., 2019). The term ‘disabled students’ affirms and values the disability identity of the participants in this study, and acknowledges disability as an important aspect of diversity within higher education (Miskovic & Gabel, 2012). Hence, while seeking to expose structural barriers, a space is given for personal agency. In this study, disabled students are not viewed solely as passive victims oppressed by society.

Having a disability has its unique stories. It include narratives that reveal stories of resistance, resilience, and triumph that challenge dominant disability narratives of oppression, defeat, and failure.

3) It reflects the epistemological and methodological approach of this study, i.e., to ensure that traditionally silenced voices are sought; acknowledging and addressing the unequal power relations that exist between the researcher and the researched in the research process; and to ensure that the key findings and results from this study are used in ways that facilitate empowerment and social action among the disabled community involved (Mertens, 2015).

Having said this, I concur with Shakespeare (2013, p. 19) that this continuous debate over terminology creates "a diversion from making common cause to promote the inclusion and rights of disabled people". In Malaysia, 'person with disabilities' is used as the English term. In the Malay language, 'orang kurang upaya' often shortened to the 'OKU' acronym, is used. A discussion of this term is further expounded in Chapter 2, Section 4.2.1 (Conceptualising and contextualising disability in Malaysia) to add to this critical conversation.

1.8.2 Accessibility

In this study, accessibility is focused upon in the context of education. In line with the social model of disability, this study adopts the definition of accessibility from Instructional Management System Global Learning Consortium (2004, Section 2, para. 1) as:

> *the ability of the learning environment to adjust to the needs of all learners'. Accessibility is determined by the flexibility of the education environment (with respect to presentation, control methods, access modality, and learner supports) and the availability of adequate alternative-but-equivalent content and activities. The needs and preferences of a user may arise from the context or environment the user is in, the tools available (e.g., mobile devices, assistive technologies such as Braille devices, voice recognition systems, or alternative keyboards, etc.), their background, or a disability in the traditional sense. Accessible systems adjust the user interface of the learning environment, locate needed resources, and adjust the properties of the resources to match the needs and preferences of the user*.

1.8.3 Assistive technologies

Assistive technologies are typically defined as "any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (Individuals with Disabilities Act, 1997). Assistive technologies are often used to support and assist disabled university students to access teaching and learning resources, and university systems and services.

1.8.4 Accessible technologies

The term accessible technologies was proposed by Foley and Ferri (2012) to advocate for new ways of thinking about technology for disabled people. While assistive technologies focus on specialised and specific technology for certain disabilities and medical conditions, accessible technologies demand that all technology, including mainstream or generic technology, be inclusive, accessible, and enabling. Rather than conflating disability to certain specialised technologies, accessible technologies promote "thinking about technology for *people* rather than for *disability*" (Foley & Ferri, 2012, p. 196, italics in original). More importantly, while assistive technologies operate under a deficit-medical model, accessible technologies call for the examination of technology as a social-cultural-political practice and tool. This study focuses on the use of mainstream technology by disabled university students, rather than assistive technology. Mainstream technology includes "any technology that is intended for general use rather than for use entirely or primarily" by disabled people (Field & Jette, 2007, p. 189).

CHAPTER 2: LITERATURE REVIEW: CONSTRUCTING THE RESEARCH OBJECT

> *We tend too easily to assume that the social or political importance of an object suffices in itself to grant importance to the discourse that deals with it. What counts, in reality, is the rigor of the construction of the object. I think that the power of a mode of thinking never manifests itself more clearly that in its capacity to constitute socially insignificant objects into scientific objects … or what amounts to the same thing, to approach a major socially significant object in an unexpected manner …*
>
> (Bourdieu & Wacquant, 1989, p. 51).

2.1 Introduction

In this study, the nature of disabled students' participation and life chances in the university were explored, with a particular focus on their relationship with digital technology. Bourdieu warned researchers to be vigilant and to beware of words: "beware of them because words present themselves as if they are value-neutral, whilst in effect they are socio-historical constructions, taken-for-granted as expressions of 'common sense' " (Bourdieu & Wacquant, 1989, p. 54). Language is not neutral and transparent but is value-laden. Therefore, Bourdieu called for critical reflection on the pre-constructed social framing of any phenomenon under investigation. Hence, in this chapter, the contested nature of the core constructs and concepts related to this study were critically examined, namely: disability and technology, the digital divide, digital inequalities, and digital inclusion.

Framing the literature review using a Bourdieusian lens was important because "it is easy to (mis)take constructs as things *in themselves* rather than as a set of relations" (Grenfell, 2012, p. 220, italics in original). Grenfell stressed the essential stage of pre-reflective interrogation – studying the research object on its own pre-given terms (2012). I developed the following questions to guide the literature review process: What are the dominant and pre-given historical, socio-cultural, and political representations of these constructs in the scholarly literature? What are the preconceived notions and presuppositions of the field that might lead to potential misrepresentation in interpreting the empirical evidence and findings of my study? These questions specifically highlighted that any social phenomenon does not occur alone, but operates within a set of relations, an interplay between the objective structures (field or social space) and the lived experiences (habitus) of the players in the field. In this chapter, I have approached these questions with a particular focus on disabled university students and their relationships with technology.

The outline of this chapter is as follows: First, the digital divide is reconsidered through a broader digital inequality and disability lens. Next, the use of digital technologies specifically within

contemporary higher education is critically reviewed in relation to disabled university students. This is followed by a discussion of Pierre Bourdieu's theoretical framework as an alternative lens and its place in understanding digital inequality. Bourdieu's conceptual tools *habitus, field,* and *capital* as important notions in this study are considered in light of digital inequality and inclusion research. Finally, I will present the research and methodological gaps and how they will be addressed.

2.2 Rethinking the digital divide and digital inclusion through disability

The use of information and communications technology (ICT) has been a preoccupation of many governments since the beginning of the 21st century as it has been seen as a strong determinant of the social and economic progress of society. By the end of the millennium, the argument has been that ICT played a central role in transforming countries into 'knowledge economies' and 'network societies' (Castells 1996, 1997, 1998). Since the proliferation of the Internet, the pervasiveness of ICT has been part and parcel of living in the 21st century society. Having access, and the ability, to use ICT has long been seen as a fundamental and necessary aspect of participating and flourishing in this information-based society, as observed by Servon and Nelson (2001) more than two decades ago. Selwyn and Facer (2007, p. 9) also spoke succinctly of this pervasiveness:

> *Indeed, ICT now lies at the heart of most of the activities which are seen to constitute 'social inclusion' … Technologies such as the Internet, digital TV and mobile telephony are now important means of accessing and interacting with local government, health and welfare services, the criminal justice system and other areas of government … ICT use is implicated increasingly in what it means to be socially, economically, culturally and politically involved in 21st century society.*

Following this premise, it could be argued that to be able to fully participate in society and be socially included, one needs to have access, and the ability, to use ICT. Inversely, those who do not have access, and the ability, to use ICT will be socially excluded from society and the benefits that ICT can bring. Hence, there has been a growing focus on the issues of inequality of access to ICT and the potential gap between those with access to ICT and those without. This so-called gap has been popularly termed as the digital divide. Key scholars in the field, van Deursen and van Dijk (2003, 2005, 2006), contended that the digital divide was a complex and dynamic phenomenon that needed critical scrutiny. Fundamentally, van Dijk (2005, p. 15) stated that "unequal access to digital technologies brings about unequal participation in society". As observed by Robinson et al. (2015), the consequences of digital differentiation are increasingly impacting one's life course, gender, race, economics, health, and health-care as the Internet and technology proliferate in contemporary society. While digital disparities in access and digital engagement gaps have been shown to significantly affect the economically and socially disadvantaged segments of the population (Helsper & Reisdorf, 2017; van Deursen et al., 2017), the digital realm is proving to be

increasingly complex and multidimensional, particularly among young people (Gòmez, 2021; Mesch & Talmud, 2011; Park, 2017; Robinson, 2011). Research has revealed that the simplistic dichotomous divide between having access and not having access to technology has become problematic as mere technology and Internet access have not narrowed the digital gap as expected (van Deursen & van Dijk, 2015).

Additionally, some scholars had previously highlighted that educational technology was not as deterministic, equitable, and democratic as it was often depicted (Selwyn, 2010; Selwyn & Facer, 2014). Furlong, Facer, and Sutherland (2000, p. 94) had long cautioned that "access is a far more complex issue than mere provision of facilities". More than a simple case of 'technology haves' and 'technology have-nots', Selwyn and Facer (2014, p. 489) further pointed out that:

> *Even when able to access technology, the types of digital tools that an individual uses, the ways in which they are used, and the outcomes that result are all compromised by sets of 'second order' digital divides (echoing the distinction between engaging meaningfully as opposed merely to 'functioning' with technology).*

A growing body of work now recognises the limitations of the binary division approach to the digital divide. A distinction was made to add to the previous idea of simple access to multiple levels of digital divides by scholars in the field (Hargittai & Hsieh, 2013; Livingstone & Helsper, 2007; Selwyn, 2010; Tsatsou, 2011; van Deursen & van Dijk, 2013, 2015). In recent years, van Dijk (2017, p. 202) has offered what he called the "contemporary digital divide theory". The contemporary digital divide is conceptualised as consisting of first, second, and third levels of inequality. Ragnedda, Ruiu, and Addeo (2020) described the digital divide succinctly – the first digital divide represents inequality in terms of digital devices and Internet access; the second digital divide as differences in digital skills and usage; and the third digital divide as the benefits and opportunities (or barriers and disadvantages) derived from access and use of digital technologies, including ICT, in impacting life outcomes. The way these three levels of digital divide are operationalised and utilised in my attempt to better understand the disabled participants and their relationships with technology in the university will be elaborated upon in a further section below. For now, I would like to turn attention to the tendencies of the digital divide literature to overlook disability.

While discussions of the digital divide have moved well beyond the initial binary division, most accounts still only mention disability in passing despite disabled people experiencing high rates of digital exclusion (see Anderson & Perrin, 2017; Dobransky & Hargittai, 2016; Ellis & Goggin, 2015). One of the first scholarly papers to singularly address the issue of disability in the digital divide was by Dobransky and Hargittai (2006). They highlighted how disabled people were largely overlooked in digital inequality studies, thus leaving a gap, or a "disability divide", in Internet and digital media access and use (p. 314). These authors returned to this topic with another key paper after a

decade (see Dobransky & Hargittai, 2016), and again more recently (Dobransky & Hargittai, 2021), only to still find relatively little work that has critically examined how disabled people incorporate digital technologies into their everyday lives. Several scholars had similarly highlighted the invisibility of disabled people in the understanding of the digital divide (Goggin, 2017, 2018, 2019; Goggin, Ellis, & Hawkins, 2019, Jaeger, 2012; Macdonald & Clayton, 2013). As a marginalised group overlapping with other disadvantaged social positions in society, disabled people have remained relatively excluded from the wider debate in technology research, despite having immense potential and rich possibilities to benefit from it in their social participation in the community. This is also evident in the Handbook of Digital Inequality (Hargittai, 2021) where only two of the 24 chapters addressed issues related to disability and digital inequality. This indicates that disabled people and disability issues are still largely missing in discussions of the digital divide and digital inequality.

As a leading scholar on disability and digital inequality, Goggin (2017) has amplified the debate about the importance of having an underpinning theory. He has shared his concern about how the digital divide has often been used as an inadequate concept to draw attention to issues of digital inequality while overlooking disability. He argues that while the digital divide had its uses in highlighting injustice and unfairness in a highly digitised society, "we cannot have an adequate understanding of digital inequalities unless we engage with, and draw upon, critical theories of disability" (Goggin, 2017, p. 63). The fundamental problem is the lack of theorising and conceptualising of the digital divide from an embodied and socially informed perspective of disability. The following section will first review the relatively sparse but growing literature that considers disability in the discussion of the digital divide. In line with Goggin, I will then make a case for the place of disability to be central in rethinking the conceptualisation of digital inequality and digital inclusion, followed by a review of studies which focus specifically on disabled students in higher education.

2.2.1 Understanding digital inequality and inclusion through critical disability perspectives

As the Internet matures and ownership of web-enabled mobile devices becomes widespread and affordable, digital technology is increasingly intertwined with most of what we do in our daily lives. New socio-technical landscapes afforded by advancement in Internet and mobile technologies has enabled disabled people to access and participate in mainstream technologies as never before (Dobransky & Hargittai, 2021; Goggin, Ellis, & Hawkins, 2019). Yet, digital inequalities among the most socially and economically disadvantaged, particularly disabled people, have become even more distinct and differentiated (Chadwick et al., 2022; Thomas, et al., 2020). Such differentiation has serious ramifications for the livelihood of disabled people. There is growing research that centres on disability in the study of the digital divide, albeit a small concentration.

Dobransky and Hargittai (2006) had earlier identified a gap, which they called the digital disability divide, in our understanding of how disabled people incorporated digital resources into their everyday lives. They argued that this gap was due to a lack of consistency in the definition of disability, as well as an emphasis on physical access to ICT while neglecting the "differences in what people do online once they have gained access" (Dobransky & Hargittai, 2006, p. 318). Fundamentally, they found that disabled people with different impairments access, use, and interact with digital technologies in different and complex ways. For example, those who are Deaf or hard of hearing, and those with mobility disabilities were found to be more likely to use the Internet, while those who are blind or partially sighted, and those who have difficulty typing, were significantly less likely to go online compared to their non-disabled counterparts (Dobransky & Hargittai, 2006). In short, not all disabled people are equally disadvantaged. This highlights the need for more nuanced approaches that consider the diversity of impairments and experiences. Since then, while the conceptualisation of the digital divide had clearly progressed from simple access to a consideration of multiple levels of access (Hargittai & Hsieh, 2013; Ragnedda, Ruiu, & Addeo, 2020; van Dijk, 2017), the same authors still found limiting and inconsistent conceptualisations of disability in the digital divide research a decade later (Dobransky & Hargittai, 2016), as did other authors (Blanck, 2014; Ellcessor, 2016; Ellis & Goggin, 2015; Goggin, 2017; Jayakar et al., 2015; Macdonald & Clayton, 2013; Roulstone, 2016). What was clear is that disabled people's differential ICT and online experiences and the impact on their lives were yet to be addressed adequately.

Similarly, disability and technology scholar, Paul T. Jaeger (2012), also extensively addressed disability gaps in access and usage of the Internet and related technologies. From the outset, he highlighted that for most disadvantaged groups, gaps in Internet access can be overcome with physical access and education. For disabled people, however, access and use of technology are complex, diverse, multi-dimensional, and quite variable according to the high diversity of the disabled groups with their varied impairments. Critically, disabled people's use of technology is filled with stereotypes and pre-conceived notions. Technology support for disabled people is often tied to specialised equipment, used and seen "as a compensation for impairment rather than an enabler of participation" (Desmond et al., 2018, p. 437). Jaeger (2012, p. 2) also highlighted how "the Internet is inherently unfriendly to many different kinds of disabilities". Additionally, certain websites and Internet-enabled technologies might offer opportunities for certain types of impairment, but exclude others. This poses a complex set of barriers among different groups. For equal participation and social inclusion of all disabled people, these technological misconceptions and barriers need to be addressed as they have significant and real-life impacts on all aspects of people's daily lives. Therefore, disability scholars are calling for a reimagining and reconceptualisation of our understandings of disability and technology to include qualitative data that explore intersectional aspects of disability that "spans a wide variety of different bodies, conditions, and situations" (Goggin, 2017, p. 70), and to consider the dynamic nature of the impact

of basic everyday technology on disabled people's lives such as the Internet, social media, and mobile smart phones.

In Australia, the national digital divide has been surveyed through the Australian digital inclusion index. This index has consistently shown that disabled people are among the most highly excluded groups. Specifically, in the 2020 report, it found that disabled Australians had a low digital inclusion index. Across the three dimensions that were measured: access, affordability, and digital ability, the digital inclusion gap among disabled Australians "has changed very little" since 2014 (Thomas et al., 2020, p. 20). The report revealed the need to prioritise disabled people in Australia. It is important to note, however, that the participants were limited to "those receiving either the disability support pension (DSP) from Centrelink, or the disability pension from the Department of Veterans' Affairs" (Thomas et al., 2020, p. 11). This meant that many other impairment categories were excluded from the sampling. Hence, while disability issues are slowly emerging in studies of digital inequality, and in related areas of the digital divide and digital inclusion, the approaches taken often stem from outdated understandings of disability.

Goggin (2021) confirmed this narrow view of disability as problematic. A key limitation in large-scale national surveys and statistics in digital inequality research, such as in the Australian digital inclusion index studies, is "a lack of understanding of the nature, complexity, and implications of disability" (p. 265). According to Goggin (2021), national initiatives that consider the highly diverse, complex, and intersectional dynamics of the disabled community would better inform policies and practices. Stronger research collaboration with aligned goals, such as shared conceptualisations of disability, research questions, and research approaches, across many countries on disability and digital inequality will be needed for more adequate and accurate data for international comparability. At the same time, Goggin (2021) asserts that small-scale qualitative studies that focus on the intersectionality of social, cultural, and political aspects of disability and technology will deepen our understanding of the complex issues and life experiences across the wide range of particular groups of disabled people in the diversity of their life-courses, cultures, and communities. With the rapid advancement of emergent technologies such as AI, big data analytics, wearable technology, smart cities, and automation, anchoring critical disability perspectives in charting and addressing digital inequalities within society would open up more inclusive decisions in planning and designing for a better digital future for all.

Other authoritative scholars such as Alan Roulstone (2016) provided critical foundational work on disability and technology from an international and interdisciplinary perspective. Roulstone (2016) called for a critical approach to technology; basically, a complex model of disability and technology. He specifically argued for the need to "seek international evidence, to acknowledge diverse social and cultural contexts, to register disabled people's perceptions and experience and to factor in age, generation, gender, impairment and locality wherever possible" (Roulstone, 2016, p. 3). For

example, technology associated with disability had previously been focused on highly specialised assistive technology that was rehabilitative in nature (Ravneberg & Söderström, 2017). This specialised and rehabilitative technology focus becomes problematic particularly in developing and poor nations. This assistive technology research, although important, had less impact on our understanding of technology use in the global South, where access to rehabilitative services are limited, as highlighted by Roulstone (2016). There are also fewer studies on the Asia-Pacific region and developing countries where resources are scarce and limited (Goggin, 2017; Grech & Soldatic, 2017; Water, McKenzie, & Swartz, 2018). Hence, alternative perspectives from socio-culturally diverse contexts are often lacking in mainstream understandings of disability and technology studies. Understanding disability and technology to include intersectional geopolitics, and social and cultural factors would provide a clearer picture of the realities of disabled people's use of technology in context. This is especially so for a developing, multicultural country such as Malaysia, where research data on disabled citizens are limited and disability laws underdeveloped (Othman et al., 2022; Tahir et al., 2020; Tan, Abdullah, & Shuib, 2019). In short, when it comes to understanding Malaysia's landscape of disability and the relationship with technology, critical and social perspectives are sorely lacking. Excavating insights into disability from the ground up would prove useful in expanding our understanding of digital inequality and inclusion to further improve participation, policies, and practices of the disabled community in Malaysia.

2.2.2 Digital technologies in higher education

The presence of digital technologies is now deeply woven into the eco-system of contemporary universities. This technological relationship between students and the university starts from marketing and promotion of the university through to enrolment and admissions, to teaching and learning, the administrative processes and services, and on through to graduation, and thereafter. Hence, digital access and skills are increasingly a necessity rather than an option to fully participate in any digitally-reliant contemporary university. High ownership of, and access to, technology appear to be almost universal across university students. Rarely considered as being disadvantaged in the digital divide, university students have been found to be heavy users of technologies (Kennedy et al., 2009; Minocha, 2009; Selwyn, 2009; Bennett & Maton, 2010; Corrin, Lockyer & Bennett, 2010; Mazwan & Usluel, 2010; Vivian et al., 2014). In Malaysia, statistics from government and the higher education sector show that having access, and being connected, to various digital technologies is very much part of being a university student. Reports show that a great majority of students have access to Internet-enabled mobile devices (Abd Rahim & Abd Rahim, 2021; Amin, 2012; Kudus et al., 2017; Song, Murphy, & Farley, 2013). These findings align with the international research which shows that a high level of education is a predictive factor for high access to technology, and high levels of Internet usage (Dutton & Blank, 2011; Hoffman, Lutz, & Meckel, 2015; Robinson et al., 2015; Scheerder, van Deursen & van Dijk, 2020; van Deursen & van Dijk, 2021; Wei & Hindman, 2011; Zhong, 2011).

In discussions about digital higher education, the common rhetoric is that it had become a universal challenge for universities worldwide to keep up with the pace of technological change. The focus of universities has been to remain relevant to the demands of the cohorts of young people who have grown up surrounded by digital and networked technologies, popularly known as 'digital natives', who are now entering higher education (Prensky, 2012; Losh, 2014). More often than not, digital technologies are seen as having a transformative effect on university teaching and learning, making it more efficient, engaging, and equitable (Selwyn, 2016). However, this homogenised view and the uncontested claims of 'technology-as-progress' and technology as having 'transformative effects' disables a critical reading of learning technologies. By ignoring the wider social and cultural uses of technology, we might miss deeper revelations of technology's role and life impact. In other words, a deterministic framing of technology diverts our attention from understanding the reality of technology and the actual use of technologies.

Selwyn (2016) further cautioned how this deterministic view also detracts our attention from understanding the less extraordinary, but more pressing issues of digital higher education. Friesen (2009, p. 17) had long called for the need for "rich and unconventional ways of understanding and investigating 'the lived experience' of human interaction with complex interfaces and computer technologies". Similarly, Oliver (2013) argued the case for a socially constructed positioning of technology where the role of individual agency is valued and acknowledged. Selwyn (2016) also particularly highlighted the need for critical approaches to understanding the outcomes and consequences of the increased digitisation of contemporary higher education. Then, Facer and Selwyn (2021, para. 1) renewed the call for us to "look beyond the charismatic allure of the 'techno-fix', and instead work toward forms of technology use that can support and sustain the longstanding and hard work of addressing the social and material obstacles to educational and social equalities." As digital technologies become a cornerstone[4] of contemporary higher education institutions, it is paramount to move from predominantly addressing deterministic or instrumental perspectives of digital technology use to include practical, social, and emancipatory concerns and to critically consider the "messy realities of students' engagement with digital technology" (Selwyn, 2016, p. 1008).

This conundrum appears to be more apparent in the higher education landscape, particularly among disadvantaged and marginalised students (Seale, 2020). Past evidence had already long shown that the second level of the digital divide, the unequal and differentiated use of digital resources, skills, and the Internet, existed even amidst high levels of access to technology in the universities. The research showed that students with different trajectories experienced technology very differently while having access to similar technology, hence experiencing the second digital

[4] In response to the COVID-19 pandemic that began in 2020, higher education institutions around the world grappled to rapidly move their academic services and support, particularly teaching and course resources, online. This crisis inadvertently exposed numerous access challenges and barriers experienced by both university academics and students that warrant immediate attention.

divide (Bennett & Maton, 2010). For example, Goode (2010) found that university students from vastly different learning experiences in the home and at school developed different relationships with technology within the same university context. In Goode's study, the unequal high school education and disparities in home resources determined knowledge about technology acquired by students before entering university, subsequently affecting their meaningful academic use of technology. Similarly, Lu and Straubhaar (2014, p. 186) found that Latina/o university students from poorer communities lacked "knowledge of and access to technology, as well as the ability to utilize technology in a way that is useful". This qualitative study also found differences in terms of gender, in relation to their disposition towards, and use of, technology (Lu & Straubhaar, 2014). In another study, Czerniewicz and Brown (2013) found the existence of digital strangers among black South African university students rather than digital natives, thus overturning the homogenised view that young people are all 'tech-savvy' and prolific users of technology commonly found in the educational technology literature. Despite having access to technology at university, the researchers found these digital strangers lacked both experience and opportunities, had barely used a computer before coming to university, and did not have direct access to technology off campus.

The above studies, therefore, undermined earlier reports that suggested that a high level of education was a predictive factor for technology use. More importantly, these studies seemed to suggest that university students, despite having high levels of access to technology, did not necessarily use technology effectively, and that other social and cultural factors might be at play. Similarly, their use of technology might not entail beneficial or meaningful use. Coupled with the lack of understanding of disability in the digital divide, as reviewed earlier, our limited insights into the complex relationships disabled students have with technology within the higher education context is glaring. The social positioning and critical perspectives of disabled students on their use of digital technologies in the university were, and still are, largely unrepresented. There is a need to locate more inclusive and realistic accounts of technology use among this cohort of students. Hence, this study argues for a singular focus on disability and disabled students.

2.2.3 Singular focus on disabled university students

There are compelling reasons to focus solely on disabled university students. Firstly, as reviewed earlier, within the digital divide map, these students have rarely been taken into account as a specific singular social group. For example, large-scale surveys in the UK and Europe mapped users according to many domains, such as age, life stage, income, gender, location, attitude to technology and education, but not disability (Dutton & Blank, 2011; Zhong, 2011). As discussed earlier, many disability scholars have noted that disabled people have been largely invisible and not considered in the digital divide debate (Dobransky & Hargittai, 2006; Dobransky & Hargittai, 2016; Eynon, 2009; Goggin, 2017; Macdonald & Clayton, 2013). More recent findings have reported similar trends (Dobransky & Hargittai, 2021; Johnson, 2019; Robinson et al., 2015;

Scheerder et al., 2017; van Dijk, 2020; van Deursen et al., 2017; van Deursen & van Dijk, 2021), including comprehensive digital divide research data from 10 Asian countries (Wang, Shi, & Lee, 2022). Additionally, even when disabled people have been considered, narrow or limiting definitions of disability have been used (Thomas et al., 2020). In short, there remains a lack of statistics and research that provide empirical evidence as to where disabled people as a group are located on the digital divide map. Subsequently, their experiences and perspectives are elusive and little known. While having an impairment is more likely to intersect with other disadvantaged social statuses, such as lower socioeconomic status, and older adults, disabled people were found to be distinctively different in facing barriers to accessing the Internet and ICTs (Dobransky & Hargittai, 2021). Thus, I contend that critical understandings gained through a disability and technology lens would foreground richer, deeper insights into, and realities about, digital inequality and exclusion where technology is playing a fundamental role in all aspects of an increasingly digitised society.

Secondly, disabled university students are largely missing in the disability and technology research (Vickerman & Blundell, 2010; López-Gavira & Moriña, 2015; Seale, 2017, 2020, 2022). While digitally networked contemporary universities have the potential to level the playing field for disabled students, "the relationship that disabled university students have with both their technologies and institutions is poorly understood" (Seale, 2013, p. 256). Seale and Dutton (2012) categorised disabled students in higher education as the invisible digitally-excluded group, and aptly so, as they are an under-represented group in higher education compared to their non-disabled peers. Crucially, technology was previously found to be contradictory in nature, like a “double-edged sword” (Seale, 2006, p. 25) among disabled students. Similarly, Steyaert (2005, p. 68) lamented the paradox “that the technology that provides a great platform for inclusion, in reality appears to be excluding”. Furthermore, some authors have observed that disabled students experience more instances of inequitable access to technology and resources due to the high levels of personalisation of technical requirements, inaccessible design of digital resources, and limited access to appropriate technology (Brabazon, 2015; Fichten et al., 2009; Barile, Fichten, & Asuncion, 2012; Lewthwaite, 2014; Seale, 2014).

As a result of these inaccessible resources, services, and systems, disabled students in higher education institutions have found themselves on the wrong side of the second level of the digital divide (Fichten et al., 2020; Heiman et al., 2020, Seale et al., 2021). For example, with screen reader software, students who are blind and those with low vision can now access and ‘read’ electronic text. However, the increasing use of graphics and videos on the web and in other learning resources has created new barriers. Web pages, particularly those heavy in image and graphic content remain inaccessible for disabled students, among others (Burgstahler, 2022; Seale 2020). In other words, having access to digital and assistive technologies does not automatically guarantee inclusion and participation. Even with the existence of legislation and accessibility

policies, guidelines, and standards, Seale (2006, 2013, 2014, 2017, 2020) consistently found that digital learning resources and services still remained largely inaccessible to disabled students in higher education. More importantly, barriers to technology include a wide range of intersecting political, social, and cultural factors other than mere physical and online access. This means that the relationship between disabled university students and their digital technologies is far more complex and diverse than we currently understand.

This lack of visibility of disability within the general population as well as in higher education has put disabled university students in a vulnerable position, particularly in the increasingly digitally-networked learning environment. This is a valid concern as higher education institutions worldwide are, as noted earlier, heavily reliant on using networked systems and technology in their operations, services, and management, from marketing, enrolment, and admissions, to examinations and graduation and everything in between. To understand the complexity of the relationship disabled students have with their technology, there is an urgent need to prioritise their missing, hidden, and silenced voices. This could be further explored by focusing on, and examining, disabled students' life stories and personal accounts of their actual use of technology in higher education.

2.2.4 Disabled university students and digital technologies

While there is a lack of critical accounts of disabled university students' relationships with technology, a handful of researchers have sought to prioritise and examine the role of digital technologies in higher education among disabled students. Key scholars such as Seale and colleagues (UK); Fichten, Asuncion, and colleagues (US/Canada); and Ellis, Kent, and colleagues (Australia), have made significant attempts to specifically address key elements in disabled university students' experiences with technology, both specialist and mainstream. Broadly speaking, studies in the field have focused on patterns of technology use, students' perceptions of technology, outcomes of technology use, and influential factors in using technology (Seale et al., 2021). In the following section, I will review relevant key studies and offer an overview of our current understandings of disabled university students and their use of technology.

Among one of the key texts that focused specifically on disability, technology, and higher education was Jane Seale's landmark book entitled: E-learning and disability in higher education: Accessibility research and practice (2014). This is one of the most comprehensive accounts to date prioritising the digital experiences of disabled university students. This text, in its second edition, critically re-examined the accessibility research and the practice of e-learning in higher education with a focus on voices and silences among all stakeholders, including disabled students. The key point that Seale (2014) put forth was that using an accessibility lens was limiting, and no longer sufficient to understand technology's complex role in disabled students' lives in the university setting. She elaborated on how focusing on accessibility as a yardstick can be problematic

particularly in limiting the role of technology in education solely to providing access to, and use of, learning resources. The accessibility lens also "offers a limited conceptualisation of the process and outcome of technology use and deals superficially with notions of equality and empowerment" and "ignores the ability and agency of the user" (Seale, 2014, p. 224). This accessibility focus also further supports the discourses on disability and technology that predominantly focus on what disabled students cannot do, and thus, needing special access, support, and accommodation. In the university, to access these accommodations requires the formal assessment of deficits, and hence, according to the author, lead to our failure to understand disabled students' motivation, control, and choice in their use of technology to support their learning. It over-simplifies their complex relationships with technology and their institutions. Seale (2014) then argued for a digital inclusion framework that addressed the inter-related concepts of participation, empowerment, and use; in other words, that the use of technology should empower disabled students to successfully participate, and be included, in their university.

There is no doubt that providing access to assistive technologies, connectivity, and accessible digital resources is crucial for promoting wider participation and inclusion in higher education. However, as Seale (2014) argued, this alone is not sufficient to ensure meaningful participation and beneficial interactions among disabled students. There is a danger in focusing solely on the accessibility of technology in measuring and interpreting technology use among disabled university students, as Seale and her colleagues had previously found. They found several issues unique to disabled students in their technology use within higher education on top of inaccessible design issues (Seale, Draffan, & Wald, 2008; Seale, Draffan, & Wald, 2010; Wald, Draffan, & Seale, 2009). For example, time is an important factor for disabled students. Substantial time is needed to deal with issues related to their impairments and medical health conditions, thereby leaving them with less time to explore and work online compared to their non-disabled counterparts. They also found that some disabled students, unlike non-disabled students, had to learn new assistive technologies at the start of their university studies. Learning a new assistive technology can be time consuming, especially when certain assistive software or device's learning curve is high. As a result, they might not be able to fully benefit from these technologies or make meaningful use of them due to a lack of skill in operating these new assistive devices. This is on top of having to navigate unfamiliar online spaces to interact, and obtaining online learning and administrative resources provided by their lecturers and the university. Another pertinent issue was that disabled students have to be more flexible and agile in their use of technologies, having to find ways to personalise their use for learning without training or guidance (Seale et al., 2008; Seale et al., 2010; Wald et al., 2009).

Seale (2013) and Seale et al. (2015) also found that disabled university students with access to both mainstream and assistive technologies, had a significant amount of 'technological know-how' and sufficient training and education in using technology prior to attending university. Crucially,

despite having significant levels of digital capital and being highly skilled, these studies found that it was not sufficient to enable the students to fully benefit from digital technologies. Underlying the issues of access and support, was an unspoken high expectation for students to be independent and self-sufficient, a pervasive culture within higher education that has a crucial influence on the digital decisions made by disabled students (Goode, 2007; Lewthwaite, 2011). Disabled students might reject the use of assistive technologies and training, and other technologies for fear of being looked upon as not being 'normal' and self-sufficient. The perceived stigma of getting special accommodation to certain technologies due to their impairments and medical health conditions also deterred them from fully benefitting from it (Seale, 2013). Furthermore, Seale et al. (2015) found there was a lack of social bonding online between disabled students and their disabled peers to accrue valuable social capital to make informed decisions about certain assistive technologies and support. These online social connections could have benefitted the students in providing more streamlined resources and support on specific assistive technologies they were using, but these were underutilised. This suggests that the relationship between digital technology and disabled university students is not simply technological, but is also social and cultural in nature.

Similarly, Lewthwaite's (2011) study on experiences of social network interactions among British university students highlighted unique experiences specific to disabled students. Rather than overcoming issues of offline disabilities, Lewthwaite (2011) found that social media (i.e., Facebook) exacerbated some students' disabilities, and for some with unseen impairments, they had a social experience of disability for the first time. This finding concurs with Goggin and Newell's (2003) past observation that disability might be socially constructed in new media, where "the development of systems that assumed non-disabled patterns of activity and ignore disabled users create spaces in which disability, a social ascription, is exacerbated rather than reduced" (Lewthwaite 2011, p. 11). Far from closing the second level of the digital divide and widening participation, Lewthwaite (2011) found that social media further problematised the issue with a third level of digital divide. In another study of social media use by disabled students, Kent (2017) found that while disabled university students had seemingly high levels of access to, and were very confident in using technology, their social and cultural online experiences were far more complicated.

Another group of researchers from Australia, Elli, Kent, and colleagues (Ellis, Kao, & Kent, 2020; Ellis et al., 2021; Kent, 2015a, 2015b, 2016; Kent, Ellis, & Giles 2018; Kent et al., 2018; Kent et al., 2018), focused their research on online learning and specific e-learning technologies in higher education among disabled students. With a specific focus on online education, e-learning, and disability, Kent (2015a, 2015b, 2016, 2017) studied the opportunities, access, and barriers to e-learning technologies, including social media, among disabled students. It was noted that online education afforded more opportunities for disabled people to access higher education, particularly for disabled students who were unable to physically attend campus due to mobility and mental illness, and those who were Blind or partially sighted. Despite online education being a flexible and

attractive option for many, the research found that online accessibility was differentiated and disabling for various types of impairment, especially in the increased use of online video and audio (Ellis et al., 2021; Fichten et al., 2020; Kent, 2017; Seale, 2020).

From the outset, many online courses and learning management systems have not been designed with disabled students in mind. It was also found that a majority of online students were reluctant to disclose their impairments and/or health conditions, and request accommodation even when needed (Roberts, Crittenden, & Crittenden, 2011). One of the possible reasons for this could be that the whole process of requesting accommodation from their institutions was problematic. As Rogers-Shaw, Carr-Chellman, and Choi (2017, p. 21) pointed out: “accommodations offered to students are frequently ineffective because they focus on students’ disabilities rather than on an understanding of students’ needs in the overall context of the course”. Even when accommodations are requested, it takes considerable time and cost to retrofit, reconfigure, and redesign the teaching and learning resources to make it accessible (Kent, 2015a). This put disabled students into a disadvantaged position to successfully participate in their studies. For example, it was recently reported that captions were a commonly requested ICT accommodation in the university by disabled students (Ellis et al., 2021). While this captioning service was provided upon request, significant delays were experienced in altering the learning materials to an accessible format. This time delay in obtaining accessible learning resources made it difficult and challenging for disabled students to catch up on their coursework and assessment tasks. Hence, Kent (2015a) argued for the need to implement universal design principles from the beginning for all online courses in providing accessible resources. This approach would serve to include as many various forms of impairment and needs, and those who were unwilling to disclose and request accommodations.

In a separate but similar study, Kent (2015b) found a particularly high proportion of students, almost half, who identified themselves as having a mental illness. Being a relatively hidden or invisible impairment, especially in an online environment, this group might experience digital barriers and exclusions that are less understood. What was clear is that a fully online learning environment afforded these students the flexibility to work around the effects of their illness compared to being on the physical campus, have more control in disclosing their impairments and health conditions, and flexibility in engaging with their learning and accessing academic resources (Kent, 2015b). On the other hand, there were significant negative impacts on those who had issues accessing particular online learning platforms, but were reluctant to disclose their needs due to stigma and shame. This study also revealed the need to consider pedagogical accessibility, especially around assessment design, on top of technical accessibility to better support inclusion for students with mental illness (Kent, 2015b). Subsequent research studies have consistently shown the complexity of the accessibility and disclosure experiences of Australian university students, particularly of those with mental illness and health conditions (Kent, 2016, 2017; Kent et

al., 2018). The effects of the impairment had a considerable impact on their online and offline academic participation in the university environment. Alarmingly, mental health illness and psychological conditions, along with ADHD and other specific learning difficulties, have become increasingly prevalent in the recent years among university students (Fichten et al., in press). It was also reported that technology related accommodations among students with mental health illness are particularly under-studied (Fichten et al., 2022a; Ko & Petty, 2022). This means that our current understanding of a large group of disabled students is limited.

In another recent case study of 229 disabled students from an Australian public university, Ellis et al. (2021) explored the students' use of both mainstream and specialised technologies in higher education, and its significant impact on enrolment, retention, and completion rates. What stood out from this case study was that among this cohort of disabled students, only 20 found that specialist technologies were preferable to support their needs. The majority of them preferred mainstream technologies or devices such as iPad and MacBook which have built-in accessibility features that allow for personalised customisation. The researchers also found that among the most highly used technologies were eBooks and smartphone apps, both in the home and at university. Providing captions for university content and online lectures was found to be the most commonly requested form of support regardless of impairment category, other than Blind and partially-sighted students. While captions have increasingly become widely available and used on entertainment media platforms, within the university context, captioning remains a disability support service that needs to be requested (Ellis et al., 2021). Mainstreaming captions by fully integrating them into teaching and learning university resources such as online lectures would not only benefit disabled students but also a majority of the student population (Ellis et al., 2020; Kent et al., 2018). Hence, the provision of captions would facilitate a more inclusive and equitable educational experience for many, if not all. This approach to making technology accessible to as wide a range of students as possible offers an opportunity to include disabled students from the outset, rather than as an after-thought or retro-fit solution.

Focusing on students from North American universities, Fichten, Asuncion and colleagues had explored patterns and outcomes related to ICT use among disabled students since early 2000s. These authors conducted several reviews over the past 20 years, often addressing and tracking emerging technologies' role in higher education (Asuncion et al., 2012; Fichten et al., 2001; Fichten et al., 2003; Fichten et al., 2009; Fichten et al., 2014; Fichten et al., 2020; Fichten et al., in press; Heiman et al., 2017). What these studies clearly show are that digital technologies, be it mainstream or specialist, played a fundamental role in the disabled students' academic performance and social participation – or lack thereof – in the university.

In their most recent review, Fichten and colleagues (in press) highlighted the significant changes in the past decade relating to technology used in higher education, and particularly the past few years

due to the advancement of artificial intelligence (AI) based technology. Specifically, there was a rise in trend towards choosing and using mainstream technology with built-in accessibility features among disabled students (Fichten et al., 2022b). For example, there were increased use of smartphones and tablets among Blind and partially-sighted users in replacement of traditional assistive devices (Martiniello et al., 2019). Mobile apps such as *Be My Eyes*[5] connects the user at their specific location with a sighted volunteer to assist and support their needs such as reading a text or navigating their environment through a live call. The *Be My Eyes* app recently included AI-powered virtual volunteer for instantaneous image-to-text generation in addition to real-life person volunteer. This app has and would afford independence and flexibility among Blind, partially-sighted, and older persons in their daily living. Additionally, built-in text-to-speech software, and other mobile apps that automatically convert text captured by the smartphone camera to speech, including language translation, not only benefit those with visual impairments but also second language users. Audiobooks are also becoming mainstream among the general community due to convenience – for example, listening to a book while attending to other activities. The popularity of audiobooks had led to the proliferation of accessible audio-based resources which highly benefitted the Blind and partially-sighted community. Similarly, voice-assistance in smartphones and other digital devices allow the general public to interact and operate their digital devices using voice. Again, many disabled users have harnessed this accessibility feature to navigate their lives through voice-activated control of home appliances, interacting with their mobile devices and computers, among others. Other built-in accessible technology such as automatic video captioning allow Deaf/deaf and hard of hearing users to access videos and other media with audio. At the same time, the general public also benefit from captioning in situations where audio can't be played or used. As Gernsbacher (2015, p. 195) had noted: "Video captions benefit everyone" especially for those "watching videos in their non-native language, for children and adults learning to read, and for persons who are D/deaf or hard of hearing".

With the advancement of built-in accessibility features in mainstream devices, major operating systems, and social network platforms such as Windows, Apple, Google, Facebook, YouTube, Audible, among others, more disabled students are increasingly choosing and adopting mainstream technologies over specialised assistive technology. Yet, the uptake of research studies on the impact and implications of these emerging technologies on disabled students has fallen behind (Fichten et al., in press), and are often drawn from outdated definitions of disabled students' characteristics. The demographic of disabled students in higher education have also been found to have large numbers of students with multiple disabilities. For example, Fichten et al. (2022a, p. 23) found almost two-thirds of their participants have common comorbidities such as "learning disability plus attention deficit hyperactivity disorder (ADHD) plus mental health related disability; ADHD plus

[5] *Be My Eyes* is "a free mobile app with one main goal: to make the world more accessible for blind and low-vision people. The app connects blind and low-vision individuals with sighted volunteers and companies from all over the world through a live video call". (https://www.bemyeyes.com/about)

mental health related disability; and chronic health condition plus mental health related disability". This again suggests that mental health disabilities are increasingly prevalent and common among disabled university students. Australian universities revealed similar findings as discussed earlier (Kent, 2015b; Kent et al., 2018). Crucially, it was reported that more than half of the students who self-identify as having a disability do not register for accommodations from their university, especially those with invisible impairments such as mental health, chronic-health conditions, ADHD and other learning difficulties (Cohen et al., 2020; Fichten et al., 2018; 2019; 2022a; Parsons et al., 2021). These findings have significant implications on the approaches and strategies of recruiting research participants in disability research studies where student participants are usually recruited through the university's disability and learning support centres (Fichten et al., 2022a). Further, the effectiveness of supporting disabled university students through the accommodation approach will need critical exploration, as large group of eligible disabled students are excluded due to their reluctance to disclose and other various barriers.

With the proliferation of AI-based technology in our current technological landscape, it was predicted that accessibility features would increasingly become more seamless and personalised (Bureau of Internet Accessibility, 2020). Amidst this rapid technological innovation and development, it is important to keep this accessibility adage in mind: "Digital does not equal accessible" (Berkowitz, 2008, para.1). While built-in accessibility features integrated into mainstream technologies have benefitted and facilitated inclusion and social participation of disabled people, these technological innovations and trend have numerous implications for disabled students. For example, the COVID-19 pandemic put a spotlight on digital access barriers among diverse learners, but especially with disabled students when university courses and services were forced to move online rapidly (Burgstahler, 2021; Ewing, 2021; Lazar, 2022; Wilkens et al., 2021). During this time of global health crisis, knee-jerk responses with regards to digital technologies within higher education revealed disability biases in institutional-wide decision making, where disabled students were usually last to be considered (Burgstahler, 2021; Fichten et al., 2022b). This, unfortunately, is not surprising as historically, disabled people are marginalised and disadvantaged simply by the way society is organised. In terms of designing for technology, Jaeger (2012) observed that accessible versions of technology are often an after-thought. The internet, for example, has enormous barriers for disabled people. An accessible internet requires "many significant adjustments to design, development, and implementation of Internet-related technologies and content" (Jaeger, 2012, p. 33), which are costly and time consuming. While these barriers have improved tremendously since then, it is imperative to fundamentally consider inclusive approaches from design to inception of any development of technology.

In a broad sense, the emphasis on a design approach that includes the greatest possible range of users is the concept of universal design (Hamraie, 2017). From the perspective of disabled students, this means they are able to participate in the university without constantly and repeatedly

having to request accommodations and support related to accessible ICT use and resources throughout their academic studies. While the concept of universal design is not new in the field of architecture and the built environment, its application to digital technology and higher education has been piecemeal due to the rapidly changing advances in emerging technologies among others, but more so due to the long history of the exclusionary nature of universities. Within higher education, the exclusion of disabled students has its root from the demand for able-bodiedness and able-mindedness, and this mandate in the academic culture "can be best defined as ableism" (Dolmage, 2017, p. 7). The following section will explore this critical issue further in relation to universal design and accommodation services in the university.

2.2.5 Universal design: Design for all

Burgstahler (2022, p. 237), an authoritative scholar on universal design (UD) in higher education, defines accommodation as "an adjustment or alternative offered after an environment, course, or service has already been designed,…for a specific student enrolled in a class". It is important to unpack this definition of accommodation to critically understand its impact on disabled university students. Taking the definition on face value, accommodations enable disabled students to participate in the university by providing specialised support to the functional limitations of the individual student that request for it. However, several recent studies found the accommodation process in the university to be highly problematic for various reasons. For example, as highlighted earlier, many eligible students were found to not register for disability support services in the university (Burgstahler, 2022; Cohen et al., 2020; Fichten et al., 2018; 2019; 2022a; Parsons et al., 2021). Among the possible reasons are concerns about being discriminated against due to their impairments, having to provide official documentation as prove of impairments, equating requesting accommodation as being weak and needy, and other stigmatising experiences that comes with disclosure.

The foundational premise of accommodation is based on what Titchkosky (2011, p. 70) wrote on how academia's everyday practices and procedures see "disability as a problem in need of solution…within the university". Dolmage (2017) also pointed out how accommodation is an ableist concept – a form of structural ableism. This is similar to the idea of retrofitting of inaccessible physical spaces, where it "single out the body that needs to ask for access", but crucially, while accommodations "are intended to simply temporarily even the playing field for them in a single class or activity, it is clear that these retrofits are not designed for people to live and thrive with a disability, but rather to temporarily make the disability go away" (Dolmage, 2017, p. 70). In other words, the accommodation process relies on the willingness of the disabled students to declare and prove their perceived "deficit", over and over again, in order to obtain these support services.

Interestingly, authors Fichten and colleagues (2022a) in their recent study on tech-related accommodations among disabled university students found they scored higher in their grades

when given exams or classroom related accommodations with technology, compared to similar accommodations without technology. They concluded that if “all students - those with and without disabilities - continue to have access to technology while completing academic work and writing exams, it could further remove the need for certain technology related accommodations” (Fichten et al., 2022a, p. 26). This meant that it might be worthwhile to further examine the efficacy of accommodations in general, and to consider if providing greater access to technology to all students regardless of status would remove certain barriers to academic performance and participation. Rather than addressing individual needs of any particular student, the idea of providing access to all might mitigate some barriers and concerns of the use of accommodations in the university.

This move from “design for me” to “design for all” (Ravneberg & Söderström, 2017, p. 9) is the foundational principle of universal design. Universal designs are “accessible, usable, and inclusive” (AccessCyberlearning 2.0, 2019, p. 10). The universal design framework was said to be a proactive benchmark for universities to support diversity and inclusion for students in higher education, especially for disabled students (Burgstahler, 2020; Camacho, López-Gavira, & Moriña, 2017; López-Gavira, Díez, & Morgado, 2021). After all, Ravneberg and Söderström (2017) found that in terms of technology, what’s most important to young disabled persons were being perceived as ordinary young people, and technology’s ability to enable social interaction and feel included among their peers.

The studies mentioned above have brought to light some of the complexity of the relationships that disabled students have with technology and their university. It is evident from these studies that the issue at hand is not as straightforward as having or not having access to technology, being connected or not, or even that of having accessible digital resources, services, and systems. Past research has provided enough evidence for us to understand that the influencing factors that determine beneficial and meaningful use of technology among disabled students in higher education are complex, multiple, and diverse. This confirms the point that using the accessibility lens of analysis only provided a limited or partial understanding of the complex relationship between disabled students, their technologies, and the university environment. A more inclusive understanding from politically, socially, and culturally grounded accounts are needed. An effort of this order requires an alternative lens to explore how disabled students’ relationship with technology affects their successful participation in the university. Seeking and prioritising the perspectives of disabled university students is crucial. Reflecting on these questions might deepen our understanding of what it means to be digitally included, how and why this cohort is digitally excluded, and what strategies they use to overcome these digital barriers. In response, I proposed the use of Bourdieu’s theoretical framework to facilitate this broader socio-cultural examination of the phenomenon.

2.3 Conceptual framework: Bourdieu and the digital

Pierre Bourdieu's theoretical lens provided an alternative and inclusive framing for a deeper understanding of disabled university students' relationships with technology. As we will see later in this chapter, it is the relational aspects of Bourdieu's conceptual tools of *habitus*, *field*, and *capital* that are particularly valuable for this study in offering a way to analyse and understand the complex and messy realities of the students' relationships with their technologies. The following section will present the three primary concepts of Bourdieu's theoretical framework, *habitus*, *field*, and *capital*, and how the inter-relationship between these concepts informed and framed this study. This is followed by a review of how these concepts were applied to understand digital inequality and inclusion in the research. As a central concept, digital capital was also explored to provide the necessary thinking tool to make sense of my study's findings and the implications arising from it in Chapters 4, 5, and 6.

2.3.1 Bourdieu's conceptual tools*: habitus, field,* and *capital*.

Bourdieu (1984, p. 95) summed up his relational conceptual tools of habitus, field, and capital as shown in Figure 1.

[(*habitus*)(*capital*) + *field* = practice]

Figure 1: *Bourdieu's theoretical framework*

To him, social practice is structured by the individual's habitus and capital within the social field they are operating in. At the same time, their habitus and capital continues to structure and shape their future practice. Hence, Bourdieu's theoretical framework is also sometimes known as a theory of practice.

2.3.1.1 Habitus

Bourdieu defined habitus as "*a way of being*, *a habitual state* (especially of the body), and in particular; *a predisposition*, *tendency*, *propensity* or *inclination*" (1977, p. 214, italics in original) that is shaped by "one's past and present circumstances, such as family upbringing, and educational experiences", and at the same time, continually shaping one's present and future practices (Maton, 2012, p. 50). This set of dispositions are durable over time and embodied, rather than mere preferences and perceptions. Habitus is also a compilation of collective and individual trajectories where "a person's individual history is constitutive of habitus, but so also is the whole collective history of family and class that the individual is a member of" (Reay, 2004, p. 434). Therefore, a collective understanding of habitus is crucial as individual history. At the same time, Bourdieu

(1990, p. 46) acknowledged the diversity between members of the same cultural group, stating: "Just as no two individual histories are identical, so no two individual habituses are identical".

Perhaps, habitus is best understood through the following phrase:

> *The notion of habitus … is relational in that it designates a mediation between objective structures and practices ... Social reality exists, so to speak, twice, in things and in minds, in fields and in habitus, outside and inside agents. And when habitus encounters a social world of which it is a product, it finds itself 'as fish in water'. It does not feel the weight of the water and take the world about itself for granted* (Bourdieu & Wacquant, 1992, p. 127).

Translated to the field of my study, for example, university students having the right habitus are then able to go through their academic career relatively easily. In contrast, where a student's structuring does not match the social structures of the university, one would find themselves 'as fish out of water'. Further to this, Dokumaci (2018, 2023) introduced the notion of the habitus of ableism, arguing for a new way to understand how disabling practices were, and are, enacted in society and our daily lives. The habitus of ableism within the institution and society carries with it deeply ingrained and forgotten affordances of access that are easily obtained by some, while for others, are unreachable and impossible. As Dokumaci (2018, para. 19) put it: "It is because the habitus of ableism puts the environment's affordances within easy reach of some bodies that others have to make up for whatever is not readily given to them". This concept of ableism as habitus is important to my study. Ableism, as a habitus, can point us to a better understanding, and expose taken-for-granted sets of dispositions and practices that put disabled people at a disadvantage from the outset. This is particularly so within academia, as historically, the habitus of the academy has traditionally been exclusionary and ableist in nature. Dolmage (2017, p. 3) went on to boldly state that "disability has always been constructed as the inverse or opposite of higher education". Even when academic ableism has been recognised as a problem, it was addressed primarily through rhetoric with buzzwords such as access and inclusion used to show progress (Dolmage, 2017).

At the same time, the concept of ableism as habitus also provides a space for us to understand the habitus of disabled people, or to be more specific, disabled university students. It is hard work to come up with affordances and strategies of one's own to navigate university life as the reader will see in some of the participants' stories later in this thesis. Importantly, at the heart of how habitus works is in its relationship with the field – they are tightly interlinked. Habitus cannot operate alone, but instead works in relation to the field to influence behaviour or practice.

2.3.1.2 Field

Examining a particular university's structural field, then, can uncover nuanced understandings of power relations and inequality that exist within the institutional structures. Hence, for Bourdieu

(2005), to gain a realistic understanding of social practices or behaviours, it is necessary to examine the social space or 'field' in which the interactions and events take place. Even while possessing the same habitus, practices and behaviours differ as they are influenced by the social field that one is operating in (Reay, 2004). Hardy (2012, p. 231) similarly explained:

> *An individual may be active in many different fields at the same time. Here, the same dispositions, strategies and capital (habitus) may be valued very differently in different field contexts so an agent can occupy a desirable dominant position in one field, but a less valued position in another.*

Through a Bourdieusian lens, the social space or field is often described as a "game" defined by rules or forces exerted by the players playing it. Each field has its own logic and field-specific practices, known as rules of the game. For Bourdieu (1977), these rules are never neutral, therefore leading to unfair outcomes for different players in the field. Rather, the game is rationalised by field-specific doxa (common beliefs or popular opinion) and is played for field-specific economic, social, and cultural capitals. As Jammaers, Zanoni and Williams (2021) had noted regarding organisations – where there is taken-for-granted doxa, it legitimise and normalise the unequal distribution of capital within the organisations. Social practices within a field that privileges certain groups over others is what Bourdieu (1977) term as symbolic violence. Therefore, in the current study, it is crucial to develop an in-depth understanding of the particular social field in which the disabled students were situated.

At the macro level, it is the nation's system and politics that influence the socio-economic and political field, e.g., national education and ICT policies. Then, the meso level field is the university and its structural system, which itself is contained within a wider field and is influenced by external forces within the higher education field, such as the Ministry of Higher Education and other government regulatory bodies. Finally, the collective of individuals (actors/players) within a sub-culture, i.e., the disabled university students, operating within layered fields with each field conferring different levels of influence on the collective within them. Hence, disabled students' interactions with technology are not only subject to the habitus of, and capitals possessed by, the disabled students individually and collectively, but also by the different levels of the structural fields, as seen in Chapter 4: Mapping the fields of power.

The players, i.e., disabled students, bring capital to the game that provides them with more, or less, power to influence these rules. Winning is decided on the basis of who gets the most, in both volume and type of, valued capitals. There is no level playing ground in a social field, in this case, the university field. Players (university students) who begin with valued forms of capital are advantaged from the outset because the field depends on, as well as produces more of, that capital. Such lucky players are able to use their capital advantage to accumulate more and advance further, winning at the game more than others. Field players generally take the doxa as a

'truth': in order to be successful, they play by the rules. Playing the game both requires and produces particular dispositions which become configured as habitus – ways of acting, being, thinking, and doing. The field, however, is never static, but changes over time as power dynamics challenge its boundaries and the recognised forms of capital.

2.3.1.3 Capital

Capital are stocks of external objectified resources and/or internal embodied abilities that each player accumulates which are scarce and socially valued (Bourdieu, 1986). The value of the capital is always derived from the field – hence, having to accumulate the right capital that counts is what is at stake in the field. What this means is that all capital acts to acquire positioning in the field. As mentioned earlier, the more valued the volume and type of capitals one possesses in the field, the more chance one has of 'winning' in the field. These said capitals can be transformed, reinvested, or exchanged to obtain other forms of capital. To Bourdieu (1986, p. 242), forms of capital can present:

> *as economic capital, which is immediately and directly convertible into money and may be institutionalized in the form of property rights; as cultural capital, which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of educational qualifications; and as social capital, made up of social obligations ("connections"), which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility.*

Drawing upon a simple example within a university field, economic capital in the form of financial means is exchanged for a place in the university. Here, cultural capital is then obtained in the form of a university degree. This cultural capital can then facilitate the accumulation of more economic capital in the form of professional work as well as social capital in the form of a social network of relationships with high capital university course mates and professors. In Bourdieu's terms, university students' successful participation in the field of higher education then is highly related to the volume and types of capital they possess which is valued in the field. In other words, how well the students play the game corresponds with having the right kind and amount of capital that is valued within the university. Their successful participation in the university is the result of the students' ability to access valued and legitimised forms of capital.

As highlighted earlier, the narrow conceptualisation of the digital divide has been problematic for our pursuit of a realistic understanding of digital inequality and digital inclusion. As an alternative lens, Bourdieu's theoretical framework, as discussed in the preceding sections, further challenges the simplistic concept of the digital divide. The following section will review recent research that has used Bourdieu's concepts to expand our understanding of digital inequality and digital inclusion.

2.3.2 Bourdieu, digital inequality and digital inclusion

Bourdieu's inter-related concepts of habitus, field, and capital has been used increasingly in the theorising of digital sociology to understand digital communication and social media technology use. Pertinent to my study, I would like to draw our focus to Bourdieusian studies that specifically address issues of digital inequality and inclusion. Bourdieu's concepts of habitus, field, and capital have frequently been utilised separately in research studies.

Some studies have drawn on Bourdieu's habitus to understand individuals' uptake and attitudes toward digital technologies (Costa & Murphy, 2015; Micheli, 2015; Robinson, 2009; 2011). These studies found that interactions with technology and the forming of digital habitus were differentiated and mediated by past internalised habitus. Generally, there were distinct differences in the individuals' digital habitus between low- and upper-middle income families, and between the socially disadvantaged and advantaged, particularly in the education and career settings. Micheli (2015) found that young Italians from disadvantaged social environments and backgrounds tended to use technology for recreational purposes unrelated to academic or human capital enhancement. In contrast, upper-middle-class young peoples' digital practices focused on capital-enhancing activities and personal enrichment, replicating their parents' stance towards technology. Similarly, Robinson (2009, 2011) found that upper-middle-income families' habitus encouraged the use of technology for skill development, priming them for academic and career planning. Disadvantaged young people, on the other hand, were less likely to use technology to improve their education and career life chances. In other words, individuals from lower- and working-class backgrounds were more inclined to spend their time online for recreation, socialising, and leisure such as browsing social media sites and playing online games.

Bourdieu's concept of 'field' has been used in exploring the digital divide and inequality through national surveys on understanding differential status in Internet access and usage patterns in various countries, particularly in the global North (Ignatow, 2020); for example, Zillien and Marr (2013) in Europe, Hargittai and Hinnant (2008) in the United States, and Abbas and Mesch (2018) in Israel. This field theory had also been used to understand the online space, also known as online fields. Levina and Arriaga (2014, p. 477) defined the online field as "a social space engaging agents in producing, evaluating, and consuming content online that is held together by a shared interest and a set of power relations among agents sharing this interest". The authors used the online field as an analytical lens to study social dynamics and status production processes across a variety of digital social platforms such as Facebook, YouTube, Twitter, and Wikipedia, among others. The relational aspects of the field and the notions of power and status among the players in the field made it appropriate to the study of these online social spaces.

According to Ignatow and Robinson (2017), capital has come to be a central concept in studies of digital inequality. Bourdieu's capital refers to "stocks of internalized ability and aptitude as well as externalized resources which are scarce and socially valued. Like the more traditional form of

capital, they can be transformed and productively reinvested" (Ignatow & Robinson, 2017, p. 952). Distinctively, Bourdieu's capital includes any resource that empowers and enables those who own it in any particular field. The more valued capital one has within that specific field, the more advantage they have at winning in the field. Essentially, this accumulated capital can be converted to other forms of capital, be they material, cultural, symbolic, or social. Many scholars have since conceptualised the notion of capital in the digital realm as information capital (Hamelink, 2001; van Dijk, 2005), techno-capital (Rojas et al., 2004; Lu & Straubhaar, 2014), and digital capital (Park, 2017; Ragnedda, 2018; Seale et al., 2015) in the exploration of digital inequality and inclusion.

Hamelink (2001) first conceptualised the term information capital, after which van Dijk (2005) further theorised and applied this concept in their research on digital inequalities. van Dijk (2005, pp. 72-73) defined information capital as: "(a) the financial ability to pay for the costs of computers and networks, (b) the technical skill to deal with them, (c) the capacity to filter and evaluate information, and (d) the motivation to look for information and the capacity to use this information in society." While this definition was extremely useful in measuring inequality and encompassed the first and second levels of the digital divide, it did not capture the third level of the digital divide – how, why, and who benefits from being online. In other studies, digital capital is embedded within, or as a subset of, the framework of other primary capitals (Seale et al., 2015; Selwyn, 2004). For example, Selwyn (2004) proposed using secondary technological forms of capital, namely digital economic capital, digital cultural capital, and digital social capital, as differentiated factors underlying inequalities among individuals' engagement with technology. This framework was later adopted by Seale and colleagues (2013, 2015) to explore disabled students' use of technology in higher education. Like van Dijk's concept of information capital, what was missing from both Selwyn's and Seale's version of digital capital was the understanding of how and why digital capital (or the lack of) impacted on disabled students' successful participation in the university.

A recent study by Ragnedda et al. (2022) provided compelling evidence of the growing consequences of digital capital in everyday life. Ragnedda (2018) had earlier argued for the need to conceptualise digital capital as a stand-alone capital to fully capture the tangible outcomes and consequences of differential access to, and use of, digital technology and the Internet. The focus was on, in Bourdieusian terms, how digital capital, like other primary forms of capital (political, economic, cultural, social, and personal), is accumulated and transferred into different forms of capital. This conceptualisation of digital capital, an important notion in my study, will be discussed in detail in the following section.

2.3.3 Bourdieu, digital capital and disabled university students

Relatively little work has been done to explore and examine in-depth how the proliferation of Internet and digital technologies have created affordances and opportunities in the development of disabled students' new forms of capital in the university field. Little is known about how disabled

university students' digital capital within the online field is converted and transformed to offline capital to participate successfully in their academic career. Rather, past studies had been primarily focused on addressing the first (providing accessible devices, systems, and resources) and second levels of the digital divide (motivation, attitudes, and skills in using technology). As reviewed earlier, there is a danger in focusing solely on the accessibility of technology in measuring and interpreting technology use by disabled university students. The third level of the digital divide remains under-studied. Understanding the experiences of disabled students and their use of technologies in the university through a Bourdieusian lens then opens the space to further holistically explore specific inequality and inclusion issues that might have been overlooked in the past.

To capture the multi-dimensionality and intersectionality of digital inequalities, including the third level of the digital divide, some scholars identified the concept of digital capital as a specific capital towards better understanding of tangible outcomes and impacts of digital access and use (Park, 2017; Ragnedda, 2018; Ragnedda, Ruiu, & Addeo, 2020; Ragnedda et. al, 2022). Specifically for my study, digital capital has been referred to according to the definition offered by Ragnedda (2018, p. 2367):

> *a set of internalized ability and aptitude" (digital competencies) as well as "externalized resources" (digital technology) that can be historically accumulated and transferred from one arena to another. The level of digital capital that person possesses influences the quality of the Internet experience (second level of the digital divide), which, in turn, may be "converted" into other forms of capital (economic, social, cultural, personal and political) in the social sphere, thus influencing the third level of digital divide.*

In other words, digital capital consists of digital access (physical and material access to digital devices and resources) and digital skills (competencies and attitudes in using technology) which can be accumulated and converted to other forms of offline capital such as political, economic, cultural, social, and personal capital. Like other traditional forms of capital, digital capital has the key characteristics of accumulation and transferability (Ragnedda, 2018). Unlike past conceptualisations of digital capital, the distinction here is how digital capital, as a specific form of capital, but which is intertwined with other capitals, acts as a bridging form of capital.

2.3.3.1 Digital capital as a bridge capital

In their recent study, Ragnedda and colleagues demonstrated this bridging nature of digital capital. In a sample of 868 UK adults, the researchers found "those with higher offline capital tend to have a higher level of digital capital and at the same time those with higher digital capital tend to reinforce the five capitals (political-social-cultural-personal-economic) by using the Internet for capital-enhancing activities" (Ragnedda et al., 2022, p. 34). Here, digital capital acted as a bridge between online and offline life chances. In other words, digital capital interacts with other previously existing capital, and this interaction has consequences on both the online and offline realms. This strong association between digital capital and tangible outcomes, according to

Ragnedda et al. (2022), warranted it as a specific form of capital. These researchers also concluded that findings might differ in different contexts, particularly in developing countries with lower level of digital penetration, while highlighting the need for further exploration on the level of digital capital and its outcomes among underrepresented groups.

In summary, the inquiry into how digital capital plays a role in the lives of disabled students will unpack a deeper understanding of their relationships with technology in the university. When applying the concept of digital capital to our understanding of disabled students' use of technology in the university, digital capital then acts as a form of currency to legitimise their positions to participate and succeed in the university. Here, digital capital included the disabled students' physical and material access to digital devices and applications, as well as their digital competencies and attitudes toward technology. Additionally, through the disabled participants' digital experiences and practices in the past and in the university, the bridging nature of digital capital was also considered and explored. As mentioned earlier, digital capital as a bridging form of capital addressed the third level of the digital divide, where it connects and links offline experiences and resources with the online environment, and then transfers those online experiences back into tangible benefits and outcomes offline (Ragnedda, Ruiu, & Addeo, 2020). In other words, this third level of the digital divide focused on the differential impacts and outcomes, both advantages and disadvantages, of accessing (first level) and using technology (second level) in the university lives of the disabled participants. How the disabled participants' digital capital was played out in the university field is further discussed in Chapter 6, Section 6.3: Playing the game.

2.4 Addressing research gaps

To address the gaps mentioned above, this thesis examines and explores the everyday lived experiences and relationships shared between disabled university students, their use of digital and networked technologies within the university and the learning space they are studying in. It is a small intensive look into a case university that explored how the political, social, and cultural practices within the university environment and structures influenced or affected the disabled students and their relationship with digital technologies in their participation in the university. Equally crucial, the habits and dispositions of the students were also examined to provide more complete insights into how their past history and experiences also shaped their current uptake and practices of digital technologies. Particular attention was given to understanding the inter-relationship between the structures of the case university and the dispositions, actions, and lived experiences of the disabled university students in their technology use. The focus was to explore the social and relational impacts and implications of using technology, or specifically, the impacts that the disabled students' digital capital (digital access and digital competencies), had on tangible beneficial outcomes, opportunities, and affordances in the university. The following paragraphs further discuss specifically how this study will address the research gaps.

2.4.1 Prioritising socio-cultural perspectives using Bourdieu's theoretical framework

As demonstrated earlier, the relationship between disabled university students and their use of technology have been found to be far more complex than the issue of access and accessibility. Research on the social nature of technology is still largely absent from the educational technology scholarship (Facer & Selwyn, 2021). The fact remains that technology has been found to be less deterministic and democratic than has been depicted in the educational technology scholarship. Technology can both enable and disable, include and exclude, and particularly with disabled university students, digital inequalities can be exacerbated and even more differentiated. Even where they have access to technology and accessible resources, the question of why certain technologies are preferred and used rather than others, how disabled students make meaningful use of these technologies, and the outcomes of technology use, remain largely unanswered. Conceptualising technology as a socially constructed tool demands an examination of technology use as "complex interactions and negotiations with the social, economic, political and cultural contexts" (Selwyn 2009, p. 69). Moving beyond deterministic assumptions about educational technology, we need to recognise that technologies are "socially constructed, shaped and negotiated by a range of actors and interests" (Selwyn, 2010, p. 69). A broader socio-cultural framework is needed to enable a more critical examination of the use of technology among disabled university students.

As such, this study has drawn on Bourdieu's theory of practice as a critical lens and as a systematic framework for data collection and analysis. Although Bourdieu's conceptual framework does not specifically address disability and technology, his extensive work on education, particularly higher education, was predominantly centred on addressing and exposing social and power inequalities maintained and reproduced by universities (Naidoo, 2004). Specifically, this framework allowed insights and understandings of disabled students' use of technology from a socio-cultural perspective (external and structural influences) in relation to individual biological-psychological conditions (internal and agentic influences).

Several studies have drawn upon Bourdieu's ideas and demonstrated how practical applications of Bourdieu's theoretical concepts can be used to expand and explore socio-cultural perspectives in contemporary educational research (James, 1996; Grenfell & James, 2004; Naidoo, 2004; Reay, 2004; Mills & Gale, 2007). In the sociological research, there has been a longstanding debate over the primacy of either human agency or social structures, the objective or the subjective, and the micro or macro in shaping human behaviour (James, 2011). Seeing this agency-structure dichotomy as an artificial divide and as problematic in our understanding of social behaviour and practices in reality, Bourdieu offered a framework to link individual agency (behaviour/practice) to social structures and vice-versa by working across and between 'subjectivist' and 'objectivist' accounts. As mentioned earlier, this can be summed up as: **[(habitus)(capital) + field = practice]**. Maton (2012, pp. 50-51) offered an explanation of this equation stating:

> *one's practice results from relations between one's dispositions (habitus) and one's position in a field (capital), within the current state of play of that social arena (field) … the interlocking nature of his three main "thinking tools": habitus, field and capital. Practices are thus not simply the result of one's habitus but rather relations between one's habitus and one's current circumstances … we cannot understand the practices of actors in terms of their habituses alone – habitus represents but one part of the equation; the nature of the fields they are active within is equally crucial.*

To reconcile the influences of both the subjective experience of the individual and objective external social structures, Bourdieu's theory of practice has been mapped out through the interactions of these three main concepts: *habitus, field,* and *capital*. Each of these relational conceptual tools, as discussed earlier, is equally vital in understanding and explaining social interactions and behaviours with none of them being primary, dominant, or causal (Thomson, 2012).

2.4.2 Expanding the notions of digital inclusion and accessibility among disabled university students

Choosing this sociological and relational perspective was important. As pointed out earlier, past studies have provided enough evidence that the influencing factors that determine beneficial and meaningful use of technology among disabled students in higher education goes beyond mere physical access to digital technologies and resources. For example, several authors have found that legislation and policies are insufficient (Burgstahler, 2022; Fichten et al., 2020; Seale, 2020). Despite the existence of legislation and accessibility guidelines and standards, and the large array of both assistive and mainstream digital tools and resources available within universities, the technologies still remain largely inaccessible to disabled students. Disabled university students were also found to have a spectrum of issues and challenges in their uptake or rejection of both assistive and mainstream technologies (Goodley et al., 2020; Lewthwaite, 2011; Perera-Rodríguez & Díez, 2019; Seale et al., 2015; Seale et al., 2021). The evidence has pointed to the complexities of the technologies used among disabled students in supporting their academic and university lives being well beyond access to hardware and software technologies, and far more than merely being online and having digital skills.

As the conceptualisation of digital inequality being a dichotomous 'have' and 'have-not' scenario is overly simplistic, this study explored a broader perspective of the digital divide (van Dijk, 2017; Ragnedda, Ruiu, & Addeo, 2020). Specifically, the focus shifted away from simple access to the differential levels of digital exclusion. In this study, the digital divide has been reconceptualised as a hierarchy of access to various forms of technology in various contexts, resulting in differing levels of engagement and consequences. Moving away from, and expanding upon, a strictly binary division, the different elements and factors that make up the contemporary digital divide are shown in **Table 1**.

Table 1: *Three levels of access*

First level divide	Unequal access to digital devices and the Internet
Second level divide	Unequal and differentiated use of digital resources, skills, and the Internet
Third level divide	Unequal distribution of tangible impact, outcomes, benefits, and opportunities from access to, and use of, digital devices, resources, skills, and the Internet

These three different stages progress from access to digital devices and resources, through to the use of technology, which then may (or may not) lead to meaningful engagement with technology in terms of digital skills, information, and services. Finally, the stages end with the potential short-term outcomes and longer-term consequences of accessing and using technology. In other words, digital inequality does not end with having digital devices, being online, and having relevant digital competence. Engagement with digital technologies (or the lack of) impacts individuals in society in various areas of their lives and throughout their lifespan. These multiple levels of digital divides were found to be even more differentiated among disabled people (Dobransky & Hargittai, 2021) because technology as a whole was designed for non-disabled people. This meant that disabled people are, from the outset, disadvantaged by having to navigate through technology, be it hardware, software, or online content. While online accessibility has improved tremendously in recent years, disabled people are still found to be disproportionately digitally excluded. In this study, I sought to fill this gap by focusing on the distinct effects of impairment experienced by disabled students going through these multiple levels of the digital divide. More importantly, I sought out how disabled university students found digital strategies and affordances to navigate through inaccessible online environments to successfully participate in university life. In addition, exclusionary digital and non-digital practices within the institution from the perspective of disabled students were sought. These nuanced findings would be useful for universities to consider to create a more inclusive learning environment for their students.

2.5 Summary

In this chapter, I have reviewed the relevant literature with regards to the digital divide and digital inclusion, and how disability and disabled people as a whole are largely missing from the digital divide research. I have also attempted to situate my research within the wider literature to show the gaps in our current understandings of disabled students and their use of technology in the university setting, particularly in a multi-ethnic and multicultural global South nation. This led me to consider socio-relational perspectives in my study by using Bourdieu's conceptual framework. I then described Bourdieu's theoretical concepts generally, and discussed these conceptual tools in relation to my study. Finally, I outlined how my study will address the gaps which were highlighted earlier in the chapter. Moving on, the following chapter will discuss and establish the epistemology, methodology, and methods underpinning this study.

CHAPTER 3: RESEARCH METHODOLOGY

> *Every project for the development of the human spirit which, forgetting the historical grounding of reason, depends on the sole force of reason and rational discourse to advance the causes of reason, and which does not appeal to political struggle aimed at endowing reason and freedom with the properly political instruments which are the precondition of their realization in history, remains prisoner of the scholastic illusion.*
>
> (Bourdieu, 1998, p. 140)

3.1 Introduction and outline

This doctoral study seeks to uncover the "messy realities" (Selwyn, 2016, p. 1008) in the disabled university students' relationships with their technologies and institution. Specifically, this study aims to expand and gain more nuanced and contextual insights into this complex relationship between disabled university students and their digital and networked technologies practices within a particular case university in Malaysia. Through a set of inter-related conceptual tools: *habitus, field,* and *capital,* Bourdieu's conceptual framework provided a systematic and relational approach which I used to explore and examine the inter-connectedness and complexity of disabled students and their relationship with digital technologies in a contextual and situated space, i.e., the university they study in. This relational aspect of Bourdieu's conceptual framework is fundamental to my study to ensure that the individual complexities of the disabled university students are fully recognised, while it is equally important to address the multiple contextual factors impacting upon their experiences. For this reason, this study is both critical and interpretive in nature. I found Mertens' (2009) articulation of a philosophy of inquiry – the transformative paradigm – to be useful in providing support to negotiate this critical and interpretive research perspective. Choosing the transformative approach allowed me to both critically seek out social inequalities and injustices that might exist in higher education while privileging the disabled university students' voices and personal experiences.

In this chapter, I will establish the grounds for choosing the transformative paradigm and the rationale for combining two complementary methodologies – phenomenology and qualitative case study methodology – to address my study's aim and objectives and the research questions. An outline of my epistemology, methodology, and methods that underpinned the data collection and analysis will be given. To recap, my research questions are:

What are the lived experiences of disabled Malaysian students in using digital technologies to participate in the university?

1) What forms of digital capital do disabled students have access to and use?
2) What are the disabled students' dispositions and habitus in using digital technologies?
3) How do disabled students access and use their digital capital to participate in the university?
4) How might disabled students' digital capital impact their participation in the university?
5) How might the dominant structures of the university culture, practices, and mechanisms perpetuate digital exclusion and barriers among the disabled students?

This chapter begins with a brief discussion and justification of the transformative research paradigm, followed by the overarching research design and approach of the study. The methods used are then discussed following Bourdieu's three-stage framework, with the corresponding data collection tools and instruments explored in detail. The pilot studies and ethical considerations for the study are then discussed, followed by the strategies taken for establishing quality, trustworthiness, and rigour. The data analysis framework is then described in detail, and finally, a short summary will be given as well as an outline of the forthcoming chapters.

3.2 Research paradigm

The transformative paradigm provided an ontological framework for this study to examine and understand both enabling and disabling experiences of disabled university students' use of digital technologies. Aligned with critical theory with its emphasis on subjective knowledge, the transformative paradigm is grounded in the multiple realities of people and their social and cultural positioning (Creswell & Plano Clark, 2018; Mertens, 2015). These realities are shaped by the experiences and values of people in different positions (due to factors such as ethnicity, gender, disability, and culture) who are influenced by social, political, cultural, and economic forces. A transformative study poses the question: "Whose reality is privileged in this context, and what is the mechanism for challenging perceived realities that sustain an oppressive system?" (Mertens, Holmes, & Harris, 2009, p. 88). Taking this transformative stance allowed me to focus on understanding the realities of the disabled students situated in their contextual environment while critically identifying and examining the consequences of historically privileged versions of reality.

The transformative paradigm purposefully addresses specific issues experienced by those pushed to the margins, bringing their historically excluded realities and experiences to the centre. This research approach shifts from deficit perspectives often associated with marginalised groups to the conscious locating of positive aspects, resilience strategies, and acts of resistance when

confronting discriminatory and oppressive circumstances. Additionally, a transformative study "recognizes that serious problems exist in communities despite their resilience in the process of throwing off the shackles of oppression, as well as making visible the oppressive structures in society" (Mertens, 2009, p. 11). Being a non-disabled researcher, the transformative paradigm allowed me to play a sustaining role in researching disability issues. I strived to fulfil what transformative researchers are called to do, to "consciously and explicitly position themselves side by side with the less powerful in a joint effort to bring about social transformation" (Mertens, 2015, p. 21). Crucially, I sought to centre the voices of the research participants, with the goal of "raising their consciousness or advancing an agenda for change to improve their lives" (Creswell, 2018, p. 9).

Figure 2: *Key considerations for designing a transformative study*

To design a transformative study, I used the key considerations offered by Creswell and Plano Clark (2018, p. 98). **Figure 2** illustrates the key considerations that guided the research process. Furthermore, ethical methodological choices were considered to ensure that traditionally silenced voices were prioritised – recognising and acknowledging disabled students as important community members of the university by privileging, listening to, and valuing their perspectives. I chose to focus on their strengths rather than taking a problem-oriented frame. In other words, while disabled people are discriminated against and oppressed across society, my study does not deliberately seek out to confirm these discriminatory and oppressive stories. I also sought out stories of resilience and resistance. As detailed below, I made research process decisions that aimed to empower and benefit the participants. Care and attention were given, particularly during the interview process, to better represent the participants through collaborative and open communication between the researcher and the participants. This was achieved by taking the time to build trust and develop respect in the relationships between myself and the participants. Additionally, conscious efforts were taken to seek the hidden disabling experiences of the university systems by the participants – "the interrogation of unearned privilege" (Mertens, 2009, p. 95). Priority was given to linking key findings to implicate and recommend practice and policy change that might facilitate and enable full participation of disabled students in the university, consistent with the emphasis of the transformative paradigm to facilitate empowerment and social action for the marginalised group involved (Sweetman, Badiee, & Creswell, 2010).

3.3 Research design

Qualitative research is an investigative approach compatible and congruent with the basic tenets of a transformative study. In essence, qualitative research is said to "study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2011, p. 3). Additionally, Merriam and Tisdell (2016, p. 6) suggested that qualitative researchers are "interested in understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences". Mertens (2015, p. 238) highlighted the appropriateness of qualitative methods when working with disabled people, as many of the criteria for choosing this method parallel the conditions of inclusive education; for example, "low-incidence conditions, such as deaf-blindness, cause sample sizes to be restricted or small", and the uniqueness of disabled students across diverse categories of impairments. Taking a transformative stance also meant that while seeking these unique disabled students' experiences in using technology to support their participation in the university, I critically sought and questioned historically-socially-culturally-politically privileged versions of reality. Here, the assumption is that "knowledge is not neutral and is influenced by human interests. Knowledge reflects power and social relationships within society and the purpose of knowledge construction is to aid people to improve society" (Sweetman, Badiee, & Creswell, 2010, p. 442). This is particularly important because the disabled community being researched in

this study is multicultural and living in an environment in which oppressive and discriminating social structures and policies are pervasive.

3.3.1 Phenomenological case study design

The goal of my research is to understand the disabled students' lived experiences of a phenomenon, i.e., their use of technology in the university. Additionally, as my focus was on a specific culturally complex group of university students in a particular university context in Malaysia, taking a case study approach allowed me to collect multiple forms of data to build a stronger case for social action and change specific to the participants' situational and political context. Thus, a combination of two qualitative approaches – phenomenology and case study methodology – best met the research design needs of my intended inquiry. The following sections describe the two approaches in relation to my research, and then provide the rationale for selecting a phenomenological case study research design.

3.3.1.1 Phenomenology

Phenomenology is an established methodology which has often been used in qualitative research since the originator, Edmund Husserl (1931), first advocated it as a scientific and structural study of a phenomenon. A phenomenological study describes the meaning of particular individuals' lived experiences of a phenomenon (Creswell & Poth, 2017), or simply, the study of the lived experiences of individuals (van Manen, 2014). There are various strands of phenomenology, "each rooted in different ways of conceiving of the what and how of human experience" (Neubauer, Witkop, & Varpio, 2019, p. 91). In short, each phenomenological approach has different philosophical presuppositions. Hence, it is also a methodological tradition that is filled with confusion and misconceptions with scholarly discussions still ongoing. An attempt to critically unpack the philosophical and methodological issues of phenomenology would be beneficial, but too substantial a challenge for this thesis due to space constraints. Thus, I would like to point the reader to an authoritative contemporary phenomenology scholar, Max van Manen. His comprehensive seminal text, Phenomenology of Practice (van Manen, 2014) provided an extensive exploration of phenomenological traditions and methods including a detailed description of key phenomenological ideas as they have evolved over the past century. Additionally, van Manen (2017) published a journal article specifically addressing some common misconceptions and issues while providing the basic criteria and distinctions of a phenomenological inquiry. While I am not able to discuss these complexities in great length, I will highlight some of what I consider to be significant for my phenomenologically-informed research in the following paragraphs.

My investigation is phenomenological in that it seeks to answer the main research question: What are the lived experiences of disabled Malaysian students in using digital technologies to participate in the university? The focus here, as in phenomenological studies, is on the participants' subjective and unique experiences and how these are lived (Adams & van Manen, 2017; Neubauer et al.,

2019; Wertz, 2005). The main reasons for choosing a phenomenological approach are what van Manen (2017, p. 779) asserted – the uniqueness of phenomenology as a method to obtain empirical "originary understandings and insights into the phenomenality of human experiences", and the attentiveness to "fascinating varieties and subtleties of primal lived experience and consciousness in all its remarkable complexities, fathomless depths, rich details, startling disturbances, and luring charms". Here, the use of the voice-centred relational method in analysing the participants' in-depth interviews, as described in Section 3.9 below, enabled attentiveness to the deep layers of their complex experiences and meanings required of a phenomenological inquiry.

Specifically, I consider my research inquiry to be a hermeneutic phenomenology study (van Manen, 1990; 2014), one among the many variants and strands of phenomenological approaches. Hermeneutic phenomenology, also known as interpretive phenomenology, has its roots or philosophical origins from Martin Heidegger (1962). Below are some of the key aspects that make the hermeneutic tradition well-suited for my study. These types of studies:

- consider the research participants' experiences of a phenomenon to be relational, which cannot be separated from the individual's personal history and the culture in which they were raised, i.e., their lifeworld (Lopez & Willis, 2004).
- go beyond the individual's descriptive experiences of the phenomenon. Rather, it is the interpretation of the research participants' narratives of their experiences of the phenomenon through their lifeworld, which is inextricably linked with their associated social, cultural, and political contexts (Bynum & Varpio, 2018; Laverty, 2003).
- recognise the researcher's past experiences and knowledge. The researcher's subjective experiences should be openly acknowledged and accounted for in the same way as the research participants' lifeworld. The researcher's reflexivity is an essential element of the interpretive and analysis process (Bynum & Varpio, 2018; Neubauer et al., 2019).
- can use theory or conceptual frameworks to orient the focus of the inquiry, develop research questions, and interpret the findings (Lopez & Willis, 2004).

My research approach to inquiry is also that of critical hermeneutics, where the lived experiences of marginalised groups are the main focus of investigation, with the objective being to make their voices heard. A critical hermeneutic inquiry, therefore, "probes beneath the surface of participants' narratives to ascertain embedded power issues" (Lopez & Willis, 2004, p. 731), questioning dominant and socially accepted ways of viewing reality. Ultimately, I was interested in seeking deeper insights into, and the subtleties of, the lives of disabled Malaysian students as they experienced it, particularly in their day-to-day use of digital technologies in the university and what it meant to them.

3.3.1.2 Case study

As a qualitative research method, Mazumdar and Geis (2001) highlighted the important features of the case study approach, particularly for research on disability. Among these features, most pertinent to my study was the emphasis on gaining in-depth understanding of a complex social phenomenon. The focus was on "*verstehen*" – a German concept of emphatic understanding of human behaviour, or what Stake (2010, p. 48) described as "an experiential understanding of action and context". In essence, my case study primarily sought out disabled students' perspectives on their experiences with using technology in the university context. In searching for deeper insights, a case study approach also enables rich and emic data to be collected in order to obtain and present as detailed a picture as possible (Merriam & Tisdell, 2016; Stake, 1995). Here, I outline the strengths of the case study method relevant to my study, based on Mazumdar and Geis (2001). Case studies:

- are focused on *verstehen*, seeking out in-depth understandings of the phenomenon under investigation
- collect rich emic data from multiple sources
- recognise the complexity of social phenomena, social life, social systems, and human actions
- consider a phenomenon as having many facets that are interlinked and interconnected in layers
- take into account contextual factors, including history, and their effects on the phenomenon

Mazumdar and Geis (2001) also specifically highlighted the important features of a case study approach in researching disability-related issues. Among others include the ability to capture the experiential uniqueness of the disabled person in their interaction with the natural, human-made, and social worlds. This is particularly valuable in unravelling rich facets of the life of a person with a particular impairment in their contextual situation, as no two people's experiences are the same even with the same apparent condition. Hence, case studies also enable the inclusion of positive and advocacy narratives, rather than merely focusing on stereotypical negative stories of disability. Rich and thick detailed biographic descriptions used in case studies afford nuanced depictions of disabled persons as humans with all their emotions and feelings.

Particularly in my study, choosing a case study approach provided the opportunity for me to illuminate the particularities and uniqueness of disabled university students' experiences in Malaysia. Additionally, it allowed me to consider and prioritise an understanding of the effects of interconnected historical, contextual, and cultural factors in a multi-ethnic Southeast Asian country, especially when this nuanced information was found to be lacking in previous research. Understanding these messy contextual realities while gaining a real sense of the phenomenon was

crucial and valuable for improving practice and policies, and more so when the political, socio-cultural, and economic landscape of my study differed widely from those in the global North countries. The situational and contextual insights from my case study may be beneficial to facilitate specific social change that is relevant to the region, and to enact effective public policies to support the full participation of disabled Malaysian students in the university. Hence, this case study can be categorised as being instrumental in nature (Stake, 1995), focusing on asking the 'how' and 'why' questions in order to understand a social phenomenon within a real-life, bounded context to bring about social change within the disabled community.

3.3.1.3 Combining phenomenology and case study

Combining two methodologies such as phenomenology and case study is not a novel approach. As Merriam and Tisdell (2016) stated, it is not uncommon to pair qualitative approaches such as phenomenology with case studies. Phenomenological case studies have been previously used in educational research; for example, this combination has been used to explore students' experiences of a certain teaching and learning strategy in the classroom (Hickman & Kiss, 2010), how at-risk male adolescents interact with a particular school culture (Jabbari & Duncan, 2021), undergraduates' excessive use of smartphones in a Korean Christian university (Ko, 2015), and the lived experiences of a group of undergraduate African-American students' transition from high school to college life after completing a structured academic success programme (Walters, 2017). Suffice to say, a phenomenology case study explores the lived experiences of individuals of a phenomenon in a bounded context or system. Similarly, I sought to explore the lived experiences of disabled students' use of technology in a particular Malaysian case university.

This fusion of two complementary approaches – in-depth phenomenological interviews (Seidman, 2006) within a "specific, unique, bounded system" (Stake, 2005, p. 445) of a case university – allowed me to focus on understanding the lived experiences of disabled students' use of technology within a critical contextual case. More importantly, the basic tenets found within these two methods are compatible with my study's theoretical framework. It is here that the role of Bourdieu's framework is imperative, particularly in relation to the linking of agency to social structures through the bridging of individual experiences to a specific, unique, bounded contextual environment.

Having outlined the research paradigm and design of this study, the following section discusses the selected research methods. Fundamentally rooted in phenomenology (Ignatow, 2020), Bourdieu provided a framework to operationalise the interconnected concepts of *habitus, field*, and *capital*. These main concepts "are not only defined in terms of relations, but they are also inter-related in such a way that they can only function fully in relation to each other" (Ignatow, 2020, p. 78). Articulated in three stages, I will now discuss the research methods, procedures, and tasks for data collection, before exploring the framework for the data analysis process.

3.4 Data collection methods: Operationalising Bourdieu's theory of practice

Bourdieu's theoretical framework suggested that social behaviour or practice can be summed up as: "**[(habitus)(capital) + field = practice]**" (Bourdieu, 1984, p. 95). These conceptual tools are to be taken as a set of interconnected relations. Fleshed out in a three-level field analysis, together with the construction of the research object and participant objectivation (Bourdieu & Wacquant, 1992), Grenfell (2012, 2014) articulated Bourdieu's framework in three stages as below:

Stage One: The construction of the research object

Stage Two: Three-level field analysis

Level 1: Analyse the position of the field *vis-à-vis* the field of power

Level 2: Map out the objective structure of relations between the positions occupied by agents who compete for the legitimate forms of specific authority of which the field is a site

Level 3: Analyse the habitus of agents; the systems of dispositions they have acquired by internalising a deterministic type of social and economic condition

Stage Three: Participant objectivation

This three-stage framework acted as a set of guiding principles for my data collection and analysis process. Drawing from the original work of Bourdieu (Bourdieu & Wacquant, 1992), and Grenfell's interpretation (2012, 2014), the following sections discuss each of the concurrent stages. The objective was to provide the context and guide for the reader to follow through the interpretation of the findings and the arguments made in the later chapters of this thesis. It also served as an audit trail, providing the rationale for methodological decisions made for the study. The corresponding methods and tools used to operationalise these stages in this study were also reviewed. Both structural and individual data were collected and corroborated via multiple sources from contextual conditions aiming to reach a more accurate, situational, and nuanced understanding of disabled university students and their uses of digital technology (Yin & Davies, 2007). As noted at the beginning of this thesis, this doctoral study started before the COVID-19 pandemic, including the data collection phase.

3.4.1 Stage One: The construction of the research object

Stage One was concerned with the socio-historical constructions and concepts of certain words or phrases that present themselves as value-neutral or taken-for-granted common sense. As Grenfell (2014, p. 30) succinctly argued: "the whole focus on the construction of the research object is that it is partly an attempt to break with the 'pre-given' of the world, especially the academic one, and to

re-think language and language pedagogy in a new way". Therefore, the 'construction of the research object' stage provided me with the space to examine, critically review, and reflect on the contested nature of the constructs and concepts under investigation. This stage was where the transformative ontological question was asked: Whose reality is privileged in this context? The transformative ontological assumption holds that while reality is socially constructed, "certain individuals occupy a position of great power and that individuals with other characteristics may be associated with a higher likelihood of exclusion" (Mertens et al., 2009, p. 92). This stage reconceptualised and presented the related research constructs in the field, which were critically reviewed in Chapter 2 of this thesis.

3.4.2 Stage Two: Three-level field analysis

Bourdieu summarised his approach as an analysis of the field that "involves three necessary and internally connected moments" (Bourdieu & Wacquant, 1992, p. 104). According to Grenfell (2014, p. 33), Stage Two requires three distinct levels: "the relationship of the field to the field of power, the structure of the field itself, and the habitus of those occupying positions within the field". It is important to note that data collection could begin at any of the three levels of analysis, as they are not necessarily sequential or linear. It is the links between individuals (habitus), field structures, and the positionings both within and between fields that is at the heart of Bourdieu's approach to field analysis. One could start from the ground up through the gathering of personal accounts (habitus) of individual participants (Level 3); or one could start from examining the overall structures of the fields of power being studied (Level 1). Most importantly, the researcher needs to obtain relevant data that allow for a construction of a relational analysis, both within and between fields, i.e., the relationship between the structures of the field of power (pervading cultures, values, and assumptions), and individual dispositions, trajectories, and experiences.

Using a phenomenological case study approach enabled the collection of multiple forms of data to provide an in-depth relational analysis of the field and habitus. Adopting multiple methods for data collection also resulted in greater credibility for my study (Silverman, 2005; Bryman, 2008; Yin, 2014; Merriam & Tisdell, 2016). This is where the weaknesses found in each method can be minimised and addressed through other methods. It also provided an avenue for triangulating the various data collected to produce more trustworthy results and findings (Yin, 2014; Merriam & Tisdell, 2016). The conscious effort to triangulate the data collected throughout the research process was integral to ensuring a strong chain of evidence to describe, illustrate, and enlighten the case study. **Figure 2** illustrates the multiple sources of evidence collected in this study. The following sections describe each level of the three-field analysis with the corresponding data sources.

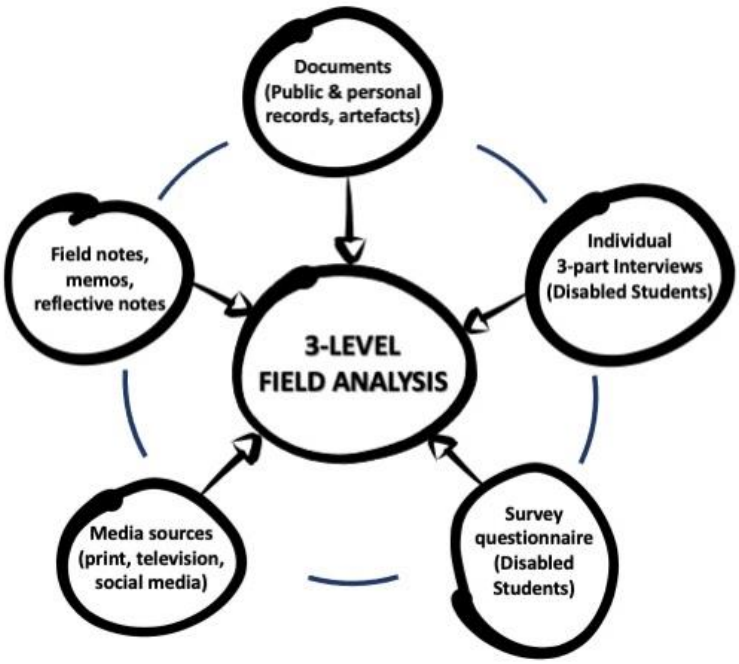

Figure 3: *Convergence of multiple sources of evidence*

3.4.2.1 Level 1: Analyse the position of the field vis-à-vis the field of power

This part of the study started with examining and scrutinising documentary sources from media, government, and professional and regulatory bodies as well as through official statistics and archival records in the field of higher education, disability, and technology in relation to the broader social context of the historical, political, and socio-economic field, i.e., the macro level. This progressed to a more focused and specific documentary analysis of the sub-field or the research case study site, Faith University (pseudonym), i.e., the meso level. The documents and records included policies, strategies, regulations, and other representations of the dominant voices found within faculties, schools, and various departments of the university. Documentary evidence is central in case studies "to corroborate and augment evidence from other sources" (Yin, 2009, p. 103). For this study, examination of these documents provided insights and contextual understandings of the particular culture, values, beliefs, and assumptions that existed (i.e., the doxa) and were embedded (i.e., symbolic violence) within the social space of the sub-field (i.e., Malaysia, Faith University) under study (Simon, 2010). The primary documentary sources that were collected to examine the macro and meso levels of the field in this study included:

- Macro level: Official published national and international documents, archival records, and policies and regulations related to higher education, disability, and digital technology/accessibility.
- Meso level: Official published documents and records on disability, accessibility, and technology-related policies within the institution (i.e., Faith University), as well

as related departments and centres via the university website, the university handbook, university brochures, and the vision and mission of the university, etc.

A contextual understanding of the related fields, both the sub-field of the case university (meso field) and the broader social-political context (macro field), provided a central backdrop to enabling a relational analysis of the online questionnaire survey and interview data collected for Level 2 and Level 3 of the field analysis, i.e., the micro level practices of the individual agents (i.e., the participants' habitus, positions, and trajectories) in the case university.

3.4.2.2 Level 2: Map out the objective structure of relations between the positions occupied by agents

Following the documentary analysis of the macro and meso fields in Level 1, forms of capital, specifically digital capital, that were seen as profitable and valuable within the field were further examined, linking Level 1 to Level 2. Here, the digital capital – i.e., digital access (physical and material access to digital devices) and digital skills (competencies and attitudes in using technology) – owned by the disabled students within the case university were considered. An online survey questionnaire was used to capture detailed information in relation to the digital capital possessed by disabled students in Faith University.

While acknowledging economic capital as the obvious mediating factor in individuals' access and use of technology, Selwyn (2004) suggested that the ability of individuals to engage with and make meaningful use of technology, and its outcomes and consequences, entails cultural and social capital. In other words, having specific technological forms of cultural and social capital differentiates between one who merely has access to or ownership of technology, and one who benefits from their meaningful engagement with technology. Selwyn (2004, p. 353) cites Bourdieu's explanation of the effect of cultural capital possessed by individuals:

> *To possess the machines, he [sic] only needs economic capital; to appropriate them and use them in accordance with their specific purpose, he must have access to embodied cultural capital; either in person or in proxy (Bourdieu, 1997, p. 50).*

In adopting Bourdieu's concept of different forms of capital, Selwyn (2004) identified the effect of different forms of capital on the ability of individuals (or groups of individuals) to make meaningful use of technologies. Seeing that the 'use of accessibility' lens of analysis only provided a limited or partial understanding of technology use, Seale and colleagues (2013, 2015) further developed Selwyn's (2004) framework to explore the complex inter-relationship between disabled students, technology, and their universities, particularly on the digital capital of disabled students (see **Table 2**). Beyond access, there was strong evidence to suggest that the influencing factors that determined beneficial and meaningful use of technology among disabled students in higher education would be complex, multiple, and diverse. This study adopted Seale et al.'s (2015, p. 120) online questionnaire survey which was designed to target information on digital capital. The

online survey instrument consisted of 41 closed questions, many with the option of free-text responses to capture the digital capital of the disabled students in the case university.

Table 2: *A framework for examining digital capital in higher education*

Categories		Examples
Digital cultural capital	Technological know-how	Using a range of technologies to support learning Developing strategies for using generic and specialist technologies to enhance learning efficiency Being aware of the pros and cons of using technologies Being confident in using technology to support learning
	Informally investing time in self-improvement of technology skills and competencies	Learning through trial and error Self-taught by consulting manuals, help pages
	Formally investing time in improvement of technology skills and competencies	Accredited ICT qualifications gained prior to entering higher education: e.g. GCSE or A levels, National Vocational Qualifications Training received through higher education or in employment: e.g., DSA-funded assistive technology training sessions
	Influence of family and institution attended prior to higher education in offering early and sustained access and encouragement to use technology	Family positively encourages technology possession and use Family members are confident and knowledgeable about technologies School or college ensures access to, and provision of, technologies to support learning
Digital social capital	Networks of face-to-face technological contacts	Friends on the same course Friends who live nearby (e.g., same hall of residence) Disabled friends Course tutors University support staff (e.g., librarians)
	Networks online 'technological contacts'	Use of social media (e.g., Facebook) Use of specialised online forums Use of company websites and help pages Use of email

3.4.2.3 Level 3: Analyse the habitus of agents; the systems of dispositions they have acquired by internalising a deterministic type of social and economic condition

Details about habitus, dispositions, trajectories, and experiences were obtained through individual semi-structured interviews with disabled students in Faith University. In-depth interviews enabled opportunities "to find out what is in and on someone else's mind" as well as "enter[ing] into the other person's perspective" (Patton, 2002, p. 341). The main purpose of the interviews was to gain

knowledge about peoples' experiences and behaviours as well as their perceptions of the world they live in (Kvale, 1996). Simons (2010) suggested that in-depth interviews allowed for active engagement and flexibility to adjust and shift the focus to emerging issues as well as digging deeper into certain issues, responses, or topics during the interview. In addition, the interviews were found to be useful for uncovering socio-cultural nuances, and unique and complex experiences such as the relationship between disabled students and their uses of technology.

This study adopted the method of in-depth phenomenological interviewing proposed by Seidman (2006). The structure underlying the method consisted of three sets of separate interviews with each participant. With a combination of life-history interviewing and in-depth focused interviewing, the three sets of interviews with each participant lowered the risk of relying on single interviews, especially when exploring and understanding the meaning of people's behaviours and lived experiences (Seidman, 2006; Patton, 2015). For this study, three semi-structured interview schedules (see sample in Appendix 1: Research Materials) were designed to facilitate the three interviews. The interview schedules were derived from the research questions and Bourdieu's framework covering introductory questions, the core interview questions, and closing comments. The core interview questions followed Seidman's three interview series. These three sets of interview questions, and their sub-questions, covered Bourdieu's conceptual tools of *habitus, field*, and *capital*. Additionally, each of the three sets of interviews matched the three stages of the digital divide, as follows:

Interview One (life history/habitus/disposition). The first interview concentrated on the life histories of the disabled students, which included questions about their personal biographies and experiences in school and university from their elementary years to the present. The interview questions were framed to tease out the participants' habitus, or what Bourdieu called 'dispositions', in using technology such as their family upbringing, their past educational and digital experiences, and their perceptions, appreciations, practices, and tendencies towards technology. How did the participant come to have a relationship with technology? What was the participant's past experiences with technology before coming to the university?

Interview Two (contemporary experience/capital/social-space/field). The second interview was conducted around the photo documentaries that the disabled students had produced prior to the first interview. During this second interview, the images they brought in allowed them to elaborate upon the meanings of their images, providing insights into their current access and use of technology in the university. This process of including photos to support the interview session is known as photo elicitation. Participant photography (Clover, 2006; Daniels, 2003) is a visual method in which research participants are encouraged to visually document their social landscapes through photography (or images), and reflect on their photos to produce personal narratives. This technique can be particularly empowering for human populations whose voices have been

historically marginalised (Singhal & Rattine-Flaherty, 2006; Wang, 2003). For blind participants, voice-recorded or text narrative accounts provided an alternative method to recorded images. This second interview particularly sought to draw out narratives on the participants' position in the university in terms of their digital capital. Questions concerning the current social space or field (i.e., the university) the participants were situated within were also sought, particularly in relation to digital capital, and the structural support that the participants currently have access to. The focus of this interview was on how disabled students accessed and used their current digital resources, including their digital skills, to participate in their learning and academic activities, providing information on the first and second levels of digital access. What is it like for the participant to use technology in the university? What are the forms of digital capital that the participant currently has access to, and use of, in the university?

Interview Three (reflection on meaning/practice). The third interview asked the participants to reflect on the meaning of their experiences as disabled students, their views and perceptions on using technology to support their learning and their wider participation within the university. This interview provided data to further examine how the disabled students' habitus interacted with their digital capital in a way that affected the uptake of technology in the university. Here, the concept of *verstehen* was particularly pertinent where extra care was taken to seek out the disabled participants' unique experiences and perspectives in relation to their use of technology, including the impact on tangible outcomes, benefits, and opportunities. Given what the participants had shared in interviews one and two, how did he or she make sense of his or her relationship with technology in the university? What did it mean to the participant to have access to, and use of, technology in the university? Additionally, interview three focused on the circumstances in which the students were able to participate in meaningful use of technology, i.e., converting their digital capital to positive outcomes and opportunities to participate in the university. Specifically, digital capital as a bridging capital was addressed, exploring the third level of the digital divide.

The flow of the interview protocol was as follows: 1) Seeking consent and explaining the objective of the interview; 2) Participant profiling; 3) First interview; 4) Documentation (images, audio, or text) of current technology use; 5) Second Interview; and 6) Third Interview. For this study, while consent was sought during all of the interviews, consent forms and information sheets were also sent to the participants several days before the first interview was conducted. This allowed them ample time to read through the consent form and information sheet in private. This approach provided them with the space to reflect upon and rethink if they still wanted to take part in the interviews. Any queries regarding the research were also able to be answered before the interview process started. For Blind participants, it also gave them a sense of autonomy in filling out the digital consent form themselves, and sending the digital copy through to the researcher by email. The participants were assured of anonymity, and consent was asked for again before each interview was recorded using a digital voice recorder. Each interview lasted no more than 90

minutes. The timeframe included the participant profiling session for the first interview, and answering any questions related to the research. The body of the main interview lasted for approximately 60 minutes.

At the start of the first interview, the researcher ran through the Learner's Profile form (see sample in Appendix 1: Research Materials) with the participants. These asked questions seeking standard demographic information as well as the participants' general use of technology and background information on the nature of their disability. It is noted that a deeper understanding of the participants' impairment from their own perspectives was crucial to further understanding their access to, and use of, technology. It was also crucial for the participants to go beyond mere description of their past experiences. Participants were invited to share instances, both on technology and dealing with disability issues that particularly stood out for them.

During the interviews, other forms of non-verbal communication were also noted. Observations were considered as an important 'companion method' to the interviews (Simons, 2010). The moment I entered the field, the informal observations started. All observations, be it the participants' body language, facial expressions, intonations, or small gestures were noted. These were of great value for interpreting the meaning of the data in the latter part of the research process. Immediately, or soon after, the observations had been undertaken, field notes were written up linking to the earlier interview recordings. Field notes were made up of written accounts of the observations. A detailed account of other thoughts including fears, confusion, mistakes, reactions, issues, feelings, insights, and information were also noted before, during, and after each interview. Field notes are equivalent to interview transcripts (Merriam, 2009), making them central to any observations (Bogdan & Biklen, 2007). They served as a valuable form of data in this research study. The more complete the written accounts, the easier it was to analyse the data. Merriam (2009, p. 129) suggested that it is best practice and crucial that "full notes in narrative format be written, typed, or dictated as soon after the observation as possible". Field notes in a narrative style were incorporated to record as much detailed information as possible. Notes were completed before the next day, so that vital insights, impressions, and pertinent thoughts would not be forgotten or left out. Salient direct quotations, detailed descriptions, and unusual encounters were also given extra focus.

3.4.2.4 Summary

In essence, the three-level field analysis provided a systematic and relational framework to understand the complex inter-relationships between the objective and dominant structures (e.g., culture, values, and assumptions) of the case university (Faith University), and the lived experiences (e.g., habitus, beliefs, background, trajectories) of the disabled students in their use of digital technology to support their participation in the university. The corresponding data collection procedures in this study are summarised against this three-level field analysis in **Table 3**.

Table 3: *Three-level field analysis with corresponding data collection procedures*

Three levels of field analysis	***Types of data***	***Methods***
Analyse the position of the *field* within fields, *vis-à-vis* the field of power	Official documents and policies from government, professional and regulatory bodies, universities, etc.	Examination and review of various documents on the role and use of technology in higher education to locate the increasingly networked and digitalised higher education field in relation to the field of power, support of technology use from the university, etc.
Map out the objective structure of relations between positions occupied by agents in the field	Descriptive data through an online survey questionnaire	Survey questionnaire to identify the different forms of digital capital (Selwyn, 2004) among disabled students in the case university
	Qualitative data through one-on-one interviews – 3 sets of interviews	3 sets of one-on-one in-depth semi-structured interviews with 5 individual disabled students to understand their current access to, and use of, technology in relation to the field
	Field notes	
Analyse the habitus of agents; the systems of dispositions they have acquired from a particular life context, past and present, in relation to the field	Qualitative data through one-on-one interviews – 3 sets of interviews	3 sets of one-on-one in-depth semi-structured interviews with 5 individual disabled students to understand their individual experiences, background, trajectory and positioning in using technology, past and present, in relation to the field
	Field notes	Informal conversations – online and offline

3.4.3 Stage Three: Participant objectivation

While the stage of the construction of the research object focused on reflecting on the preconceptions of the constructs of the field, participant objectivation focuses on the reflexivity of the researcher. This is where the researcher critically reflects and applies the same method of analysis to themselves as to their research participants. In other words, the researcher was to analyse and reflect on their own research field using the same conceptual tools of habitus, field, and capital. Central to a Bourdieusian methodology, reflexivity allowed me to critically examine and openly acknowledge my own research and academic field, its pervading culture, values, and assumptions, and how my own habitus and access to capital might influence the whole research

process undertaken. From a wider perspective of doing a transformative study, reflexivity allowed me to be conscious of the power relations that exist between the researcher and the "researched", and between non-disabled and disabled people, at each phase of the research process. This is especially important given that some past disability research has been deemed to be oppressive (Finkelstein, 1980; Morris, 1992; Rioux & Bach, 1994), while "reinforcing existing prejudices and discrimination against disabled people" (Barnes & Mercer, 2006, p. 53).

I aimed to redress past oppressive approaches in research by consciously reflecting upon, and acknowledging, the unequal power relations that exist in the research relationship while adopting accessible and inclusive practices throughout the research process. In keeping with Bourdieu's socio-political stance, I recognised my privileged position as a researcher, particularly in interpreting and reporting the stories of the disabled students in this study. Was I projecting my own conceptions of disability into my understanding of the stories shared by the disabled students? Was I interpreting the stories told by the disabled students from a non-disabled person's perspective? From the standpoint of a phenomenological interpretive tradition, reflexivity strengthens the trustworthiness of the study, particularly in the interpretation of the qualitative interview data. Methodologically, from the perspective of doing a case study approach, reflexivity was also crucial to increase the credibility of the interpretation of the data and the findings of this study. Choosing a Bourdieusian study meant it was obligatory that I should reflect on my own objective position within the intellectual and academic field I am in – particularly my position as a PhD researcher as well as my former professional work as an academic in the university (e.g., social positioning, internalised structures) in relation to the study undertaken. This will be sign-posted and discussed as reflective commentaries in various parts of this thesis.

3.5 Piloting the survey questionnaire and interviews

In social science research, pilot studies are conducted either to determine the feasibility of a study through a small-scale version of the main study being carried out (Polit, Beck, & Hungler, 2001), or as a specific pre-testing of a particular research instrument (Baker, 1994). Teijlingen and Hundley (2001, p. 1) stressed the importance of undertaking a pilot study, citing "that it might give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated". Pilot studies are also conducted for a range of different reasons. In this study, pilot studies were carried out specifically to: 1) assess whether the research protocol was realistic and workable; 2) assess the research methods including the research instruments; 3) pre-empt obstacles and challenges that might occur during data collection; and 4) train the researcher in as many elements of the research process as possible.

3.5.1 Survey questionnaire

As the questionnaire survey was mainly undertaken to collect descriptive data from the participants, only content validity was sought with particular focus on context and cultural content through validation from three experts – one from the disability field, one from the educational technology field, and one from the general education and language field. The experts were asked to evaluate items on the survey based on relevance, clarity, simplicity, and ambiguity. These criteria were derived based on the Content Validity Index (CVI) (Waltz & Bausell, 1981; Lynn, 1986, Yaghmale, 2003). Following this, face validity and accessibility were sought where five respondents assessed the survey questionnaire in terms of "clarity of the wording, the likelihood the target audience would be able to answer the questions, the layout and style" (Parsian & Dunning, 2009). Most importantly, the accessibility of the online survey, particularly for participants who were blind/ partially-sighted, and/or using voice-over software were sought. The pilot respondents for the survey included a blind/deaf student, a partially-sighted student, two Deaf students, and one student with mild Cerebral Palsy. All these students had experiences of studying within higher education. Feedback and comments were taken on board, and changes were made accordingly.

3.5.2 Interviews

A total of three participants participated in the pilot interviews. One participant was partially-sighted and another was blind. One other participant had mobility difficulties. With the first pilot participant, a total of two Skype interviews, a couple of informal follow-ups through Skype and Facebook chats, and one face-to-face final formal follow-up interview were conducted. Both the second and third participants started with one face-to-face interview, followed by the second interview through Skype. For both these participants, the third interview was conducted on the same day after the second interview. Informal conversations between the interviews through Skype and Facebook chats were also carried out. These repeat interviews were semi-structured and conversational, and provided opportunities for prolonged engagement. In this study, the pilot interviews were carried out with the following objectives in mind:

Objective 1 – Assess the suitability of the interview protocol in generating rich data that was relevant to the study's research questions, and particularly, the theoretical constructs in Bourdieu's framework

Objective 2 – Provide training for the researcher on interviewing skills and identifying areas for improvement

3.5.2.1 Objective 1

The first objective for undertaking pilot work for this study was to assess the suitability of the interview protocol, which included the three sets of one-on-one interviews, and photo elicitation. The flow of the interview protocol was as follows: 1) Seeking consent and explaining the objective

of the interview; 2) Participant profiling; 3) First interview; 4) Documentation of current technology use; 5) Second Interview; and 6) Third Interview. The structure of the interviews followed a three interview series (Seidman, 2006) where repeat interviews were undertaken compared to the typical one-off interviews in qualitative inquiries. Just before the start of the first interview, a standard participant profiling was conducted using a Learner's Profile Form. After the first interview, the participants were asked to reflect on, and record, their current usage of technology through photos, audio narration, or written text. These documentations were used as leads for the second interview. This was followed by the third and final interview. Seidman (2006) suggested that the spacing between the interviews should be within three to seven days.

3.5.2.1.1 Seeking consent and participant profiling

Typically, consent is sought just before the interview starts. For this study, consent forms and information sheets were also sent to the participants several days before the first interview was conducted. This proactive approach was carried forward to the main study.

Before the first interview, I ran through the Learner's Profile form with the participants. From the pilot study, I found that it was simply not enough to have superficial information on the nature of their disabilities. Rather than being overly concerned with being insensitive in discussing the participants' disabilities, it was crucial to go beyond mere description of their disabilities. Therefore, in the main study interviews, I made a conscious point of inviting the participants to share more on the nature of their disabilities in their own words.

3.5.2.1.2 The interview structure: Seidman's three interview series

Repeat Interviews. The structure of in-depth phenomenological interviewing proposed by Seidman (2006) consisted of three sets of separate interviews with each participant. As revealed in this pilot study, compared to one-off interviews, the repeat interviews allowed the participants to meaningfully engage in the interview process. Initial communication before the actual interviews was found to be foundational for preparing the interview relationship. For example, the participant information sheet and the consent forms were sent to participants prior to the first interview. This allowed the participants to have some time to read through the relevant information about the research study as well as the task involved. This approach also provided the participant enough information and space to mull over and reconfirm their decision to participate in the interview. In addition, the conversations that took place in the setting up of appropriate times and venues for the interviews provided an avenue to build rapport and connection before the actual interview took place. Crucially, the subsequent repeat interviews allowed for establishing a substantial relationship with the participant over time.

During the pilot interviews, the participants were all visibly more participative, engaged, and relaxed during the second interview compared to their first interview. There were also Skype and Facebook chats initiated both by the participants and myself between each interview as well as

after the full set of three interviews which allowed for prolonged engagement. For example, these informal conversations revolved around what was discussed in the interviews, visual images of technology use were sent through with some commentary as well as suggestions for best dates and times for their next interview. These prolonged engagements through the repeat interviews and informal conversations provided opportunities for more meaningful participation. Time off between the interviews also provided opportunities for the participants to reflect more deeply on their own experiences and feelings. This was important in my study as the focus was to illuminate and bring to the fore the individual voices of the disabled students' experiences beyond the disability labels that had been given to them.

Interview Structure. The timeframe with a spacing of three to seven days (Seidman, 2006), it seemed, would allow the participants the time to think over their previous interview and would also reduce the possibility of being weighed down by unexpected events such as getting sick or having a terrible day. However, Seidman (2006) stressed that as long as the structure was maintained, alterations to the duration and the spacing of the interviews could be explored. In other words, while the structure was to be respected and maintained, the duration and spacing between the interviews was flexible. Unanticipated complications were bound to happen with interview participants, therefore alterations would be needed on certain occasions. In reviewing the pilot interviews, due to time constraints and the availability of the participants, interviews two and three were conducted in the same session for all participants. The pilot interviews also revealed that the third interview generated far less data compared to the first and second. Possible reasons for this could be due to fatigue from both the participants and the researcher due to combining the last two interviews into one session. Although reasonable data were obtained, upon reflection, it would have been sensible to stick to the proposed spacing of three to seven days apart between each interview for future interviews as much as possible. Hence, I ensured that all three interviews followed Seidman's recommendations on the structure of, and the spacing between, the interviews.

Interview Questions. The study used phenomenological interviews as the primary source of data and information. The interview questions were broad but focused, allowing the participants to freely narrate their experiences and stories. The repeat interviews with the pilot participants yielded rich and nuanced data. The three sets of interview questions and their sub-questions were derived from Bourdieu's framework – the interlocking nature of habitus, field, and capital. I adapted the three interview structure for each interview to generate data on the participants' habitus, capital, and field: Interview One (life history/habitus/disposition); Interview Two (contemporary experience/capital/social-space/field); and Interview Three (reflections on meaning/practice).

From the pilot interviews, it became evident that it was important to adhere to the three interview structure. The series of three interviews were designed so that each interview had a distinct purpose and focus in itself and within the series. The interviewer needed to strike a delicate

balance between “providing enough openness for the participants to tell their stories and enough focus to allow the interview structure to work” (Seidman, 2006, p. 13). There were instances that could have been more consistent with the focus of each interview in the series; for example, there was one instance where the pilot participant went on to tell an interesting story that was not the particular focus of that interview. He went on to share his current experiences in the first interview, even though that was the focus of the second interview. As a result, even though the story told was interesting, the conversation went off tangent for quite a while before I could steer it back to the original focus and intent of the first interview. As Seidman (2006) cautioned, the details of each interview acts as a foundation to illuminate the following interview. To deviate from the structure would disrupt the logic of the interviews, hence not being able to fully benefit from the power of that logic. The interview guide and interview questions were then checked and modified to ensure that they adhered to the three interview structure.

Feedback from the pilot participants on the clarity of the interview questions was positive. The pilot participants could understand the interview questions with ease and stated that they were clear about what was being asked. Considering that the first language of all the pilot participants was not English, this feedback was crucial. The first pilot participant also mentioned that he was comfortable with the duration of the interviews, and was accepting of the repeat interviews that took place.

Participant Photo Elicitation. At the end of the first interview, the participants were invited to visually capture the salient moments or events associated with their interactions with technology for a one-week period after the formal interview in the form of photographs. For the participants who were blind, an alternative approach to documentation was suggested. The participant could either record audio on their experiences or digitally document their experiences in text format. This approach enabled the collection of valuable data which would be otherwise difficult or impossible for the researcher to collect in person. This approach also allowed the participants to reflect on their own interactions with technology after the first interview. The participants’ photos, audio, or written text were used as tools for more focused and in-depth discussion during the following interviews. However, the pilot participants only sent through their images with captions via Skype chats after the second and third interviews. From here, I anticipated that I would need to remind the main participants after the first interview and before the second interview.

3.5.2.2 Objective 2:

The pilot study enabled me to assess a number of practical issues including preparing and training of novice researchers in their interview and observation skills and techniques. The study provided an avenue for training of interviewing skills and identifying areas for improvement for the main study’s future interviews. From the pilot interviews, there were a few points of note of in terms of what to do and what not to do in the main interviews. In summary, these included: 1) Be patient

with pauses and silences, 2) follow-up and prompt for further information, 3) do not follow the interview guide too rigidly, 4) avoid leading questions, and 5) always ask open-ended questions.

While I do not have sufficient space here to discuss this very important reflexive part of the research process, I wanted to stress that significant attention was taken for the interviews – both before, during, and after the interview period. Phenomenological interviewing is said to differ from other types of interviews as the singular focus is on obtaining lived experience descriptions. Adams and van Manen (2017) cautioned to avoid "confus[ing] experiential descriptions with opinions, explanations, interpretations, and personal views or 'feelings' about certain experiences" (p. 786). I have attached a sample of my reflective thoughts on this process in greater detail as an appendix: *Reflections on research process: interviewing*.

3.6 Ethical considerations

The ethical framework for this study was developed through both its ontological focus and adherence to the National Statement on Ethical Conduct in Human Research (2018) guidelines as stipulated by the university's research code of conduct. Ethics approval was formally sought from the university through the Human Research Ethics Committee before any data was collected (approval code: HREC CIA2404-1). For this study, there were four primary ethical issues addressed: gaining access to participants, protecting their privacy and confidentiality, protecting them from harm, and compensating their time through payment-in-kind.

3.6.1 Gaining access to participants

After formal ethics approval was obtained from the university's ethics committee, recruitment of research participants was carried out through mass emails to students and invitation posters around the campus. The initial plan, as approved by the ethics committee, was firstly to gain access to disabled students across the university through the university's wellbeing and learning support centre which covers counselling, mental health, disability, and learning support services for students and staff. However, the Director of the centre said that due to the strict policy rules of the student support services within the university regarding confidentiality and data protection, this approach to recruitment of participants was not possible. In response, I resorted to the second approved alternative approach of sending out mass emails to the university's student population.

Potential participants who fit the study criteria, i.e., participants who were enrolled in the university and identified themselves as disabled were invited to take part in the study. A mass email invitation was initially sent out to all undergraduate and postgraduate students to participate in the online survey questionnaire. Alternative formats such as a paper-based survey, a Braille version, or having someone read the survey in person were made available should the participant request it. However, no one requested the alternative formats for this study. At the end of the online survey, participants who were open to follow-up individual interviews were asked to leave their contact

details. Subsequently, another mass email invitation was sent out to all students to participate in the individual interviews. Additionally, invitation posters were placed around the campus to invite those who met the above criteria to participate.

In retrospect, the advantages of sending a mass email to all students and placing invitation posters around the campus allowed students who were willing and interested to respond to the request for participation voluntarily. With this approach, students contacted through the mass email remained anonymous to the researcher unless they responded to the request for participation. Additionally, this blanket recruitment approach provided students the autonomy to delete the invitation email or ignore the posters without any obligation to participate in the study. The potential disadvantage of going through a gate-keeper such as the university's student support services would be that the prior relationship the potential participants had with the student support services, both negative or positive experiences, might influence their participation in this study. Additionally, if individual emails were sent out via the main gate-keeper's email lists, students might participate because they felt obliged to do so because of their affiliation with the university's student support services. Hence, if this approach had been taken, the ethical aspects of voluntary participation in this study without coercion may have been compromised.

3.6.2 Protecting privacy and confidentiality

Participation was voluntary with informed consent being sought prior to the start of the first interview through the signing of a consent form which came with an information sheet. The consent form confirmed and guaranteed the participants' right to privacy, full anonymity, and confidentiality of their personal information and data collected during the interviews. The right of the participants to withdraw at any point of the interview was acknowledged and confirmed at the beginning of all three interviews. To ensure that the research participants fully understood the concept of informed consent, the consent form was read out to them in person at the start of all the interviews with their understanding being checked. Extra time was also given for the participants to ask any further questions or clarify any concerns before they were asked to sign the consent form. The information sheet contained relevant information on the research project including the contacts of the researcher, the supervisors, and the university's ethics committee, should the participant need further clarification. They were also made aware that all data collected with identification were treated confidentially and kept in a secure place, i.e., a password-protected computer. In the reporting and interpretation of the data, anonymity was managed through pseudonyms for both the participants and their affiliated university to maintain their privacy and anonymise their identity.

3.6.3 Protecting the participants from harm

Although it was anticipated that this study might pose minimal risk in terms of physical harm, there was the possibility that the participants might go through some psychological and emotional distress while recounting their experiences during the interviews. Should this happen during the

interviews, the participants were informed at the start of each interview that they could access the support services provided by the university, such as individual counselling and therapy, should they feel the need. From the initial interaction of the interviews, it was evident that all the participants had knowledge of the counselling support services on offer. None of the participants displayed any distress during the interviews that needed professional intervention.

3.6.4 Compensating participants' time

Research participants who participated in the individual interviews were compensated with an RM50 book voucher as payment-in-kind for the interviews. There are concerns that payment-in-kind might induce the participants to only give positive views during the interviews. These concerns were addressed by reminding the participants that both positive, negative, and neutral experiences were being sought. The participants were also informed during the interviews that it was their personal and nuanced experiences with technology that this study was focusing on. Additionally, the assurance of full anonymity also provided a safe space for the participants to reveal their negative experiences, if any. In addition, it was considered reasonable to compensate the participants who volunteered their time and effort to contribute to the study through the interviews, bearing in mind that most of these students had to spend considerable time coping with their academic studies on top of dealing with their ongoing impairment effects.

3.7 Establishing quality, trustworthiness and rigour

Consistent with analytical approaches to establishing quality, trustworthiness, and rigour in qualitative research, this study took a systematic approach to these issues. In this section, strategies to strengthen the credibility, transferability, dependability, and confirmability (Lincoln, 2009) of the study are discussed.

3.7.1 Credibility

Firstly, the credibility of this qualitative case study was strengthened by comparing and cross-checking the gathered information using multiple methods and various sources of data. This convergence of multiple sources of data is known as triangulation, and this strategy increases research quality (Yin, 2014; Merriam & Tisdell, 2016). Second, prolonged and persistent engagement in the field also helped to increase the credibility of the study (Lincoln, 2009). Mertens (2015) reported that multiple in-depth interviews increase the accuracy of research findings. Rather than one-off interviews, I conducted a series of three in-depth interviews (Seidman, 2006) with each participant. These repeat interviews allowed me adequate time to build rapport and engage meaningfully with my participants. Spending sufficient time with the disabled participants was crucial to developing trust in our relationships. Open communication throughout the research process and after the interviews also provided opportunities to share and reflect on what was talked about during the interviews. For example, I was connected to all of the disabled participants

via social media, and informal conversations were ongoing even after the interviews. The third strategy taken was during the composition or writing phase where the draft case reports were reviewed by key participants to comment on, and confirm, the findings. This process is known as member checking or respondent validation. It offered the participants the opportunity to refute or clarify the interpretations made about them. This strategy decreased the possibility of misinterpreting what the participants had said, hence minimising the potential misreporting of the findings and results. The fourth important strategy taken in this study to ensure credibility was in relation to personal reflexivity. Reflexivity played a crucial role throughout the research process. Central to a Bourdieusian study, reflexivity allowed me to critically examine my own personal, research, and academic field with its pervading culture, values, assumptions, and biases. More importantly, in articulating and acknowledging my perspectives explicitly, including my assumptions and biases, the reader of this thesis will be in a better position to understand how I arrived at my particular interpretations of the data, and how they influenced the findings and conclusions of the study.

3.7.2 Transferability

Firstly, it was suggested that the use of theory strengthens the transferability of a case study (Yin, 2014). This qualitative case study used Bourdieu's theoretical framework to strive for transferability. This included the research design phase particularly in the shaping of the 'how' and 'why' research questions. Bourdieu's conceptual tools of *habitus, field*, and *capital* were operationalised in the data collection and analysis phases by deploying the three field analysis. The second strategy employed to enable greater possibilities of transferability was to develop rich, thick description of all the participants in their particular contexts and histories. This strategy included a highly detailed description of the participants supported by adequate evidence from their quotes, and the field notes and documents. Denzin (2001, p. 116) highlighted how thick description "connects self-stories and personal histories to specific interactional experiences". Additionally, Bourdieu's three-field analysis enabled thick interpretation of the disabled students' nuanced experiences in relation to their historical and contextual environment. The strategies mentioned above will enable more readers to apply my findings to their own context or situations.

3.7.3 Dependability and confirmability

The dependability of this qualitative case study was addressed firstly through a well-constructed case study protocol (Yin, 2014). The case study protocol included detailed information of each step in the research process. Secondly, a case study database was developed to systematically organise and document the extensive data collected. This database is not the case study report, but instead, consists of separate databases of the collected data evidence, including documents and other materials collected from the field, i.e., the raw data. Merriam and Tisdell (2016) additionally suggested that triangulation, peer examination, reflexivity, and an audit trail as strategies to ensure dependability and confirmability of qualitative research. These three strategies

were similarly used to strengthen the credibility of this study. Having an audit trail – a chain of evidence (Yin, 2014) – was imperative with detailed accounts of how the data were collected, including a database of original sources through which the qualitative data could be tracked or traced. This audit trail went right through to the analysis process, the findings and the interpretation of the findings, and the final report. Mertens (2015) also suggested that the logic used to interpret the data be explicitly stated. For my study, this detailed account was predominantly reported in the methodology chapter as well as sign-posted throughout the entire thesis to allow the reader to understand why and how decisions were made throughout the research process.

3.8 Data analysis framework

This study collected multiple sources of evidence which were analysed combining three different data analysis approaches. **Figure 4** illustrates the data collection and analysis framework for the study – multiple sources of data evidence corresponding to the specific data analysis approaches mapped to Bourdieu's three-level field analysis. The analytical approaches used in this study were Foucauldian discourse analysis (FDA) of documentary and media sources, the voice-centred relational (VCR) method of analysis of interview data, and a descriptive analysis of the survey questionnaire data. Collectively, these multiple perspectives allowed for a critical interpretation of the disabled university students' narratives from a range of differing vantage points.

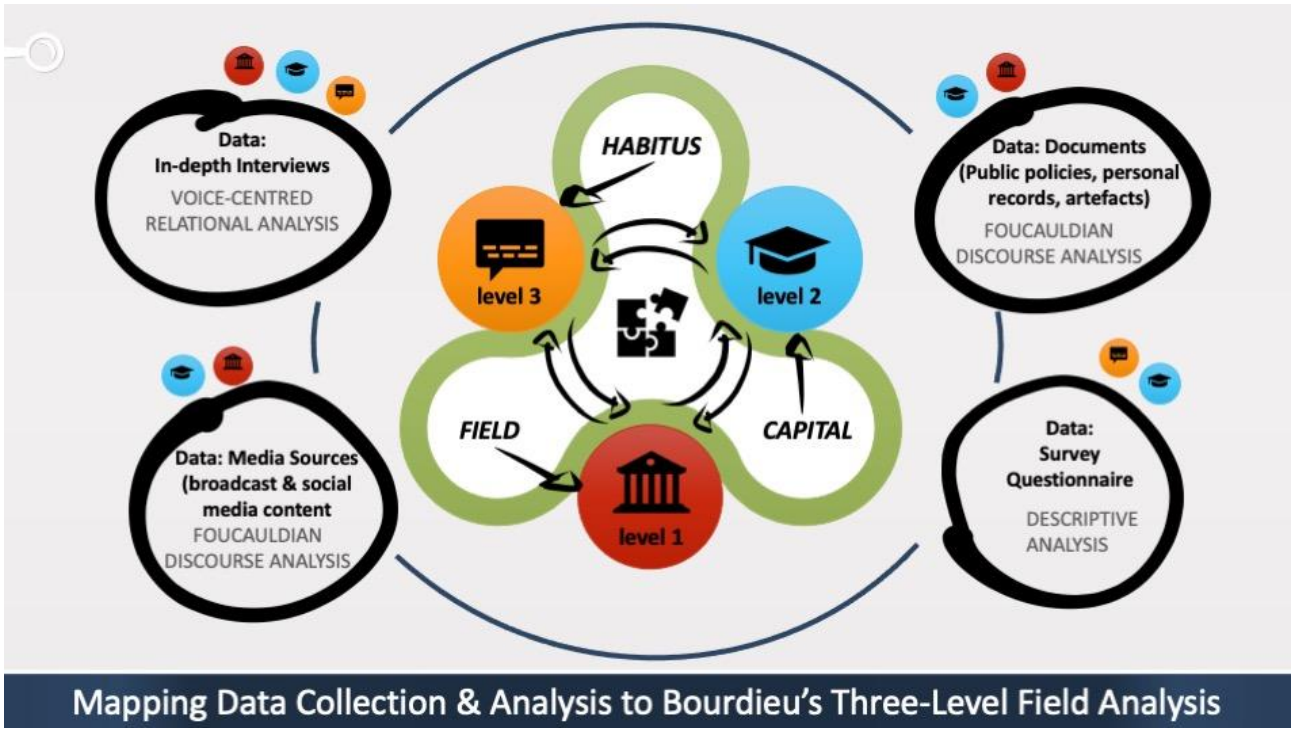

Figure 4: *Data collection and analysis framework*

3.8.1 Non-use of computer analysis process

As I began to analyse my interview data, it became clear to me that I would not be using computer-assisted analysis. While it is typical for most research analysis these days to use computer software, I was concerned that this process would miss many important nuances and cultural details. This is especially the case within a multi-socio-cultural context in which words and texts have different and multiple meanings attached to them. In my analysis, I was not only looking for keywords or merely locating themes. As Willig (2013, p. 385) cautioned: "The fact that a text does not contain a direct reference to a discursive object can tell us a lot about the way in which the object is constructed." The search for both the implicit and explicit interactions in my analysis was "guided by shared meaning rather than lexical comparability" (Willig, 2013, p. 385). Not using computer-assisted analysis also prevented me from the danger of reducing the data to mere computer coding and themes. This is because the main focus of the analysis, particularly the interview data, was to seek out multiplicity and complexity rather than flattening the data.

One of the advantages of using specific qualitative computer software is to support researchers to make sense of, and deal with, a large amount of data. However, for this study, due to the small number of participants, five in total, I was able to manage the data analysis using simple word processing software package, when needed. Although it was a laborious and intensive task, it was paramount for me to remain true to the principles of VCR analysis. This form of analysis, as elaborated upon below, required me to read the transcripts and listen to the audio-recordings at the same time on countless occasions. Each reading and listening was undertaken systematically using the *Listening Guide*. Using a pre-programmed computer-assisted analytical programme would have detached me from being attentive to the multiple voices that came through with each reading and listening. The process would have been too mechanical and disengaged to meet the needs of my study. Crucially, I needed to systematically go through multiple interpretive readings to understand the complex narratives of the participants. Using software would have meant that I would have lost the nuances and unspoken silences.

While I did not use such software for my analysis, the audio recordings of the interview data were transcribed and digitised in Microsoft Word format. The analysis process started with listening to the recorded audio of the interviews several times before the verbatim transcription took place. It is common that the transcription process be given the least attention during the analysis process (Stake, 2000). However, in this study, the verbatim transcription activity was taken as a valuable entry point into the initial analysis, and a vital part of the process. Hence, the transcription was undertaken by myself rather than being out-sourced. Once fully transcribed in a digital format, the simple word or term search function was available when needed. Additionally, the trail of evidence for the interview data was through colour-coded visual indicators that were highlighted and tagged within the Microsoft Word document as I identified and located the multiple voices (see examples

in Appendix 2: Sample Data). The following section will discuss the analytical process involved in detail.

3.9 Analysing interview data: Voice-centred relational analysis – the *Listening Guide* method

The voice-centred relational (VCR) method, through the use of the *Listening Guide,* offers a systematic and relational way of working with and interpreting the disabled university students' personal voices and agency, and their experiences from multiple perspectives. The *Listening Guide* draws from a relational ontology where human beings are viewed as relational beings, imbedded in a complex web of intimate and larger social relations (Gilligan, 2015). It provides a way of exploring and linking the outer world to the inner psyche of the participants. This approach sits well with Bourdieu's relational framework which offers the linking of agency (behaviour/ practice) to social structures and vice-versa by working across and between 'subjectivist' and 'objectivist' accounts. The relational and reflexive nature of this method echoes that of Bourdieu's theory of practice. While the VCR method has been extensively used in feminist, gender, and adolescent studies (Brown & Gilligan, 1992; Doucet, 1995; Mauthner, 2002; Tolman, 2002; Levine, 2003; Moeller, 2012; Chu, 2014), the essence of this approach focuses on issues related to power, voice, and authority which also makes it a good fit for use in a transformative disability study.

After the interview data were fully transcribed, the transcripts were read and listened to at least four times, following the methodology of the *Listening Guide* (Gilligan, 2015). This method of analysis and interpretation allows for understanding 'individual narrative accounts in terms of their relationships to the people around them and their relationships to the broader social, structural, and cultural contexts within which they live" (Mauthner & Doucet, 1998, p. 126), at the same time, requiring active reflexivity on the part of the researcher. The *Listening Guide* method includes at least three readings and listenings. In this study, the concrete steps taken were:

1) listening for the plot and researcher's responses to the participants' narratives

2) I Poems – listening for the voice of 'I' – an attempt to hear the participants voice their sense of agency in relation to technology

3) listening for contrapuntal voices (two or more readings) – listening for relationships with technology (e.g., listening for individual, political, cultural, and structural forces that are enabling/disabling in the use of technology)

The transcripts were read while listening to the audio recordings in each step. This process was time-consuming but crucial for engaging deeply with the nuances of the data. Unlike other conventional methodologies where interviews are produced into text-based written reproduction of the interview conversations, I continued to listen to the voice of the participants while reading the

transcripts. This part of the research, therefore, was carried out multi-dimensionally, evoking reading of interview transcripts, listening to audio-recordings of the interviews, and recalling of emotions during the interview conversations. It is important to note that during the composition of the participants' biographies, this same multi-dimensional process of reading, listening, and reflecting was also implemented.

3.9.1 STEP 1: Listening for the plot

This step necessitated two components: listening for the plot and the researcher's responses to the participants' narratives. In the first component, I focused on critically examining the recurring images, words, metaphors, and contradictions in the narratives of the participants' relationships with technology. This initial step involved searching for each participant's story plot, mapping the psychological terrain and landscape of their individual interviews. From this context, I located their stories by paying attention to "repeated words, salient themes, striking metaphors or symbols, emotional hot-spots, gaps or ruptures" (Gilligan, 2015, p. 71), as well as "contradictions and absences, or what [was] not expressed" (Gilligan et al., 2013, p. 160) in each of the participant's stories. The outcomes for this first component were highly detailed participant biographies and story plots, as elaborated in Chapter 5.

This was followed by my own responses to the participants' stories, which was essentially an effort to avoid the possibility of using their voices to tell my story. Paying attention to personal reflexivity strengthened the credibility and trustworthiness of my findings and the implications of the study. This is the strength of the *Listening Guide* method. This second component of the first reading/listening demanded reflexivity on my part, where I located myself and explored my own feelings, thoughts, background, history, and experiences in relation to the interview data and the person I had interviewed. Here, the narrative text was read on my own terms where I listened to my own voice, to distinguish it from the voices of the research participants. Brown (1994, p. 392), one of the main authors of the *Listening Guide,* described this process:

> *the first listening or reading requires the listener/interpreter to consider her relationship to the speaker or text and to document, as best she can, her interests, biases and limitations that arise from such critical dimensions of social location as race, class, gender and sexual orientation, as well as to track her own feelings in response to what she hears - particularly those feelings that do not resonate with the speaker's experience.*

The issue of reflexivity was also vital in Bourdieu's framework. This process of what Bourdieu termed as participant objectivation is necessary where a genuine reflexive stance is required on the part of the researcher to objectify their own field position, and the dispositions and presuppositions that are inherent within that positioning (Grenfell, 2012). In this study, the process of reflexivity was operationalised following Mauthner and Doucet's (1998) term of being reflexive, which involves: 1) locating oneself socially in relation to the research participant; 2) attending to the

researcher's emotional responses to this particular participant; 3) examining how the researcher makes theoretical interpretations of the participant's narrative; and 4) documenting these processes for the researcher and others. By doing so, the role of the researcher's theoretical location and ideas in the data analysis processes of this study, and how these influenced the interpretations and conclusions reached, were given greater emphasis and made more explicit. The argument for this emphasis on reflexivity in the process of data analysis lies in the fact that the transformative methodological and epistemological stance that this study took were ones that acknowledged the complex nature of the research relationship, especially in terms of power, voice, and authority. In particular, the power relations between the researcher and the researched, that is, my position as a former academic lecturer (although not within the same university), middle-aged female, and non-disabled person, in contrast to disabled university students, needed to be brought to the fore in the research process. This is in line with Bourdieu's position on the logic of academic research practice, which is to empower individual agents in the field.

3.9.2 STEP 2: Generating "I poems"

This second listening consisted of tuning in to the first-person voice of the "I" that was speaking in each story – constructing what Debold (1990) called the "I Poems". Before I curated the complex subjectivities of the participants' technological experiences, the I Poems provided a preliminary evocative text to allow them to speak for themselves before I spoke to and wrote about them. This method of focusing on the use of the pronoun "I", the first-person voice, was a clear departure from other approaches in qualitative research. These I Poems were particularly valuable, especially since the disabled students were speaking within a strong ableist climate.

This step was a clear departure from other qualitative analysis approaches such as narrative analysis. Gilligan, Brown, and Rogers (1990, p. 103) described this step as:

> *This second reading, designed to attune one's ear to the voice of the person speaking, is key to a shift in stance with respect to analysing or interpreting the interview text, a shift marked by the change in language from coding, which implies fitting a person into pre-existing set of categories, to reading, which implies opening one's eyes and ears to the words of another, taking in his or her story. The exercise of directing my attention to the way the person speaks about herself is designed to highlight or amplify the terms in which she sees and presents herself … I listen to her voice and attend to her vision and thus make a space between her way of speaking and seeing and my own.*

The construction of the I Poems was relatively straightforward with two governing rules: 1) underlining or selecting every first-person "I" within the text along with the verb, and any seemingly important accompanying words, and 2) maintaining the sequence in which these phrases appeared in the text. Then, I pulled out the underlined "I" phrases, keeping them in the order they appeared in the text, and placed each phrase on a separate line, like lines in a poem. These "I"

statements, heard in order, fall into a poetic cadence and can be presented as I Poems with each "I" starting a separate line of the poem, and stanza breaks marking where the "I" shifted direction.

In the initial process of creating the I Poems, it was challenging to leave out the details of the participants' rich narratives. I wanted to tell their stories. To maintain the focus on the participants' first-person voices, Gilligan et al. (2003, p. 163) suggested "cutting the text close and focusing in on just the I pronoun, the associated verb and few other words". It took a while for me to detach myself from wanting to curate their stories. I had to make a conscious effort to allow the straightforward procedure of constructing the I Poems without worrying about the narrative structure. I had to suspend the idea of forming a logical story structure. I initially constructed the I Poems where the phrases were significantly longer to include details of the story plot. Please see Appendix 2: Sample Data to see the example of the long version of the I Poems from Anna, a blind participant, as compared to her final I Poems in Chapter 5. While the narrative structure of these long poems was equally compelling and interesting, it led the reader to focus on the story rather than the person who was telling the story.

In contrast, by leaving out the details as much as possible, the reader is left to "attend just the sounds, rhythms, and shifts" in the I Poems (Gilligan et al., 2003, p. 163). These poetic cadences and rhythms help the reader to become more engaged with the disabled participants as beings with complex subjectivities. After several iterations, I constructed two separate I Poems for each participant. The first I Poem was focused on the participants' sense of self when they spoke about themselves in terms of their experiences of living with an impairment, while the second I Poem was focused on their relationship with technology. From here, one would be able to notice or pick up the tensions or harmony between the two.

3.9.3 STEP 3: Contrapuntal voices – searching for multiple voices

This final step entailed two or more readings and listenings of the interview transcripts, each time tuning in to one voice at a time or one aspect of the multiple facets of the story being told. This step led me to identify, specify, and sort out how the interview data might answer the research questions of the study. This process brought the analysis back into relationship with the research questions where the listening was guided and shaped by the research questions with their theoretical underpinnings, or the questions raised by the previous listening, or both (Gilligan et al., 2003). Going beyond the narrative analysis, this listening for at least two contrapuntal voices allowed for different voices to be heard from within a single person, acknowledging the possibility that one statement may contain multiple meanings. This final listening addressed the challenge that qualitative researchers face, particularly the danger of reducing data to mere computer 'coding' of themes. As Brown and Gilligan (1992) highlighted, depending on what the researcher is looking for, the same words can be interpreted differently in different cultural contexts and social conditions.

Borrowing from the musical form of counterpoints, with each melodic line having its own rhythm with a range of low and high notes, Gilligan (2015, p. 72) described this listening of contrapuntal voices as picking up "the tensions, the harmonies and dissonances between different voices, and underscor[ing] the musical aspect of listening where the goal is to listen for nuance, for modulations and silences (such as where "I" turns to "you" or drops out completely), to resist binary categories, and to hear complexity rather than flatten the data".

In this study, therefore, the third and fourth readings and listenings sought out how the participants spoke about their relationship with technology – past and present, from and within broader political, social, cultural, and structural contexts. I first sought out where the participants felt free to voice their feelings and opinions. Specifically, I sought out instances where the participants could speak or voice their thoughts or feelings with ease in their use of technology. In what circumstances did participants take ownership of their statements or situations? What were the enabling experiences in their interactions with technology? From a social practice perspective, this was an attempt to hear the participants voice their sense of agency within the particular social space they were in. This was often expressed by using the pronoun "I". This was also the reason why I Poems are often referred to as voice poems (Gilligan et al., 2003). As I read and listened to the transcripts, the words or phrases that stood out were highlighted and tagged in yellow in the Word document.

Next, I located where and when the participants were silenced. Were these restraints coming from institutional or cultural norms, or from within themselves? One approach to this was by seeking out the 'you' and 'they' statements throughout the interview data. Were they knowingly or unknowingly distancing or dissociating themselves from their own desires and knowledge by using the pronouns 'you' and 'they'? Were there instances in which the participants spoke in lowered voices or voices trailing off? I also took care to note moments of quiet, pauses, and pro-longed silences. Were there moments of self-silencing to fit institutionalised cultural norms and beliefs? Phrases spoken in second or third person, such as 'you should' and 'one ought', could be how the participants chose to speak in 'moral voices' over their own voices – the act of silencing the self. Did the participants have internalised ableism or self-loathing? They might have chosen to repeat what was expected rather than what they really felt, or thought would gain them approval or acceptance. These were highlighted in red in the Word document. As one can see, this was an iterative cycle of reading/listening for different enabling or silenced voices in the interview data. These visual colour-coded indicators acted as an audit trail of evidence, and made visible the relational aspects between the voices that came through the interview data.

3.10 Analysing documentary and media sources: Foucauldian discourse analysis (FDA)

To analyse both documentary and media sources, a Foucauldian discourse analysis (FDA) was employed. This part of the analysis examined how disability, technology, and higher education as discursive objects have been constructed in Malaysia through historical, social, and political texts, particularly in government policies, regulations, and legislation as well as in the media. According to Foucault (1972, p. 43), discourse is not only what has been "already-said", but also the silent discourse – what is "never-said" and "not-said".

FDA was used in this study to examine the discourses on a meso and macro level, in the form of official policies, regulations, and legislation enacted within the country and the case university. Related media sources were also examined. Foucault (1980) suggested that it is these discourses that have the agency to shape and influence the behaviours of people. Specifically, I examined who and what these discourses privileged and benefitted, and disadvantaged and marginalised. As Hewitt (2009) pointed out, FDA is well-suited to examining public policies because it: 1) examines how individuals engage with government and institutions without making assumptions about intentions; 2) exposes the diverse influences that define a policy problem; 3) reveals the power relationships and struggles in play to understand resistance, collaboration, or cooperation with the policy and its implementation; 4) requires the researcher to challenge the notion that policy-making is a rational process based solely on indisputable evidence or truth, and to recognise the contingent nature of the policy process. Indeed, policy and media discourses produce and transmit power (Foucault, 1990).

The work of Willig (2013) informed this phase of my study, involving six stages of identifying broad discursive patterns in the data in the intersecting fields of disability, technology, and higher education. This phase of the FDA enabled an understanding of how wider social-cultural-historical-political language and discourses affected the participants' ways of seeing and being in the world. Digging deeper, Willig (2013) stressed that both implicit and explicit references need to be included rather than searching for mere keywords or themes. This is precisely one of the reasons why computer software was not used in this study for coding and managing the data, as these types of implicit references might be missed. Willig (2013) highlights that discursive objects serve specific functions and offer subject positioning, where "discourses facilitate and limit, enable and constrain what can be said, by whom, where and when" (p. 380).

Below are the key questions guiding the corresponding six analytical stages offered by Willig (2013, pp. 414-415):

> ***Stage 1****: Discursive constructions:* 'How is the discursive object constructed through language?'; 'What type of object is being constructed?'

> ***Stage 2**: Discourses:* 'What discourse are drawn upon?'; 'What is their relationship to one another?'
>
> ***Stage 3**: Action orientation:* 'What do the constructions achieve?'; 'What is gained from deploying them here?'; 'What are their functions?'; 'What is the author doing here?'
>
> ***Stage 4**: Positionings:* 'What subject positions are made available by these constructions?'
>
> ***Stage 5**: Practice:* 'What possibilities for action are mapped out by these constructions?'; 'What can be said and done from within these subject positions?'
>
> ***Stage 6**: Subjectivity:* 'What can potentially be felt, thought and experienced from the available subject positions?'

However, as Willig (2013) pointed out, these six stages do not encompass the full analysis in the Foucauldian sense. Foucault's concerns with genealogy and governmentality were not addressed here. This is beyond the scope of my studies and would necessitate an entire separate study altogether. The use of FDA in my study was primarily to develop the meso and macro fields, i.e., to locate the role of language and discourse within a socio-cultural context and its implications for the participants. Suffice to say, what was required here was to understand the discursive constructions and discourses taken up in the related documentary and media sources that had direct consequences in shaping the disabled participants' ways of seeing and being in the world; in other words, how they constructed their social and psychological realities. Davies and Harré (1999, p. 35) explained this process as:

> *once having taken up a particular position as one's own, a person inevitably sees the world from the vantage point of that position and in terms of the particular images, metaphors, storylines and concepts which are made relevant within the particular discursive practice in which they are positioned*.

Consistent with Bourdieu's cautionary 'beware of words' advice, this phase of the analysis enabled the investigation of how some discourses are so deeply entrenched, embodied, and internalised that they have become accepted as expressions of 'common sense' or 'doxa'. Are these dominant discourses problematic, harmful, or oppressive in our understanding of disabled university students' experiences and identities? Are there counter-discourses and counter-narratives that challenge the existing dominant discourses? If yes, what are they and how can they shape alternative constructions in our understanding of the 'messy realities' of the lived experiences of these disabled university students?

3.11 Analysing survey questionnaire data

3.11.1 Descriptive Analysis.

To fully understand digital inclusion in society, Selwyn (2004) argued that there are strong relationships between the digital capital one possesses, and how meaningful, effective, and positive are one's outcomes of the use of technology. The contention was that the possession of various forms of digital cultural and social capitals, or lack of, determines and differentiates whether one can meaningfully engage with, and effectively use, technology with positive outcomes to fully participate and be included in society. These forms of digital capital were based on Bourdieu's concept of different forms of *capital* – economic capital, cultural capital, and social capital (Bourdieu, 1997).

The online questionnaire survey captured and provided descriptive data that included types of technology and digital capital that disabled students at Faith University had access to and use of. The online survey instrument consisted of 41 closed questions, with many providing the option of free-text responses.

3.12 Summary and chapters ahead

In this chapter, I have explained the epistemological, theoretical, and methodological aspects of my study. In essence, my phenomenological case study is critical and interpretive in nature, underpinned by a transformative philosophical framework. I also highlighted how Bourdieu's conceptual framework informed the methodological approaches taken in addressing the aim and objectives of my research. A detailed explanation of Bourdieu's three-stage framework to operationalise the concepts of *habitus, field*, and *capital*, was then given, followed by a discussion of the pilot studies conducted. Subsequently, the ethical considerations taken in this study were addressed. Finally, the data analysis framework illustrating the analytical approaches was provided and the rationale explained.

Moving into the data analysis and findings, the three chapters ahead – Chapters 4, 5, and 6 – will report on the empirical findings that addressed the research questions:

1) What forms of digital capital do disabled students have access to and use?
2) What are the disabled students' dispositions and habitus in using digital technologies?
3) How do disabled students access and use their digital capital to participate in the university?

In Chapter 4, I will initially present a critical examination of relevant documents and media sources to map out the field and sub-fields of the case university. Examination of the socio-cultural landscape that underpins my research will provide the contextual insights relevant to my study.

Then, the analysis and findings from the online questionnaire survey are discussed, addressing the first research question. Chapter 5 will address the second research question, focusing on the personal accounts of the disabled participants. Through detailed biographies and voice-centred analysis, the findings are discussed to highlight the participants' dispositions and habitus. In Chapter 6, I attempt to link the findings from the first and second research question to the third research question. Here, I firstly consider the differential positioning – the feel for the game – of the participants in the case university in terms of their accrued digital capital and established habitus. From this, I provide an analytical commentary of how the participants used technology to participate in the case university.

CHAPTER 4: MAPPING THE FIELDS OF POWER – DISABLED STUDENTS' SOCIAL SPACES

> *A field is a structured social space, a field of forces, a force field. It contains people who dominate and people who are dominated. Constant, permanent relationships of inequality operate inside this space, which at the same time becomes a space in which various actors struggle for the transformation or preservation of the field. All the individuals in this universe bring to the competition all the (relative) power at their disposal. It is this power that defines their position in the field and, as a result, their strategies.*
>
> (Bourdieu, 1998, pp. 40-41).

4.1 Introduction

Briefly, Bourdieu's framework demanded firstly that the object of research was critically examined as a field (***Stage One***). Stage One was elaborated and reviewed in Chapter 2. Secondly, a three-level field analysis was carried out (***Stage Two* – Level 1, Level 2, Level 3**). Thirdly, the position of the researcher was examined reflexively using the same conceptual tools, i.e., my pre-given biases, assumptions, and beliefs (***Stage Three***).

This chapter specifically addresses part of ***Stage Two***: ***Three-level of field analysis*** – starting with **Level 1** (*Analyse the position of the field vis-à-vis the field of power*), then goes onto **Level 2** (*Map out the objective structure of relations between the positions occupied by agents who compete for the legitimate forms of specific authority of which the field is a site*). The aim of this chapter is to discuss the field and sub-fields of the study – the social space where the disabled university students were located. I first examined the narratives and discourses of the macro level in the field of disability, higher education, and technology using Foucauldian discourse analysis (FDA). A detailed explanation of this analysis approach can be found in Section 3.10: Analysing documentary and media sources. This was followed by the examination of the meso level of the case university renamed as Faith University. Then, through an online questionnaire survey, snapshots of the disabled university students in Faith University – the micro level of the field – were analysed. Here, the first research question is addressed: **What forms of digital capital do disabled students have access to and use? Figure 5** shows the topography mapping of the fields under study.

This critical examination of the structures of the macro and meso level fields enabled a relational analysis linking the influential factors of the existing structures of the field with the subjective personal lived experiences and practices of the disabled students (micro level) who are seeking

their legitimate position within this field. This part of the analysis was guided by the following questions, adapted from Willig's (2013) stages of FDA analysis:

- What are the dominant voices in the current discourses on disability, higher education, and technology in Malaysia (macro level) and the case university (meso level)?
- Which discourses (who and what) are privileged, prioritised, and normalised more than others? Who and what were silenced or excluded from the discourse?
- What were the baseline assumptions or unspoken 'truths' – what Bourdieu calls *doxa* – in the discourse?

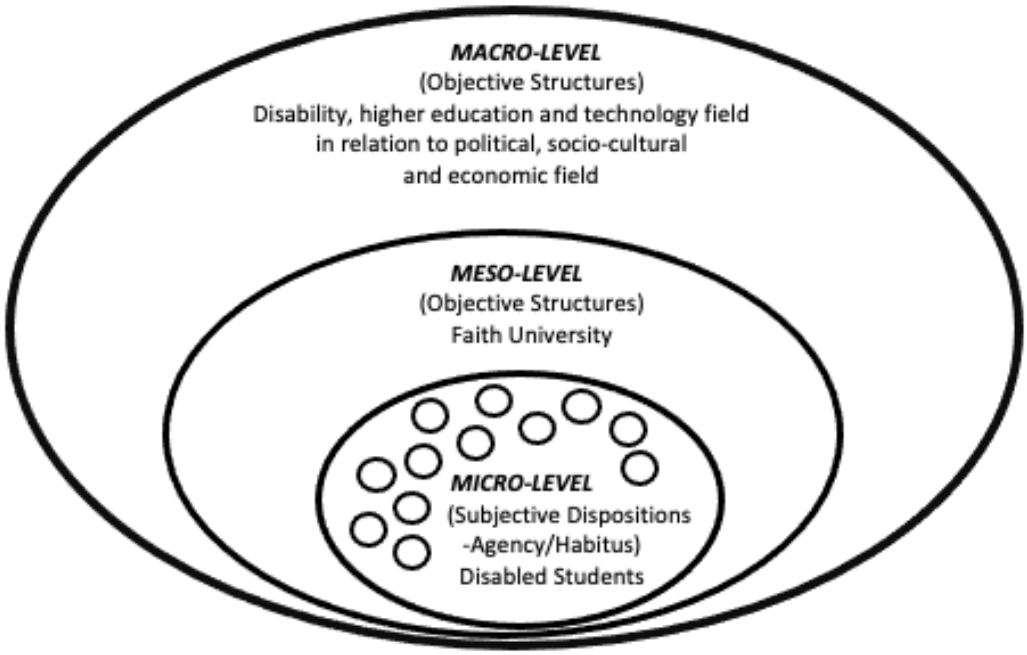

Figure 5: *Developing macro, meso, and micro level field*

4.2 Developing the macro level field

Of particular interest here is to develop the macro level field related to this study. To do this, I identified the historical development of the disability and higher education field in Malaysia. Multiple documentary and secondary sources were used to develop these evolving fields including international, regional, and Malaysian public policies and legislation, media reports, and peer-reviewed research articles. Documentary analysis of these sources provided evidence of representations and images of the related field. Below is the list (**Table 4**) of the official documents used to develop the macro level field:

Table 4: *List of examined artefacts - official documents*

List of examined artefacts – official documents	
International/Regional	
i)	**The United Nations Convention on Rights of Disabled Persons 2006 (UNCRPD) - signed (2008) and ratified (2010) & Optional Protocol (Not signed)**
ii)	**Incheon Strategy (2013-2022) - "Make the Right Real" for Persons with Disabilities in Asia and the Pacific**
iii)	**ASEAN Enabling Masterplan 2025 - Mainstreaming the Rights of Persons with Disabilities**
iv)	**International Human Rights Law**
Malaysia	
i)	**Persons With Disabilities Act 2008 (Malaysia)**
ii)	**Article 8 (1) and (2) of the Federal Constitution of Malaysia 1957** *(1) All persons are equal before the law and entitled to the equal protection of the law.* *(2) Except as expressly authorized by this Constitution, there shall be no discrimination against citizens on the ground only of religion, race, descent, place of birth or gender in any law or in the appointment to any office or employment under a public authority or in the administration of any law relating to the acquisition, holding or disposition of property or the establishing or carrying on of any trade, business, profession, vocation or employment.*
iii)	**Human Rights Commission of Malaysia (SUHAKAM) Act 1999**
iv)	**The Education Act 1996**
v)	**The Private Higher Education Institutions Act 1996**
vi)	**National Council of Higher Education Act 1996**
vii)	**Universities and University Colleges (Amendment) Act 1996**
viii)	**Pelan Tindakan OKU 2016 – 2022, Kementerian Pembangunan Wanita, Keluarga dan Masyarakat (Malaysian Plan of Action for People with Disabilities 2016 – 2022, Ministry of Women, Family and Community Development)**
ix)	**Malaysian Education Blueprint 2015 -2025 (Higher Education), Ministry of Education, Malaysia**
x)	**Pelaksanaan pelan tindakan bagi meningkatkan pengajaran dan pembelajaran pelajar orang kurang upaya (OKU) di IPTA 2012, Ministry of Education, Malaysia**
xi)	**Garis Panduan Pelaksanaan Dasar Inklusif Orang Kurang Upaya di Institusi Pendidikan Tinggi 2019, Ministry of Education, Malaysia**

4.2.1 Conceptualising and contextualising disability in Malaysia

4.2.1.1 Laws and policies governing disabled people in Malaysia

The earliest conceptualisation of disability in pre-independent Malaysia (before 1957) adopted the medical and welfare models of disability in policy and practice. In modern Malaysia, policies and legislation governing issues related to disabled people are Article 8 (1) and (2) of the Federal Constitution 1957*,* United Nations Convention on Rights of Disabled Persons *(*UNCRPD*)* 2006*,* and Persons with Disability Act 2008 *(*PWD Act 2008*)*.

Malaysia became one of the state parties to the UNCRPD in 2008, and ratified the treaty in 2010. Prior to becoming a signatory to the CRPD, the PWD Act 2008, also known as Akta OKU 2008, was passed in the Malaysian parliament on 24th December 2007. The PWD Act 2008 and the ratification of the UNCRPD was the beginning of the commitment of the Malaysian government to providing equal rights to its disabled citizens. Additionally, Malaysia also joined the Asia-Pacific regional commitment – Incheon Strategy 2013-2022 – in promoting and protecting the rights of people with disabilities. Within the country, the Pelan Tindakan OKU 2016-2022 (Malaysian Plan for Action for People with Disabilities 2016-2022*)* initiated by the Ministry of Women, Family and Community Development, Malaysia (2016) was touted as the way forward in implementing various strategies that uphold disabled citizens' rights to social inclusion and equality. The drafting of this action plan was said to involve members of the National Council for Persons with Disabilities, non-government organisations, the Ministry of Women, Family, and Community Development, and other relevant government agencies.

The Malaysian Plan of Action for People with Disabilities 2016-2022 outlined the following 10 strategic core principles, mapping to the Incheon Strategy 2013-2022's goals:

- *Core Strategic Principle 1 (Goal 3 Incheon Strategy) – Increase accessibility of persons with disability; Strategy: Increase persons with disability's mobility and quality of life for a productive and inclusive community.*
- *Core Strategic Principle 2 (Goal 1 Incheon Strategy) – Enhance economics of persons with disability; Strategy: Increase persons with disability's participation in open work force market, inclusive and accessible for them to live independently and contribute to national development.*
- *Core Strategic Principle 3 (Goal 5 Incheon Strategy) – Increase persons with disability's access to education; Strategy: Increase persons with disability's access to a quality and inclusive education at all stages including life-long learning towards talented and potential development of human resources.*
- *Core Strategic Principle 4 (Goal 5 Incheon Strategy) – Increase persons with disability's access to health care; Strategy: increase persons with disability's access to quality health care services for them to live well; enhance persons with disability's*

access to a comprehensive habilitation and rehabilitation programme, including aspects of health care, occupation, education, and social for inclusive participation.

- *Core Strategic Principle 5 (Goal 4 Incheon Strategy) – Enhance social services of persons with disability; Strategy: increase persons with disability's access to cultural life, recreation and sports; increase persons with disability's chances of owning a house; enhance the mechanism of social protection and support services.*
- *Core Strategic Principle 6 (Goal 2 Incheon Strategy) – Increase persons with disability's participation in planning and decision-making; Strategy: Increase persons with disability's participation in the political process and the process of planning and decision-making.*
- *Core Strategic Principle 7 (Goal 7 Incheon Strategy) – Upgrade persons with disability's access in risk disaster management; Strategy: Develop planning and strategy of risk disaster management for persons with disability.*
- *Core Strategic Principle 8 (Goal 8 Incheon Strategy) – Research and Development; Strategy: Encourage research and development about persons with disability as well as conveying research outcomes for better action; enhance mechanism of coordination of implementation, evaluation, and assessment of persons with disability programmes.*
- *Core Strategic Principle 9 (Goal 10 Incheon Strategy) – Advocacy; Strategy: increase awareness and shaping positive attitude among community towards persons with disability; linking and strengthening regional and international cooperation.*
- *Core Strategic Principle 10 (Goal 9 Incheon Strategy) – Convention of the Rights of Persons with Disabilities; Strategy: implementation of laws in line with Convention of the Rights of Persons with Disabilities.*

The action plan also included, together with the core strategies, its short-term objectives and long-term actions, and a list of KPI indicators and targets with a list of government agencies responsible. I have included here an example of Core Strategic Principle 3: Increase persons with disability's access to education, and the accompanying short- and long-term actions, indicators, and targets. See **Figure 6** and **Figure 7**. The absence of a digital inclusion core strategy in this national action plan raised deep concerns as technology is increasingly taking centre-stage in many facets of governance, economic, education, and work processes. Van Dijk (2005, p. 15) long contended that "unequal access to digital technologies brings about unequal participation in society". This digital divide, unfortunately, has remained a prominent issue in recent years (van Deursen & van Dijk, 2019) even within developed countries. Article 9 of the UNCRPD on equality stresses the role of technology in enabling disabled people's rights to live independently and fully participate in all aspects of life.

Figure 6: *Core strategic principle 3 - Increase persons with disability's access to education*

Figure 6: *Core Strategic Principle 3: Selected short- and long-term action place, KPI indicators and targets, with the list of government agencies responsible*

4.2.1.2 Language of disability in Malaysia

The commonly used term in Bahasa Malaysia (Malay Language), the national and official language of Malaysia, for disabled person is '*orang kurang upaya*' (OKU). This term can be loosely translated as 'less abled person'. The previous term used was '*orang cacat*', translated as 'handicapped person'. '*Cacat*' was a common term related to disability or impairment, meaning blemish, defect, flawed, or damaged. The term '*orang cacat*' is generally no longer used in formal discourse, and is deemed offensive when used to describe any disabled person. Up till 2010, as noted by Norazit (2010, p. 270), the term "*orang kurang upaya*" was still defined by the Malaysian government as:

> *Orang kurang upaya dikasifikasikan sebagai seseorang yang tidak berkemampuan memenuhi keperluan normal bagi seorang individu secara keseluruhan/sebahagian dan/atau tidak berkemampuan menyertai masyarakat sepenuhnya disebabkan kekurangan dalam bentuk fizikal atau mental sama ada dimiliki sejak kelahiran atau setelah dilahirkan (Portal rasmi kerajaan Malaysia).*
>
> *[Translation: A disabled person is classified as one who is not capable of fulfilling his/her normal needs as an individual either totally or in part and/or is not capable of participating in society fully because of a physical or a mental lack whether from birth or acquired (Official portal of Malaysian government)].*

The first recorded use of the acronym OKU was in a local daily Malay language newspaper called Utusan Malaysia on 22nd of February 2001. Since then, OKU has become the most frequently used term, both in official discourse and in common use among the disabled community. Some quarters still deem that the 'K' for '*kurang*' remains offensive as it shines a negative light on disabled people. The Malay term '*kurang*' means 'less'. Therefore, while OKU is widely accepted within the Malaysian community, some have re-interpreted the acronym OKU as '*orang kelebihan upaya*' (more abled person) or '*orang kelainan upaya*' (differently abled person).

After Malaysia's ratification of the UNCRPD in 2010, the official definition of a person with disabilities in the Department of Social Welfare under the Ministry of Women, Family, and Community Development, Malaysia is as follows:

> *OKU adalah seseorang yang mempunyai ketidakupayaan jangka masa panjang dari segi fizikal, mental, intelektual atau pancaindera yang apabila berhadapan dengan pelbagai halangan mungkin tidak dapat melibatkan diri sepenuhnya dan secara efektif dalam masyarakat (Portal rasmi Jabatan Kebaijkan Masyarakat).*

[Translation: PWD is someone who has a long-term disability in physical, mental, intellectual or sensory and when faced with challenges they may not be able to participate fully and effectively in society (Official portal of Department of Social Welfare)].

This appears to be a substantial positive change from the older definition. However, it is not clear as to why the definition from the PWD Act 2008 was not adopted per se by the Department of Social Welfare. Section 2 of the Persons with Disabilities Act 2008 states: "*orang kurang upaya termasuklah mereka yang mempunyai kekurangan jangka panjang fizikal, mental, intelektual atau deria yang apabila berinteraksi dengan pelbagai halangan, boleh menyekat penyertaan penuh dan berkesan mereka dalam masyarakat*", translated as "persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society".

These conflicting definitions from different government agencies to describe disabled people have generated a state of confusion, particularly in the delivery and implementation of educational and other services for disabled people.

4.2.1.3 Media representation of disability in Malaysia

Even after the enactment of the PWD Act 2008, the needs of disabled people are still not taken seriously. Disabled people in Malaysia are still largely perceived as cases of welfare and charity (UNICEF Malaysia, 2014), particularly those with physical and sensory impairments. The media in Malaysia also perpetuates the image of disabled people as victims, as being helpless and needing pity, and hence maintaining the perception that disabled people are a burden on society. For example, Mohd Don and Ang (2014) found that the discourse of disability in a leading Malaysian newspaper appears to consistently portray disabled people as sad, unhappy, and pitiful. Furthermore, they were shown to only obtain joy when they receive donations or charitable acts from generous benefactors. Similarly, Teng and Joo (2020), in their examination of Malaysia's three main newspapers in Malay, English, and Mandarin, found representations of disabled people in the local press to be objects of sympathy and in need of care from the community and benefactors. These portrayals of disabled people only generate stereotypes and assumptions as a vulnerable community devoid of capabilities, and dependent on charitable and government hand-outs. When disabled people are not cast as charity cases who are desperately in need of community aid, local newspapers tend to highlight them as supercrip[6] (Norazit & Awab, 2007; Ang & Yeo, 2018). These findings bear out that disabled Malaysians are often put in a negative, unrealistic, and oppressive light in the mainstream media.

[6] Supercrip is a "common stereotype in the disability literature", particularly used by media, as "someone who overcomes their disability in ways that are often seen by the public as inspiring" (Martin, 2017, p. 139). This stereotypical term is known to be problematic and harmful among the disability community as it portrays ordinary disabled people as not good enough or not worked hard enough compared with the few 'super' disabled persons who, 'against all odds', became successful and famous. If you're not an inspiration, you're a burden.

While there is lack of representation of the disabled community in films and television globally, it is even more evident in Malaysia. When they do, disabled people are often misrepresented as taking on stereotypical roles, where the characters are played by non-disabled actors. The unrealistic depictions of disabled people in visual media perpetuate stigma, ignorance, and the stereotypical beliefs of the community. Public perceptions and attitudes of Malaysians towards the disabled community were found to have a distinct correlation with the portrayal of disabilities in the media (Ibnu et al., 2021). Media representations, in many ways, reinforce the conceptualisation of disability as being 'non-human' and deviant. These stereotypical images permeate into disabled people's lives and affects them in all aspects. It is damaging not just from the community's prejudiced views of disabled people, but also affects their perceptions of their own identity and self-esteem.

4.2.2 Contextualising the higher education field in Malaysia

4.2.2.1 The evolution of 'special education'

Lee and Low (2014) comprehensively reviewed the evolution of 'special education'[7] in Malaysia. The researchers traced the evidence and divided it across four stages of 'special education' development: before and during the early colonial period (before 1900), pre-independence (1900-1957), post-independence (1957-1990), and modern Malaysia (1990-present). Among the earliest initiatives were two specialised schools, one for the blind, another for the deaf/Deaf. The first school for the blind, Princess Elizabeth Special Education School, was formed by the British Strait Government in 1948. Six years later, the first school for the deaf/Deaf, the Federal School for Deaf Children, was established. These two federal schools, prior to the independence of Malaysia, naturally adopted and relied upon Western curricula for Braille and sign language. Prior to this, education and services for the disabled community primarily depended on the goodwill of non-government organisations (NGOs) and missionary groups. Like most of the other countries in the region, disabled students' education was separated from the mainstream public education of the general population at this time.

In the post-independence era (1957-1990), Malaysia made significant progress in terms of forming a unified education system from the diverse pre-independence school systems. During this period, several policies and acts were put forward to focus on educational reform. The education of disabled children, however, was sidelined in the national agenda of reforming the mainstream education in the new nation. Additionally, the affairs of disabled people, including disabled children's education, were then under the purview of the Department of Social Welfare and the

[7] In this section, the term 'special education' is written in inverted commas because of the discriminative nature of term. This term is widely used in Malaysia. In Malaysia, 'special education' is reserved for students who are Deaf/deaf/hard of hearing, blind/partially-sighted, and those with learning difficulties excluding students with physical disabilities. The word 'special needs' is now widely considered to be offensive because it euphemistically stigmatizes the disabled people and connotes segregation (Barnes & Sheldon, 2007; Gernsbacher et al., 2016; National Center for Disability Journalism, 2015; Rucker, 2014). Inclusive education would be the preferred term to replace special education.

Ministry of Health and Social Welfare – now known as the Ministry of Women, Family, and Community Development.

During the modern Malaysia era (1990 till present), as more Malaysians were educated abroad and information became more widely accessible, many in the field called for major reform in the implementation of education of disabled students (Adnan & Hafiz, 2001; Hussin, Quek, & Loh, 2008; Jelas & Mohd Ali, 2012; Lee & Low, 2013; Mohd Ali et al., 2006; Mohd Yasin et al., 2010). Globally, the social model was gaining traction with social and educational services moving away from the welfare and medical model. At the policy level, Malaysia signed the Salamanca Statement (UNESCO, 1994) that pushed for inclusive education for all. Two years later, in 1996, the Education Act 1996 repealed the Education Act 1961, which now includes a chapter on 'special education'. In practice, however, the inclusion of disabled students in mainstream education was, and still is, highly complex and difficult to implement due to various competing socio-economic and attitudinal barriers. While there was consistent demand from non-government, civil society, advocacy, and parent groups, segregation and differentiation is still very much the order of the day for disabled students in Malaysia. Anecdotal, institutional, and research-based evidence confirms the gap between policies and practice.

Despite this slow progress, the inclusion and substantial attention given to 'special education' at the primary and secondary levels in the Malaysia Education Blueprint 2013-2025 suggested there were increased efforts from the Ministry of Education since it had taken over the helm in steering the education of disabled children. However, the inclusive integration programmes defined and introduced by the Education Rules (Special Education), Ministry of Education since 1997 are primarily based on segregation. Disabled students still learn separately from other mainstream students, and are placed in 'special' classes in mainstream schools. In other words, the so-called inclusive approach is only reflected in policy, and has yet to be translated successfully into practice in Malaysian public schools.

4.2.2.2 Disability in Malaysian higher education: Policy and practice

In Malaysia, registration of disabled people is not mandatory, hence it is difficult to provide an accurate representation of the population. From official records with the Department of Social Welfare, Malaysia, there are 637,537 disabled people registered as of 31 January 2023 – about 1.9% of the Malaysian population, of which 1.4% (485,472) are above 18 years old (Ministry of Women, Family and Community Development, 2023). However, in the Ministry of Health publication, the National Health and Morbidity Survey (NHMS) 2019, it was reported that 11.1% of Malaysians above 18 years old had disabilities, and 1 in 4 Malaysian adults experienced functional difficulties in one or more of the following domains: seeing, hearing, remembering, walking, self-care, and communicating (Ministry of Health, 2019). The subsequent NHMS reports (2020-2023) did not include data on disability. Noticeably, there seemed to be huge discrepancies between

these reports. This inaccuracy of disability data is problematic for the development of disability policies in general.

The gaps between policy and practice found in pre-university education is heightened at the higher education level. In general, there is a lack of information about, and attention to, the disabled community's access to, and participation in, Malaysian higher education. This is evident in the Malaysia Higher Education Blueprint 2015-2025 where discussion of disability inclusion was practically non-existent in the 40-page document. However, there was a recent positive initiative by the Ministry of Education. In 2019, the government introduced a much-needed policy to guide universities in implementing inclusive education for their disabled students. The publication of Guidelines to the Implementation of Disabled Persons Inclusive Policy in Institutions of Higher Education (Ministry of Education, 2019) was purported to accelerate inclusive services, including appropriate teaching and learning approaches, within the higher education sector. While this was a welcome move from the Ministry, how these guidelines were to be operationalised on the ground and in practice was vague and underdeveloped. Most Malaysian universities had no specific official policy or statement in their institutions' governing constitutions. Tan et al. (2019) found that, of the 15 Malaysian public universities, only 4 had some disability information on their official institutional websites.

Table 5: *Enrolment of disabled students in the Malaysian public higher education institutions*

Year	Enrolment of Disabled Students	Total enrolment of Students	% of enrolment of disabled students
2010	1115	462,780	0.24%
2011	1221	508,256	0.24%
2012	1372	521,793	0.26%
2013	1572	560,359	0.28%
2014	1742	563,186	0.31%
2015	1930	540,638	0.36%
2016	2444	532,049	0.46%
2017	2139	538,555	0.40%
2018	1874	552,704	0.34%
2019	1234	567,625	0.22%
2020	997	584,576	0.17%
2021	847	589,879	0.14%
2022	792	595,624	0.13%

(Data source: Ministry of Higher Education, Malaysia <https://www.mohe.gov.my/en/download/statistics>)

Within higher education, a glance at the percentage of disabled students enrolled in Malaysian public universities compared to total student enrolment is looking grim. **Table 5** shows the enrolment data of disabled students and total enrolment extracted from the Malaysian higher education statistics publications from the years of 2010-2022 (MOHE, 2010, 2012, 2014, 2016, 2018, 2020, 2022). The intake of disabled students was looking rather promising, but after the peak of enrolment in 2016 (0.46%), disabled students' participation in Malaysian public universities showed signs of decline. In fact, 2022 has shown the lowest enrolment of disabled students at 0.13% since 2010 (0.24%) of the nation's public universities' total enrolment. I would like to note that these official publications from the Ministry of Higher Education did not report the reasons for the decline in the enrolment of disabled students in the universities. There is also currently no official information on the enrolment status of disabled students in Malaysia's private universities.

Nasir and Efendi (2020) also highlighted the discrepancies in the category of impairment used in the collection of data in the official national higher education statistics. For example, the category of impairment used in the collection of data is different from the category of impairment recognised by the Department of Social Welfare, Malaysia. There are officially seven categories of impairment identified by the Department of Social Welfare, namely: physical impairment, visual impairment, hearing impairment, speech impairment, learning disabilities, mental health disorders, and multiple disabilities. However, the national higher education statistics categorised the type of disabilities as: Hearing, Speech, Legs, Arms, Paralytic, Visual, and Others. See **Figure 8**.

Figure 8: *Type of disabilities category in the higher education national statistics 2022 report*

4.3 Developing the meso level field

4.3.1 Case university site: Faith University

Faith University is a well-established research intensive university in the UK. Following an invitation from the Government of Malaysia in 1998, Faith University – a part of the Russell Group[8] of universities – became the first British university to establish a foreign branch campus outside of the

[8] The Russell Group identifies itself as representing the 24 leading 'elite' universities in the UK. This is similar to Australian's Group of Eight universities.

UK in 2000. After 5 years, Faith University moved to its permanent main campus located in a semi-rural town of Selangor state, about 27 km away from Kuala Lumpur, the capital city of Malaysia. Marketed as being a state-of-the-art university, this branch campus was touted as bringing the coveted British higher education model to Malaysia and its surrounding region. Perhaps the most attractive and lucrative aspect was, other than being enrolled in a prestigious British university, that upon completing a degree at the Malaysian campus, students would receive a degree certificate indistinguishable from certificates awarded at the parent university in the UK. Additionally, while students at the local campus may not be taught similar course materials, or take the same exams as in the UK, the delivery and management of the academic courses and syllabus are under the jurisdiction of the Quality Assurance Agency for Higher Education[9] (QAA), UK. As such, enrolment into Faith University commands some of the highest entry requirements in the country.

Being enrolled in Faith University, then, was considered to be a privilege and was highly regarded. It is known as the most "prestigious" university in Malaysia, according to one of the participants. The academic culture here is one that is intellectually challenging with high academic demands. Reay (1998) suggests that institutional habitus has a powerful influence on the shaping of students' identities. At this university, the students were expected to be independent learners.

4.4 Developing the micro level field

4.4.1 Digital capital of disabled students in Faith University

The following findings include targeted information about the digital capital of the disabled students in Faith University. Data were collected using an online questionnaire survey adopted from Seale et al. (2015). In the invitation call for participants via email and posters around the campus, alternative formats (e.g., Braille, phone call, printed hardcopy, read out one-on-one in-person) were offered on top of the online format. At the end of the survey collection period, there were no requests for alternative formats. Although a total of 51 students started the survey, only 41 completed it. There were an almost equal number of male and female participants with ages ranging from 18-29 years. All the students were in full-time education with the majority enrolled in undergraduate degrees, apart from one who was studying in the Foundation programme, and four who were enrolled in postgraduate degrees. Interestingly, there was a diverse representation of programme specialisations in this group, i.e., Education, English, Media, Languages and Cultures, Psychology, Business, Economics, Finance Accounting and Management, Pharmacy, Biomedical Sciences, Science, Chemical and Environmental Engineering, Engineering, and Mechatronics Engineering.

[9] Quality Assurance Agency for Higher Education (QAA) is the UK's quality body for higher education. For more information, access (https://www.qaa.ac.uk/).

A total of 20 students were willing to disclose their disability type, with 16 having specific disabilities; 2 were blind or partially sighted, 2 had specific learning difficulties (e.g., Dyslexia, Dysgraphia, Dyscalculia, Dyspraxia), 2 had Attention Deficit Disorder (ADD)/Attention Deficit Hyperactive Disorder (ADHD), and 9 had mental health illness (e.g., Depression, Psychosis, Bipolar Disorder, Anxiety Disorder). The remaining 4 students from this group were reported to have multiple needs – a combination of disabilities. The rest of the students chose not to disclose the nature of their disability. It is important to note that mental health needs were among the highest reported, and these data correspond with the follow-up interview participants of this study, with 4 out of 5 of the interview participants having been clinically diagnosed with a mental health illness. Of these, 2 felt that their learning difficulties were related to their experiences of having mental health issues.

4.4.1.1 Access to, and use of, technology

A majority of the students were reported to have the following access to technologies for personal use: 92.7% had a mobile phone, 78% had a laptop, and 26.8% had an iPad or tablet device. Most students had access to the Internet at home or at the university student residence (90%), and on the university campus such as in the university library and the student learning spaces (82.9%). More than half had access to the Internet via their mobile phones (61%). 87.8% of the students used a computing device (e.g., PC, laptop, tablet) every day while the remainder a few times a week. Every day, 92.7% of the students accessed the Internet and their email. Common generic and assistive technologies used to support their learning included: visualisation tools (e.g., video, animations) being the highest usage at 41.5%, writing tools (e.g., word prediction, dictionary software, hand-writing recognition) at 36.6%, recording tools (e.g., voice recording) at 34.1%, planning tools (e.g., mind-mapping) at 29.2%, reading tools (e.g., optical character recognition, text-to-speech software) at 26.8%, and alternative interfaces (e.g., voice recognition, screen readers) at 17.1%. The top three online social activities included watching online videos or live TV on websites such as YouTube and Vevo (97.6%); using social networking websites such as Facebook, Twitter, and Instagram (92.7%); and using instant messaging or online chat such as Facebook messenger, WhatsApp, and WeChat (82.9%). A large number of students also accessed advance functions on their mobile phone such as GPS, mobile TV, checking emails, and web browsers (78%). About half the students used blogs, wikis, and online forums (51.2%), almost half uploaded digital video or photo content onto the Internet for storage or sharing (46.3%), and roughly one-third of the students participated in online discussion groups or chatrooms (31.7%), while 8 students (19.5%) maintained their own blogs or websites.

The data from the online survey above show that the disabled participants from Faith University had relatively high levels of access to, and use of, technology. If these students were digitally excluded in the university, these findings suggest that it was most probably not an access issue. The following sections discuss in greater detail evidence of the students' digital capital; first, their digital cultural

capital, followed by their digital social capital. This evidence specifically answers the first research question: **What forms of digital capital do disabled students have access to and use?**

4.4.1.2 Evidence of digital capital

The results from the online survey indicated that the disabled students had access to, and use of, digital capital. Overall, the students reported that they were relatively confident in using technology to support their learning. On a scale of 1 to 10, all except 1 student rated 5 and above on their confidence level, with most students choosing level 7 (29%). Others chose level 8 (19.5%), level 6 (17%), level 9 (14.6%), level 10 (12.2%), and level 5 (4.9%). More than half the students (68.3%) had customised their computer devices to suit their personal preferences, such as background colours, toolbar and menu items, icon sizes, font size on the screen, and language preference.

When ask about strategies and experiences in seeking information to support their learning in the university, their top choices included: Use a search engine (e.g., Google) to research a subject (95.1%); Use an electronic library or portal (e.g., Wikipedia, subject-based resources, university's library databases) to research a subject (92.7%); Use online learning materials (e.g., manuals, tutorials, e-books, lecture notes); I found information by myself (82.9%); and Used web forums or online social spaces to research a subject (68.3%). In terms of using generic software in the university, the findings from the survey indicated that the disabled students possessed the needed digital cultural capital – the technological know-how to support their academic activities (see

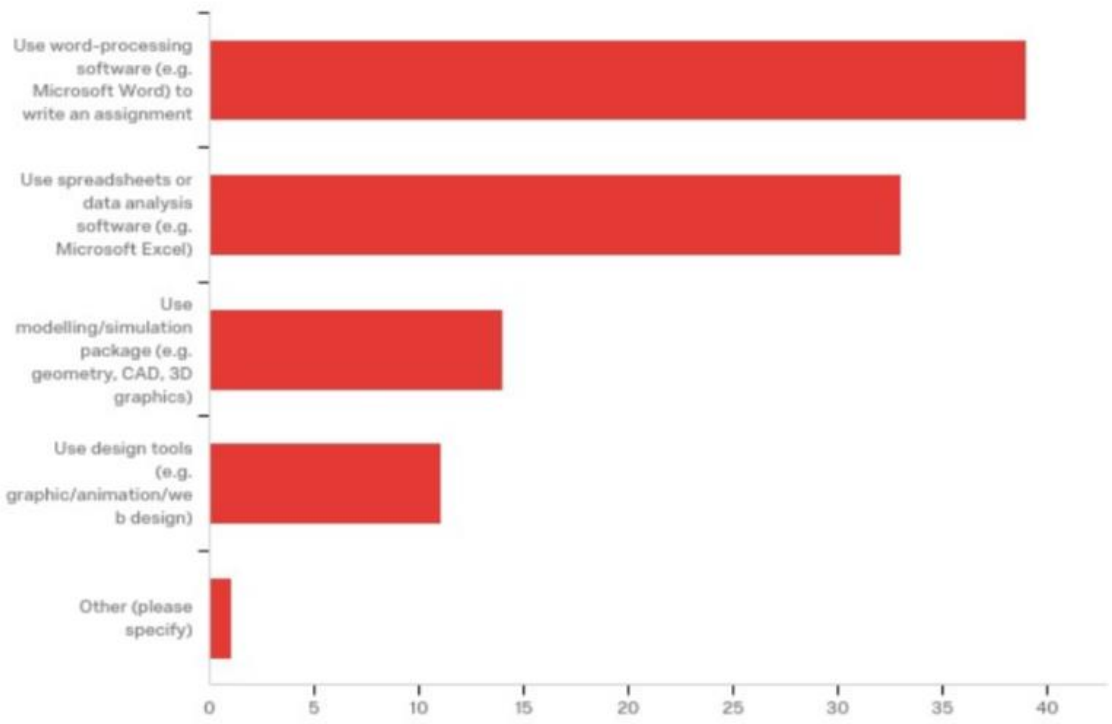

Figure 9: *Mainstream technology used in the university*

Figure 9). For example, 95.1% of the students had access to, and used, word-processing software such as Microsoft Word to write an assignment. Meanwhile, 80.5% of the students also used spreadsheet software such as Microsoft Excel or data analysis software, while 34.1% used modelling and simulation packages for geometry, CAD, and 3D graphics. Some of the students (26.8%) also used design tools for graphics, animation, and web design.

In terms of academic assessment, a majority of the students were comfortable with computer-based delivery and management (see **Figure 10**). Most of the students (90.2%) reported that they had submitted materials for assessment online, while 87.8% had accessed online revision resources such as podcasts and past exam papers, and taken a computer-based test or examination. More than half the students (63.4%) had accessed online feedback on their formative and summative assessments. About half of the survey respondents (51.2%) had engaged in online assessed activities such as graded online discussions.

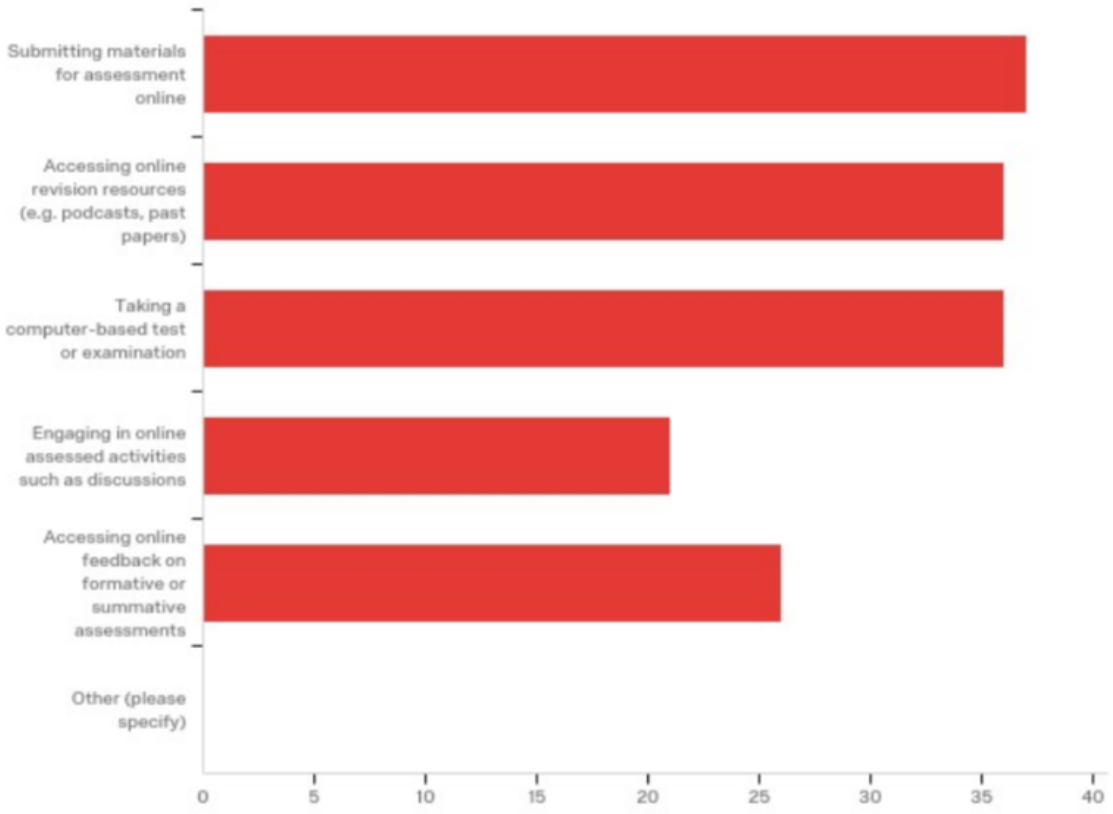

Figure 10: *Computer-based assessment use and management*

The students were also asked about their other academic activities such as presentations and the use of communication tools to support their university learning. Among the most popular digital tools used included PowerPoint (90.2%) and a website/wiki/blog (48.8%). Some of the students had used e-portfolios (26.8%) while a handful had used an electronic whiteboard for presentations (19.5%) (see **Figure 11**).

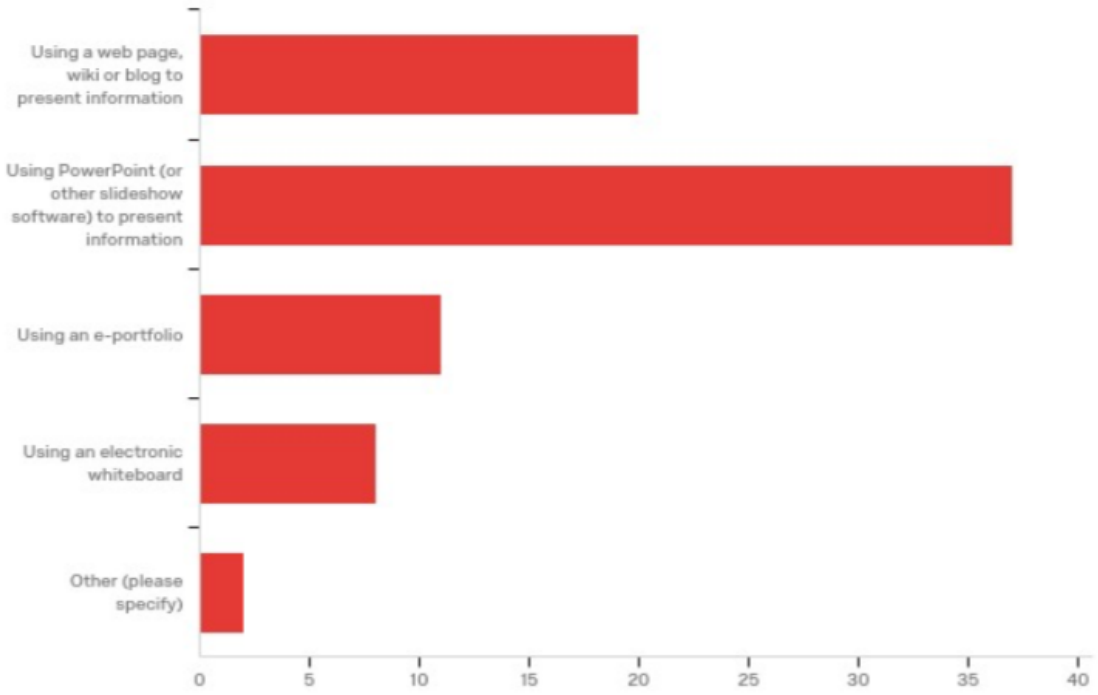

Figure 11: *Digital tools used for presentation*

Communication and interaction between students and their tutors/lecturers and peers, and accessing online course materials are important academic skills needed in the university. The findings from the survey indicated that disabled students were highly engaged with using technology for communication (see **Figure 12**). Overall, 95.1% of the students communicated with their tutors or peers by email. About 78% accessed course materials – lecture slides, notes, podcasts – via a virtual learning environment such as Moodle, 65.9% were comfortable contacting their tutors or peers using SMS or text, and 43.9% used online discussion forums to share ideas with other learners. One-third of the students (31.7%) used video or audio conferencing tools to communicate with others. One finding that stood out was the use of institutional email. One student pointed out: "*With Moodle and institutional email, it is very convenient to have access to lecture notes, slides and to communicate with lecturer*." Another student noted the difference from their former institution:

> *In my previous college, we did have our own email given by the college but it seemed nobody ever made use of it. We still continued using our personal emails for almost everything. Not all the lecturers in my college made use of the Moodle as some of them are not very tech-savvy.*

One other interview participant pointed out that having the university institutional email was among the most notable experiences for him when he first entered Faith University. Having the institutional Faith University email was very significant to him and became an important source of digital cultural capital. After all, Faith University is a prestigious university, according to this student.

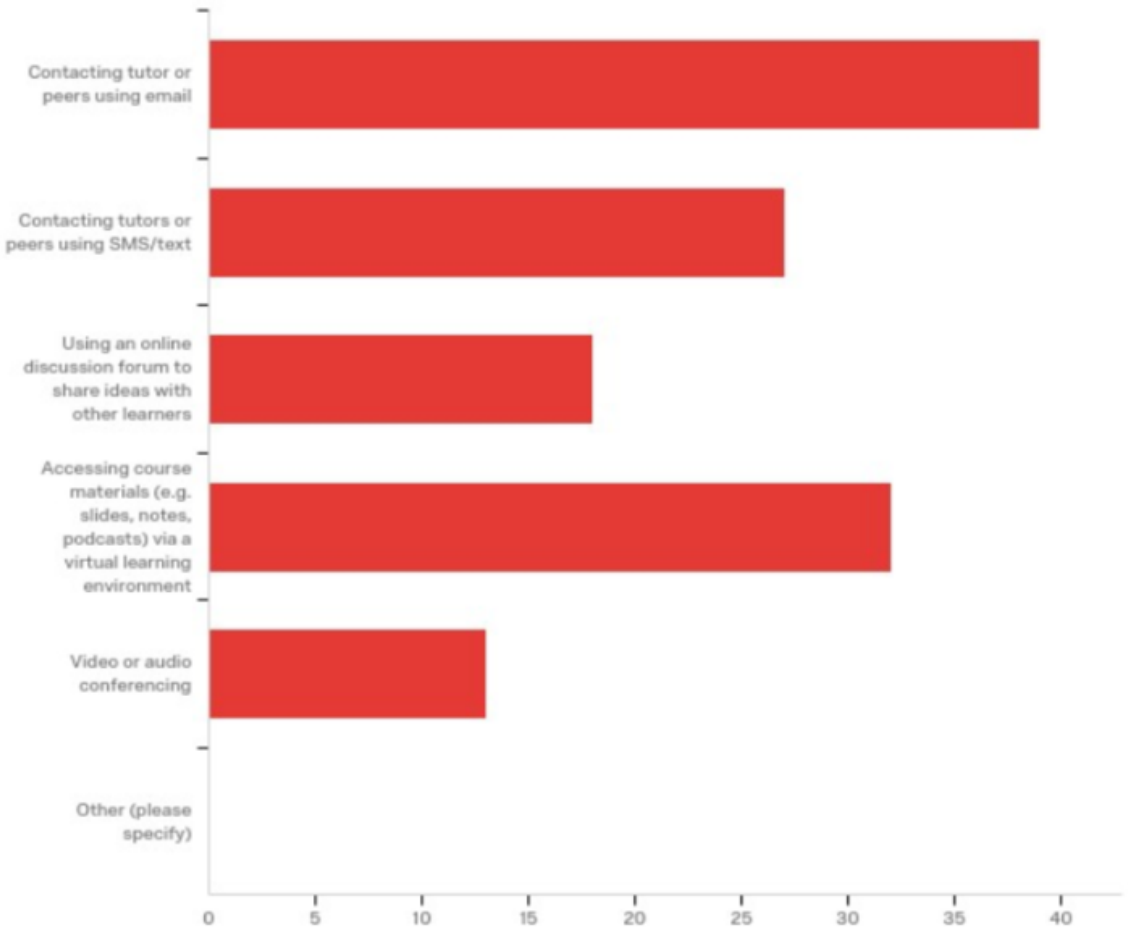

Figure 12: *Communication and interaction with tutors/peers/course materials*

The survey respondents also reported the use of digital devices to plan and manage their learning in the university. Overall, 70.7% of the students used a computing device to plan their assignments. Under half (46.3%) used a computing device for time management, while 43.9% used a digital device to record lectures. Overall, the survey responses appear to suggest that the students were generally comfortable with, and heavily reliant on, computing devices to support their academic activities in the university. They had high levels of access to, and use of, technology while possessing a significant amount of the digital capital needed to navigate their university lives. Compared to their educational experiences before coming to the university, the majority found the technology environment at Faith University significantly better. There was free access to laptops and computers with technical support available. The availability of the Internet and Wi-Fi access on campus were essential to them. Having access to academic resources on Moodle such as lecture notes and video recordings was also important.

So far, the findings have been focused on the students' technological know-how. The following sections focus on other forms of digital cultural capital, including formal and informal investment of time in self-improvement of technology skills and competencies. The influence of family and school

in supporting early and sustained access to technology, as well as encouraging use of technology similarly played a vital part in the accruing of digital cultural capital.

A majority of the survey respondents (78%) reported that their former school or education institutions did not encourage them to undertake any formal technology-related qualifications. A handful of students reported otherwise. They listed having taken subjects such as the *IGCSE ICT* or the *UEC ICT*. IGCSE is an international British high school certificate, while the UEC is a private independent Chinese high school system. Typically, the students who attended the Malaysian public school system had less access to technology due to the economic constraints of many national schools. Computers were usually separated in another room or computer lab, and they were rarely allowed to use them. Based on the students' comments, many of the computers were very old and not functioning properly with outdated software. Generally, these students did not have access to technology training during their high school years, so their exposure was minimal. However, it is noted that many students were comfortable with exploring technology using the trial-and-error approach. Some indicated they taught themselves or relied on themselves to learn the technology they needed outside of school. One student commented: "Most of the time, I tried and find out the function of most of the technology by myself." Another student said: "I learned how to use gadgets according to my needs." This might be the reason why the survey data showed that, despite minimal training in their schools, the students had high access to, and use of, technology.

In terms of family influence in the home, 41.5% of the students stated that their family had a very positive attitude to technology and encouraged them to use it. About one-third (31.7%) revealed that family members were neutral in their attitude towards technology, while only 7.3% of students' families had a negative attitude to technology and discouraged them from using it. While a handful commented that their parents were highly influential in their uptake of technology, the majority mentioned that while their parents were supportive in the use of technology, the students were the go-to person in terms of technology-related matters at home, with some parents being technologically illiterate. For example, two students commented: "In my family, technology is being introduced by me to them"; "In my family, I am always the first person my family members refer to when it comes to IT problems and I believe computer-related issues (especially software) come easy for me to solve." One student commented: "my dad does not follow tech trends while my mum is not that tech savvy either", while another said: "Parents can't catch up with technology; I am pretty much the most capable in the house."

When it came to seeking support for technology-related issues in the university, the students rated the most helpful sources to be: friends from the same course, lecturers/tutors, and friends/family from home. In comparison, while some did access online networks and forums, the majority rated these sources to be of less help. For one blind participant, another blind friend was her main source of technology support. She elaborated:

> *Thanks to one of my blind friends, I was exposed to smart mobile phone and upon my exposure to that, the way I learnt improved significantly. My friend would always be ready to provide his guidance on how to access my smart mobile phone (my iPhone, to be more specific) whenever I needed it. Online forums had also been very helpful; they had enabled me to fix some accessibility-related problems independently when I used my JAWS screen-reader on my laptop and my Voice Over software on my iPhone.*

The data from the survey shows that, in general, the disabled students' access to digital social capital came from their existing physical or off-line social networks, such as their course-mates, friends, and lecturers. When probed further during the follow-up interviews, the students unanimously shared that they usually tried to figure things out for themselves first through 'googling' relevant information online. Only when they had exhausted all avenues online, would they seek out assistance from others. For example, one of the interview participants who has a learning disability and co-morbid conditions said:

> *My learning differences or disabilities are quite identical to myself. There are not much expertise in assisting my specific needs. I usually learn and search online myself, discovering what works best for me. There are years of trial and error to get things (technologies) work the way that will maximise and equalise my disability.*

When he did join online networks and forums, it was mostly for social and emotional support for understanding his learning disability rather than for technology support. This finding corresponded with Seale et al.'s (2015) study, where the disabled students in a UK university found virtual or online sources of technology support not the most useful source of help. Similarly, Seale and her colleagues also found friends from the same course and lecturers to be the disabled students' most helpful sources of technology support.

4.5 Summary

To recap, this chapter has addressed part of ***Stage Two***: ***Three-level of field analysis*** – starting with **Level 1** (*Analyse the position of the field vis-à-vis the field of power*) and **Level 2** (*Map out the objective structure of relations between the positions occupied by agents who compete for the legitimate forms of specific authority of which the field is a site*). The analysis of the macro and meso levels of the case university were first presented and discussed. It was found that despite having national disability policies and laws in place, the implementation of disability support and services was unregulated and piece-meal in practice. This was compounded by the conflicting conceptualisations of disability among various authorised government agencies and ministries responsible for disability matters. Stereotypical and negative media representations further alienated the disabled community and their families. At the micro level, evidence from the online survey revealed that the disabled students in the case university were prolific users of a wide range

of mainstream and accessible technologies for academic and social purposes. In short, most students had high levels of digital capital.

With this understanding of the broader structures of the social field involved, the following chapter will move on to **Level 3** (*Analyse the habitus of agents; the systems of dispositions they have acquired by internalizing a deterministic type of social and economic condition*) of Bourdieu's three-level field analysis. In the next chapter, I used the *Listening Guide* to systematically comb through each single narrative to locate the multiple voices of the participants. From this voice-centred relational analysis, the personal accounts of the participants are presented through detailed biographies, plot voices, and I Poems.

CHAPTER 5: UNDERSTANDING HABITUS – THE DISABLED STUDENTS' STORIES

> *The habitus – embodied history, internalized as a second nature and so forgotten as history – is the active presence of the whole past of which it is the product. As such, it is what gives practices their relative autonomy with respect to external determinations of the immediate present. This autonomy is that of the past, enacted and acting, which, functioning as accumulated capital, produces history on the basis of history and so ensures permanence in change that makes the individual agent a world within the world.*
>
> (Bourdieu, 1990, p. 56).

5.1 Introduction: The stories

This chapter addressed **Level 3** of Bourdieu's three-level analysis. Here, the focus is on understanding the disabled participants' habitus through their individual accounts in relation to the meso and macro fields discussed in the previous chapter. These stories were constructed from the results of the first two steps of the *Listening Guide* (Gilligan, 2015) on capturing the participants' personal voices. Many verbatim participants' quotes from the interviews were used throughout the write-up. These stories provide evidence specifically to answer the second research question: **What are the disabled students' dispositions and habitus on using digital technologies?**

First, I introduce the participants' biographies from my study. These biographies allowed me to provide adequate and meaningful information to the reader to make sense of disabled students' past and present experiences from a specific political, cultural, and social context. The biographies are then followed by: 1) Plot voice and my responses to the plot voice; and 2) I Poems. Finding the plot voice involves searching for each participant's story plot. Specifically, I located the participants' stories by particularly seeking out "repeated words, salient themes, striking metaphors or symbols, emotional hot-spots, gaps or ruptures" (Gilligan, 2015, p. 71). The second component involves my responses to the story plot. This is where I locate myself and explore my own feelings, thoughts, background, history, and experiences in relation to the interview data and the person I had interviewed. Next, I presented the participants' I Poems. Focusing on the use of the pronoun 'I', the I Poems were extracted and generated from the participants' interview data. The first I Poem was focused on the participants' sense of self when they spoke about themselves in terms of their experiences living with their disability, while the second I Poem was focused on their relationship with technology. This analysis framework was discussed in detail in Chapter 3, Section 3.9: Analysing Interview Data.

Methodologically, developing rich, thick, and highly detailed descriptions of each participant's case in their particular setting enables greater possibilities of transferability. In Bourdieusian terms, this

highlights the participants' "way of being", their "habitual state", "predisposition", "tendency", "propensity", or "inclination" (Bourdieu, 1977, p. 214). What is central here is how this enduring system of dispositions generates their present practices, beliefs, perceptions, and feelings. The information captured significant features of the participants' character, cultural background, family upbringing, and past schooling experiences. Emphasis was on detailed information surrounding their past and present relationships with technology. These individual stories are vital to our understanding of the disabled participants' habitus. At this juncture, it is crucial to highlight that while habitus "refers to something historical" and is "linked to individual history" (Bourdieu, 1998, p. 86), it is permeable and transposable. In other words, habitus is not static. Hence, when and if disabled participants encounter unfamiliar fields, their habitus are also transformed. Reay (2009) added that this disconnection between habitus and field "can generate not only change and transformation, but also disquiet, ambivalence, insecurity and uncertainty" (p. 1105).

5.1.1 Participants of the study

To ensure anonymity, pseudonyms were given. These pseudonyms were chosen to reflect the ethnic origins of the participants. Interestingly, it is not uncommon for Malaysians, particularly Chinese and Indians, to take on western-influenced names due to our colonial past. I, for example, have been given an Anglo-Saxon name (Helena) on top of my Chinese name (淑仪) from birth.

Anna, Chee Seng, Intan, and myself come from West Malaysia, while Patrick and Felicity are from Sarawak and Sabah (East Malaysia), respectively. See **Figure 13** for disabled participants' location on the map of Malaysia. All participants, including myself, were born in Malaysia and spent all of our primary and secondary schooling locally.

(Source of image: Wikimedia Commons)

Figure 13: *Participants' location*

The participants are:

Anna Lim, 21 years old, 2nd year undergraduate student, ethnic Chinese

Chee Seng, 23 years old, 3rd year undergraduate student, ethnic Chinese

Patrick Ting, 22 years old, 3rd year undergraduate student, ethnic Chinese

Felicity Kitingan, 33 years old, PhD post-graduate student, mix-ethnicity indigenous/Chinese

Intan Liyana, 18 years old, Foundation Studies, ethnic Malay

5.2 Anna Lim's story

> *I started learning Braille at the age of six and the experience was so agonising that it took me about three years to master it. In fact, I had to go through Year 1 for two years and could only proceed to Year 2 when I was nine. I struggled a lot when I was learning Braille; my mum had to literally force me. I wish my learning experiences could have been different as I was not a tactile learner. It would've been really helpful if I had been exposed to technology from an early age.*

Anna was born partially blind and became totally blind when she was three months old. When she was younger, she recalled having some perception of light, but this is now gone. Having attended an integrated national school[10] in Malaysia for both primary and high school, Anna predominantly spoke Malay in school and almost exclusively Mandarin at home during her formative years. Like many school-going children in Malaysia, she was able to converse, read, and write in at least two languages. Most ethnic Chinese in Malaysia, like Anna, are trilingual. Anna's memories of her early schooling days were imbued with strong emotions including a loathing of learning and using Braille. She "agonised" over the authoritarian culture of the Malaysian school environment, particularly the teachers. Anna also lamented how her family was like any typical "conventional Asians" – traditional and restrained with very rare outward expressions of love and care. Anna spoke fondly of her 3 younger sisters and was particularly protective of the younger two. She was closest to the one who was two years younger. This sister was her 'partner-in-crime' in her dabbling with technology.

Anna's fluent spoken English during the interview belied her struggles with the Malaysian version of the English language during her formative years. At fourteen, she fell in love with the English language, particularly the spoken form of British English, after her initial exposure to a British examiner at her first piano examination. Since that life-changing eight minute encounter with a British native speaker, the self-professed "Anglophile" devoured all things British, especially the

[10] The Integrated National School programme in Malaysia was implemented in 1962 to provide children with special needs to access education in an integrated environment together with other typical school-going children (Ministry of Education, Malaysia) https://www.moe.gov.my/pendidikan/khas/programme-pendidikan-khas-integrasi/sejarah

British Broadcasting Corporation (BBC), and aspired to speak like one. Her diligence to master the language motivated Anna to seek out online communities to interact, and practice her English, with native speakers, sometimes even at ungodly hours due to time differences in the host countries. Anna consumes a daily diet of BBC podcasts and loves Charles Dickens.

For Anna, technology seemed a natural fit. She attributed her affinity for technology was due to the fact that she was an audio learner rather than a tactile learner. She spoke of digital technology as giving her a "sense of empowerment". Anna found she could spell and write freely with her laptop. Being able to type and write on her laptop made her feel "so original" and Anna says that she could be whoever she wanted to be.

> *Oh I wish I've learn how to use technology since, since I was a child because learning Braille was really, really, agonizing for me. Seeing as I am as an audio learner, it would be extremely helpful if things have change um if, if, I was exposed to a laptop when I was younger rather than the Braille machine.*

Anna felt that the Wellbeing Centre at the university welcomed her with open arms. For Anna, she did not expect people there to care about her so much, "not just academically, but also care about me as an individual". Her main decision for taking up the offer to study at this university was due to the very first meeting at the centre. Despite the fact that her middle-class family "can't really afford it initially", her mom, seeing how happy and convinced Anna was with their service, decided to let her study at this university on the same day. The university's tuition fees were among the highest in the country, being a foreign university branch campus. In her third year at the university now, Anna feels it is "the only place that I can fit in". Throughout her studies thus far, she has developed a close affinity with the staff of the Wellbeing Centre.

5.2.1 The plot of frustration and empowerment

Anna's story was one of frustration and empowerment. The frustration was from Braille that she had to battle with from her early years and schooling days. Anna spoke about how "learning Braille was really, really agonising" many times throughout the interviews. She went to great lengths to explain why and how it was such a torture for her – "you have to memorise everything blindly and that make you feel more blind". Despite this, Anna had no choice but to depend on Braille for everything. She went through this ordeal throughout her schooling days.

"I survived!" – Anna spoke with pride each time after venting her frustrations about how "stupid", "ridiculous", and "unreasonable" the Braille system was to her. To Anna, Braille "makes me feel so bad, so blind". Survive she did, as she embraced the new technology of reading, writing, and communicating using her mobile phone and laptop. New technology empowered her – "it gives me a sense, a sense of empowerment". She is now free and empowered because "I can write freely the way I want to write" and "it just make me feel like I can be whoever I want to be". Most

importantly, Anna realised that she was an audio learner rather than a tactile learner. It justified her frustrations with Braille, which is a tactile system of learning.

My response: Anna's retelling of her early schooling days resonates with my own memories of school. I could feel the deep hurt as she vividly recalled the events of her primary school days. Anna shared how her teachers "humiliated me", and "looked down on me", and that she "was left out" because of her "uneducated" non-English speaking mother. This had led to, according to Anna, a general distrust of adults, especially teachers. Those early school days were long gone, but the hurt remained. I believe this was the larger internal monster that she has yet to overcome completely, if she ever does. Anna said: "so ya, that's why I – that's why in the university, I find it hard to trust anyone who are old". Her lack of trust was masked in the form of stubbornness to accept any advice given from adults. She was hesitant to seek help and support from her lecturers when she encountered challenges in her studies at the university. Instead, Anna relied mostly on herself, 'Google', her sister, and another former university friend, especially when needing support with technology. This reminded me of my own school days, in particular my Chemistry teacher who used to pick on me in each class. I hated it and remembered how embarrassed I was each time she called my name to answer questions, knowing well that I struggled with this subject. Events such as these stay, and the hurt remains even after almost 35 years.

I am glad Anna had begun to slowly learn to trust some adults at the university's Wellbeing Centre. She reflected and disclosed how close she is now with one of the Wellbeing Centre learning support staff – "things have changed". It also gladdens my heart to hear her say during our interview that "we can be friends", two times, seeing that she does not get along with most adults. She is wary of intimidating adults due to her past schooling experiences. It was crucial that Anna was comfortable with me, to view me as an ally, and felt safe to tell her stories during the interviews. Within a relational framework such as my study, I had a responsibility to build the participants' trust in the research process and with the researcher. This trust determines what Gilligan (2015, p. 75) said is "essential to people's ability and willingness to speak truthfully about their experience".

5.2.2 Anna's I Poems

I Didn't Feel Free

I discovered
I manage
I read
I hated
I couldn't get it
I know
I mean
I didn't

I struggled
I still

I Can Be Whoever I Want To Be

I felt free
I can
I survived
Oh my God!
I love

I remember
I start to use
I literally
I mean
I have

I realized
I think
We just
I just

I couldn't
I couldn't actually
I sort of
I got comfortable
I am
I'm comfortable
I suppose?
I'm still struggling

I was
I just didn't
I didn't feel
I didn't feel free
I'm not
I had to
I know
I see

I wasn't really good
I have to
I've never heard
I use
I don't have access
I know
I survived

I've not
I finished
I think
I don't personally need it
I think
I don't

I'm more
I'm more

I actually prefer
I'm quite good
I felt great
I could use it
I mean
I can
I feel

I have
I do
I would
I found
I think
I am just afraid
I didn't have to

I got into it
I think
I can
I was given
I just have to
I think
I can't
I had
I felt so happy

I can write freely
I can be whoever I want to be
I have
I feel
I struggled
I still need
I use to have
I wasn't
I found strategies
I'm happy

These two separate I Poems allowed me to hear clearly, in Anna's own words, her *sense of frustration* with using Braille in her growing up years – "I hated", "I couldn't", "I didn't" – in contrast to her *sense of freedom* with using a laptop – "I felt free", "I can be whoever I want to be", "I like", "I can". From Anna's second I Poem, we can gather that although her experiences with technology were not without challenges, she managed to find solutions and it was worth it in the end. For example, moving from "I struggled" and "I still need" to "I found strategies" and "I'm happy".

5.3 Chee Seng's story

> *No, I have no idea it has become so severe, because if I would be diag- diagnosed with ADHD, started to learn assistive technology that cater to my needs since young, I wouldn't have, I wouldn't have gone through that because, at that point, it was the, uh, C-PTSD, uh, when C-PTSD started. I was, couldn't even function properly, let alone trying out assistive technology.*

Chee Seng was very forthcoming about his past. He was eager to share how he advocated for himself and others at the university. His undiagnosed condition – ADHD comorbid Dyslexia and Dysgraphia – complicated Chee Seng's life, including an attempted suicide around the age of 7-8 years old. He welcomed his diagnosis at 19 years old as it finally liberated him. Chee Seng went through a tough childhood, and his adolescent years were riddled with extreme stress, fear, and confusion, both at home and in school. He was constantly in "a lot of trouble" and was seen as a "problem child". His parents and teachers, not knowing and understanding his condition, dealt with him unsympathetically. Harsh disciplining of children – akin to child abuse in Western societies – is widespread among Malaysian communities, although rarely spoken about in public[11]. Corporal punishment still remains legal in Malaysian schools at the time of this writing. According to Chee Seng, "I was beaten up by my parents, I was beaten up by my teachers" when "I just couldn't do it".

> *It's like I'm finally breathing, it's, it's literally like I'm breathing … because usually, I can't write. With computer, I can, I can write. Usually I can't read, with computer, I can at least.*

Memories of Chee Seng's late teenage years (15-18 years old) were ones of locking and isolating himself in his room entirely with his laptop computer. When asked to describe his relationship with technology, he said without a doubt, "it's like, it's like a necessity, it's just like air that you breathe". For Chee Seng, technology provided "the way for us to see clearly about the world around us". Technology made it possible for him to read, to "actually finish a book" for the first time in his life. Technology made it possible for him to "write beautiful poetry". Technology made it possible for him to find his way home. For many of us, technology makes things easier; for Chee Seng, it made things possible. Technology tools such as noise cancelling in-ear headphones were "spiritually awakening" for Chee Seng – providing him a filtered space within which to focus, and to work far more productively. Before entering the university, technology was already playing a major role in his life. Chee Seng recalled:

> *My first headset, which I can listen music and isolated myself. It's the first time that I able to live my life without distraction. Ya, it's the first time … 16, 17 around there, that's when I get my first ear- earphone. So, that was the first time that "oh, ok I can finally, you know go on with my life without constantly being distracted by, ok, this person is talking, that person is talking, ya ya that's the first time that I can, ya, live, breathe, if you like. And also computer and Internet, would be also the first experience that "oh, finally I can type, I can write, I can communicate, you know, without that, I couldn't even communicate".*

Having an unseen impairment, Chee Seng disclosed how others quickly dismissed his disability challenges as trivial. His experiences dealing with the Wellbeing Centre at the university were the complete opposite of Anna's. Chee Seng went through an uphill battle fighting for his provision

[11] The 'spare the rod, spoil the child' mantra is still deep-seated in most Malaysian homes. Physical and emotional punishments are culturally and morally accepted in the name of 'tough love'. One national survey reveals that 81% of Malaysian parents carry out physical discipline at home (Malay Mail, 2019).

through the Wellbeing Centre. He related being asked by his school's Disability Liaison Officer questions such as "do you care about your diet?" and "have you been taking too much sugar?" when seeking help to get some form of accommodation. He recalled lecturers telling him, "oh, I don't think ADHD exists!" He needed to do his own extensive research and compile relevant documents to advocate for himself. What felt like a Sisyphean task, Chee Seng managed to fight the system to get the provisions he needed, despite "self-doubt" and "helplessness". If not, "I would have dropped out as well if I didn't fight for myself" or "I might have committed suicide, who knows, because of the stress that I couldn't proceed". At the same time, he attributed this persistent push for his rights to the exposure and access to relevant knowledge within his school. Proudly, he claimed how he was empowered to "find knowledge and create knowledge the Foucault way" through some of the courses he was taking in the university. Having survived challenging circumstances, Chee Seng was keen to get into advocacy work. He wanted to help those like himself to have the right to accessible technology.

5.3.1 The plot of survival and emancipation

Since he was young, Chee Seng always felt he did not belong to this world. Constantly feeling like an outcast – he "can't fit in, something is really wrong", yet "I don't know what is wrong". Living through most of his life in "survival mode", Chee Seng found "many, many ways" to "cope with the world". After a long hard journey, his redemption came in the form of having access to the Internet. It was his only way to "connect with the world" and to "navigate the world around us". Technology transformed Chee Seng's life, giving him the weapons to battle through his academic journey. When asked to describe his feelings toward technology, Chee Seng said: "Emancipation". During his first year at the university, when his condition was finally professionally diagnosed, Chee Seng embraced his new identity. With proper diagnosis, he had access to the medication that he needed to function. It was like he was given a new lease of life. Now armed with new-found confidence and relevant information, Chee Seng was able to advocate for himself and others in the university, especially in terms of assessment methods. Chee Seng was also empowered to fight for his rights through his involvement in online community forums – a place where he felt he belonged and was in solidarity with. Knowing that he was not alone in his struggles gave him the confidence to fight for a different examination assessment method for his school.

My response: Chee Seng and I connected immediately when I mentioned early in the interview the reasons why I got into this research. A keen and passionate advocate, he was very excited about my plans to start a centre at my university to support disabled students. Chee Seng's immediate response was: "I can help you!", having survived battling the system to advocate for himself in the university. Despite his formal diagnosis, he struggled to gain accommodation from the university's Wellbeing and Learning Support Centre. In many instances, he had to fight and prove that he needed accommodations. Chee Seng attributed this to a lack of awareness of academic and support staff on unseen impairments. At the same time, it was also the learning environment that

equipped him to continue to fight for his rights. Learning about Foucault through his classes was the catalyst for his self-advocacy journey. In fact, Chee Seng mentioned Foucault's concept of power several times throughout our interviews. In his foundation year, through his school and courses, and having access to journal articles and the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Chee Seng came to suspect that something was "wrong" with him. From then on, knowledge became his weapon in advocating for himself.

5.3.2 Chee Seng's I Poems

I Was Always Struggling

I can't write
I write
I can't think
I have to
I can't write
I have to go back
I got into a lot of trouble
I couldn't do it
I just couldn't do it

I suspect
I have
I basically lock myself
I would sleep
I cannot

I can't fit in
I don't know
I had
I have to get out
I can't see
I can't really
My future

I'm like 'yes!'
I have learning disability
I don't
I went through

I tried
I don't know
I can't
I can't navigate
I can navigate
I think
I am restricted

I was suspecting
I was having ADHD
I have no idea
I wouldn't
I wouldn't
I couldn't

I fought
I really appreciate
I can
I will use

I Can Breathe

I can type
I started
I found out
I feel
I started to type
I feel

I would fight
I don't care
I mean
I couldn't function
I need
I would
I would find my way

I'm finally breathing
I'm breathing
I can't write
I can
I can write.
I can't read
I can

I can
I discovered
I couldn't
I will
I will
I barely survive!

I can
I'm able to live my life
I can live, breathe
I can type
I can write
I can communicate
I couldn't
I can write
I have

I couldn't
I couldn't
I probably wouldn't
I wouldn't survive
I would have stop
I wouldn't be able to
I wouldn't be

I fought
I gather
I will
I will ask for it
I would fight for it.
I don't get

I can't
I was always struggling
I can't write

I can do that.
I was wow!
I can
I can breathe

Chee Seng's first I Poem revealed his past struggles with his undiagnosed learning disability. His unseen impairment got him "into a lot of trouble". When he was finally diagnosed at age 19, he embraced it with pride: "I'm like 'yes!, I have learning disability". From then on, Chee Seng started advocating for himself in the university. From his I Poems, he seems to be in a constant battle of fighting – "I fought", "I would fight for it", "I would fight", "I would find my way" – and surviving – "I couldn't function", "I barely survive!", "I wouldn't survive" – despite having a clinical diagnosis. Chee Seng constantly needed to "fight" for his rights in the university. When talking about his relationship with technology, Chee Seng's second I Poem was filled with the phrase "I can" at least 14 times. It is also interesting to note the way the "I" moves in the second I Poem – from statements of inability ("I can't", "I couldn't", "I wouldn't survive", "I wouldn't be able") to statements of ability ("I can", "I would", "I'm able", "I will", "I can do that"). Chee Seng equates his experiences with technology to be "just like the air that you breathe". This is particularly visible in his I Poem – "I'm finally breathing", "I'm breathing", "I can live, breathe", "I can breathe".

5.4 Patrick Ting's story

> *I think is because I'm quite fortunate to, to enter university like this. My parents didn't go to university, my elder brother didn't. So ya, so I think the exposure like really helps, even before this like pre-university like, uh, secondary school Form 4, Form 5, uh, because I was, uh, I was attending Chinese independent school, just like, um, one of the best school in town, like, although it's like pretty small town, uh, it's, it's I would say like some privilege, privilege students, those are like tech-savvy students.*

Patrick comes from a small town in Sarawak, east Malaysia. There is a sense of pride when Patrick speaks of his education trajectory, past and present. He attended a Chinese independent school from 15 years old, which to him, was one of the best schools in his small town. The university he is currently enrolled in was also a deliberate choice. The prestige status of a foreign university was important to him. This is not surprising among middle-class Malaysians of Chinese descent. Having an overseas university degree, especially from the United Kingdom, Australia, or

the United States of America, increases one's social standing and reputation. For the Chinese, education equates to valuable forms of capital – economic, cultural, and social capital[12].

Similar to Chee Seng, Patrick experienced harsh punishment in his childhood and adolescent years. His home environment was strict and authoritarian. At the university, he was diagnosed with depression and Bipolar disorder more than a year ago, and struggles with panic attacks. Upon reflection, Patrick could trace these symptoms back to his childhood experiences. Viewing mental health issues as a "taboo thing", he kept it to himself and resorted to self-harm between 15 and 16 years of age. He attributed this to getting many beatings from his parents when he was young – which "can just come anytime" or "without reason". Patrick specifically shared a particularly vivid nightmare that he experienced just a year or two back – "a nightmare about my mother caning me". He remembered waking up filled with anger and stormed into his parents' room. Patrick woke them up and caned himself until "my hand and my legs are swollen", shouting at them, "Is that what you want?" As far as he can recall, the relationship with his parents and his older brother was strained and cold.

> *… there're this this friend of mine, she has been telling me that like there's some websites that, uh, that you can talk to some people about your issues. I'm still, um, hesitating to use that, but I would say technology in general sense, uh uh, I rely it, I rely on it, uh, for studies, lah. So, I guess it's just, um, finding ways to deal with studies …*

Technology, for Patrick, was not something he thought about much, as it seemed as if it had been part of his life all this time. Patrick equated himself to those of his generation – Generation Z (or simply Gen Z). Members of Gen Z are often known as 'digital natives'[13] or the Net generation. Most university students in Malaysia, like Patrick, are constantly digitally connected (Song, Murphy, & Farley, 2013). Technology such as Moodle, a learning management system used at the university, made it possible for Patrick to catch up on the days he "didn't attend most of the classes" due to his mental health issues. For those times when he experienced panic attacks which left him needing a lot of sleep to recover, and those times when "I just feel like lying on the bed and doing nothing", he depended on lecture notes uploaded on Moodle. Having access to information online as well as the uploaded study materials, meant that Patrick's studies were not severely affected and he was still averaging B grades. He acknowledged that this would have been "impossible" without access to technology.

[12] One's level of education establishes one social status and is highly regarded within this community. This is a universal 'doxa' among all people of Chinese descent, those residing on the mainland and overseas. This doxa predates that of the Chinese immigrants that first came to Malaya, and this tradition of putting education first above anything else goes back historically to Ancient China.

[13] Digital natives are native speakers of the digital language. It is said that digital natives possess fundamentally different characteristics from other generations before them due to their pre-occupation and perpetual contact with technology. They typically grew up on a steady diet of browsing the Internet, playing computer games, streaming music, chatting on social media, and texting on their smart phones.

> *I was running for a position the student's association, um,: last second mid-year? and not a lot of people actually know about my mental health issues. But somehow, there's this rumour that, that spread, um um, Patrick is not mentally stable enough to be this this this … I, I, I wouldn't have a doubt that, you know, without the help of technology, it could spread that far.*

However, he experienced first-hand the ugliness of social media. When Patrick was running for a position in the student's association, there was a rumour spreading on social media that he was "not mentally stable enough" for the position he was running for. He felt, without a doubt, that technology compounded this issue. He was sad and shocked when he found out about this, as not many people knew about his condition. Patrick felt there was still a heavy stigma and judgement on people with mental health issues, where "you are like psycho or whatever" or "if you cut yourself, then you'd probably gonna cut someone else". He would not have gone to seek help at the Wellbeing Centre if not for a friend who alerted the office to contact him when things got "really bad". He revealed that he was forced to go to the Wellbeing Centre by his friend, stating that "I didn't need it, why do I have to go?" Patrick still finds it hard to talk to someone, although he acknowledged that it helps sometimes, but "you don't feel like troubling people".

5.4.1 The plot of self-sufficiency and accessibility

Leaving home for the first time and coming from a small town in east Malaysia, Patrick expressed that he was extremely proud to be studying at this "prestigious" university. Being accepted in this foreign university was a great achievement for him. He prided himself as being self-sufficient and loved to be challenged in terms of learning. Throughout the interviews, Patrick instantaneously lit up whenever he shared his experiences of helping friends with their studies or when he was able to solve a difficult question or assignment. Patrick, who was in his final year, had only been clinically diagnosed with mental health issues for slightly more than a year, although he mentioned that he had struggled with self-harm since the age of 15. He had not ever spoken to anyone about this issue, especially his parents and older brother until a major trigger last year. This was the first time he had spoken to someone at the Wellbeing Centre about this issue, and only because a friend had alerted the centre to contact him. Patrick said he would not otherwise had sought help from the Centre. Perhaps seeing this as a sign of weakness, Patrick seemed to struggle with accepting help or assistance from anyone. It did not fit into his idea of a self-sufficient and independent university student. Staying on top of things was important to him, and while given accommodations due to his mental illness, Patrick did not plan on using them. Despite going through a major crisis last year, and having to miss many of his classes, he was proud that he had managed to maintain his academic performance. Crucially, accessibility to online academic resources was key while managing the impairment effects of his mental health issues. Having access to lecture notes and other relevant online resources made it possible for Patrick to catch up on his classes and stay ahead in his assignments.

My response: Being a middle-class, ethnic Chinese person myself, I could identify with Patrick and his need to be seen as self-sufficient and independent. This is a pervasive Asian cultural tradition that equates production and outcomes to value and self-worth. Hard work and merit are two sides of the same coin – if you fail, it means that you did not work hard enough. There is a famous Chinese proverb related to work ethic: 世上无难事 – loosely translated as 'nothing is impossible to a willing mind'. As one can see, the cultural expectations that sheer determination and diligence will overcome any obstacles, challenges, and setbacks, quickly becomes problematic in the disability support discussion. Receiving extra help such as special accommodations might translate to feelings of inferiority or guilt, even when it is one's right to receive them. I believed this was what Patrick felt.

5.4.2 Patrick's I Poems

I Could Have Done Better

I have
I have some issues
I just feel like
I get like panic attacks
I need a lot of sleep
I stay off campus

I was going through
I was with
I was in Form 4.
I don't know
I mean
I think
I was really young

I don't really
I go to friends
I actually
I haven't
I have
I have
I have one due
I have one week
I'll try not to use it

I didn't really
I have
I don't know
I thought
I was thinking
I knew
I thought
I was
I resorted to
I could have done better
I didn't know
I didn't need it
I felt

I go
I have difficult time

I Rely On It

I would say
I use
I use
I have
I'll try to
I'll seek
I'll seek
I'm studying
I'm connected
I can just

I too lazy
I think they do
I need to go online
I type
I just type
I may even get
I just have to be
I actually prefer

I'll be in computer lab
I usually
I always ask him
I go
I use to follow
I know a thing or two
I do follow
I do
I actually do

I've done a few
I'm still doing
I use to do
I remember it
I first
I think
I think

I only got access
I think
I do

I didn't attend
I didn't attend
I remember that time
I didn't
I think

I don't exactly
I feel a bit sad
I was
I was told
I can't
I can't verify it,
I can't
I was even told

I don't mind
I do know
I'm actually
I don't know

I think
I think
I'm quite fortunate
I think the exposure
I was
I was
I would say
I would say yes
I find it more relax

I think
I don't know
I think
I'm still
I'm still actually
I'm still
I would say technology
I rely it
I rely on it
I guess

Being self-sufficient seemed important to Patrick. He did not want to be seen to be relying on others for his problems. Patrick's first I Poem was filled with statements that distanced himself from having to rely on people or the university's disability accommodations given to him because of his mental issues – "I don't really", "I'll try not to use it", "I didn't really", "I could have done better", "I didn't need it", and "I don't exactly". His second I Poem reveals a 'love-hate' relationship with technology. While dependent on technology for his academic work ("I'm connected", "I think it's important", "I rely on it", "I need to"), Patrick recalled negative experiences that he felt were detrimental to his reputation and self-confidence. I suppose this arose from his earlier concerns about being self-sufficient, particularly being at university. Patrick's mixed feelings about technology ("I just don't want to", "I don't know", "I'm not too sure", "I just try not to look", "I wouldn't have a doubt") came through clearly in his second I Poem.

5.5 Felicity Kitingan's story

> *I don't think I really thought about how accessible it actually was, you know, not until our interviews, ya. I think it's just bewilderment because again, you tend to think of technology as being quite distant and abstract, and I'm not the sort of person who take up coding for fun, let's say. Ok, uh, but the fact that you also don't notice, you know, like how it actually penetrated, you know, your life, and you know, how often, you know, it assist, how much, you know, it assist you.*

As a PhD student and academic lecturer at another locally-based foreign university, Felicity was armed with overseas academic qualifications for both her undergraduate and Master degree. She was familiar with the higher education system as a student and faculty member, and was heavily involved with human rights-related work after graduating from her first degree. Her past humanitarian work experiences had left her dealing with deep emotions and trauma. While it was

"very gratifying and fulfilling", she was diagnosed with clinical anxiety and was often in a state of hypervigilance due to her past work-related encounters. Hypervigilance is often linked to post-traumatic stress disorder (PTSD) and other anxiety, mood, or personality disorders.

> *So being able to feel connected, I think it's very important when you're experiencing depression. Because of the depression, you know, can be made worse if you feel very lonely. It was important to actually have that connection there so that, you know, that it's reasonable and logical for you to feel the way that you do, and you're not crazy, you're not, um, you're not being an unreasonable person, lah, which I think it's the fear, you know, the mental illness, am I being unreasonable, always second guessing about your decisions?*

For Felicity, technology was mostly about being able to find connections. It was important for her to keep in touch with her family and friends, and people who could support her, especially during her undergraduate years overseas. Academically, it was empowering and "literally fe[lt] like [my] brain [was] flying" to be able to access and source learning materials from her own university and other universities so that she could connect better with the course she was studying. In terms of dealing with her PTSD, anxiety, and depression, technology "fill[ed] the gap" where and when her mental health support system provision could not help her. Technology provided a safe environment and avenue to seek and connect with information online to understand her illness, as well as for developing coping mechanisms to function. Simple online communication tools such as email, Skype, WhatsApp, or even text messages allowed her to have a "buffer zone when things [got] very overwhelming" to deal with her PTSD and anxiety triggers (e.g., the sound of her phone ringing) that came from working as a child sexual abuse and refugee protection officer. While it helped to be clinically diagnosed and have access to good mental health support and the given medication, ultimately, it was the meaningful connections made possible by technology that pulled Felicity out of depression.

> *… and sometimes also, even when you're feeling low, um, it, uh, a lot of the writing that inspires me is not available in publication, ok. I mean there might be blogs, or journals that are shared, you know, like online. So, for example I mean, the yoga teacher I mentioned, you know, who worked with the UN, you know. I mean I found her online. The artist I discovered, you know, that basically pulled me through my depression ... um, I discovered her online.*

Now into the tail end of her first year of PhD studies, Felicity struggled to keep up with additional physical stress due to spine, knee, and wrist injuries on top of her mental illness, as well as her teaching commitments and being a caregiver to her mom. Juggling all these roles was not working in her favour. At the time of the interview, she had just put in an application for leave of absence from her studies. Having access to research papers in the online databases was of the utmost

importance to Felicity to remain connected to her research during her upcoming temporary time-off from the university.

5.5.1 The plot of struggles and connections

Felicity was 20 years old when she started her undergraduate degree overseas away from home. It was a time of adventure filled with excitement and exploration for a young ambitious girl. During her first year, events from her past were triggered by a suicidal course mate, and since then, she has been seeing a mental health specialist. Sorting out and working through her traumatic past was a long and complicated journey. Felicity was grateful for access to good mental health support that was made available to her where she was. The situation might have panned out quite differently if she was back home. Felicity's involvement with humanitarian work after her first degree was her source of joy and fulfilment, but it also left her with a crippling mental health illness that has impacted her till now. She said that she had no issue with identifying and accepting herself as someone who was living with mental illness. However, she was unsure if she should categorise herself, at least not in the same vein, as someone with more severe disabilities, and that it should not be an excuse for her. When she enrolled in her PhD programme in this university, Felicity came in armed with more than 10 years of strategies and coping mechanisms. Technology had enabled Felicity to cope with her daily functioning, and fostered meaningful connections with people and ideas that were vital in managing her mental health.

My response: I enjoyed talking to Felicity. I remember feeling very inspired by what she had shared with me. We are both quite similar in our profession, as well as in her passion to work with young people. As a PhD student, she understood the research process and knew how important the interviews were to me. At the beginning of her interview, Felicity was somewhat overly concerned about the research process, and was very conscious of her role as the interviewee. For example, at the beginning of our interview, she checked whether my digital recorder was on. Her responses were calculated and carefully worded – "I'll just like go with you step by step, easier for you, so, in terms of your interview". However, as the interview went on, she seemed to relax and focused on just sharing her stories. Felicity was also very articulate and keen to share her experiences. She expressed that our interviews actually made her realise her dependence on technology to function on a daily basis, past and present. At each breaking point of her life – when she was on the edge of a precipice – social connections and interactions made through technology somehow pushed Felicity through. She survived the darkest periods of her life, and made it back to share her stories.

5.5.2 Felicity's I Poems

I Cannot Bear the Sound

I started seeing
I was twenty years old
I started
I think
I started seeing

Your Brain is Flying

I could connect
I think
I mean
you know
I think

I felt very depressed
you know
I felt suicidal
I realized
you know

I said
I didn't need
I didn't want
I felt
I go
you know
I force myself
I go out
I cook
you know
you know

I started working
I was
I was
I cannot bear the sound
I hear the phone ringing
I'm like
I straight away
you know

I hear the phone ringing
I get very "紧张"[14]
you know
you really
your body tense
I think
I'm going through
you know
I relate
you know

I have anxiety and depression
I do
I don't feel this
I feel
you know
I feel

I get anxiety
you know
I don't want to
I feel
I think
you know
you know
I'm hyper-sensitive
I wouldn't
I've no way
you end up thinking so much

I look at myself
I actually do think of myself
I'm willing to accept it
you're not crazy
you're not
you're not
I think
you know

I carry my iPad with me
I know
I want to do work
I download my work
I go to for treatment
my neck
my exhaustion.

I also knew
I also wanted to explore
I had a library at my fingertips
I'll just look up
you know
you know
you know
I think
you're so hungry

I mean
I found her online.
I discovered
you know
you know
pulled me through
I discovered her online
I mean
I feel down
I think
I listen to her stuff
I mean
you know
you know

I mean
I wouldn't have
I'm honestly not
you know
you discover all of this online
you know
helps you
your sanity
you're doing
your PhD
you do need something
you know

I think
I discovered
you know
I mean
your brain is flying
you know
I remember
you know

[14] 紧张 [Cantonese (*Jyutping*): gan^{2} zoeng^{1}] means nervous; worried; stressed; anxious

I don't think
I feel
I'm being able
you know
I think
you know

you yourself
you're capable person
you don't need to
you know
I mean
you pay money
you know
you know
I am grateful
you know
you know
I mean
I mean

I'm interested

I found interesting
you know
I mean
I mean that kind of feeling
you're able
you know
you know
helps you fly
you know

Being a mature-age student and an academic lecturer, Felicity's circumstances and life experiences differed from the other participants who were all in full-time study. Her interviews shifted between her being a student and her teaching experiences at another foreign university branch campus in Malaysia. Felicity's I Poems were filled with the repeated phrases of "you know" and "I mean". There were 20 and 19 "you know" comments respectively in her first and second I Poems. This suggests that she wondered what others knew about what she knows. She was constantly seeking if others understood what she was saying. Having a connection was important to Felicity – to have a shared understanding of what she was saying.

5.6 Intan Liyana's story

> … *because I cannot live without technology, really, really cannot. I feel like if my phone dies, I just, I don't know what to do at that time, and I think among all my family members, I'm the most technology inclined, and also always around technology. So, it's really just part of my life, it's a part of me, I think.*

When we first met during her first interview, Intan had just gone through a gruelling treatment for her recently acquired aggressive degenerative neurological condition that affected her eyes. Whenever she was overly stressed, she started losing her vision and would need to go to the hospital for treatment. She had missed three weeks of classes, and felt extremely overwhelmed with catching up on her coursework. Despite the severity of her circumstances, Intan exhibited a positive and energetic demeanour throughout all the interviews. Describing technology as her "best friend for life", Intan picked up many online study strategies to cope with her clinical depression, anxiety, and ADHD. As she had not attended school much since the age of 15 due to her ADHD and mental health issues, she did a lot of self-study to prepare for her high school national exam. Technology was her "life saviour" during these times, particularly in staying motivated to study. She

also created a study blog to share study tips, skills, and strategies to tackle the Malaysian national exam, Sijil Pelajaran Malaysia (SPM),[15] or the Malaysian Certificate of Education. In dealing with her lack of focus and concentration, she used productivity and scheduling apps as her main strategies to minimise distractions.

> *I found out a lot of things that, like, really help me concentrate and also help me, like, because I have this problem with stress. When I stress, I stress too much. I stress, like, seriously a lot to the point, like, when uh, I think one of the effects of my condition, I have like very little control of my emotions.*

At 15 years of age, Intan was concerned with her depressive state and decided to seek professional help. It was then that she was diagnosed with clinical depression, anxiety, and ADHD. Being a straight A student, Intan's ADHD diagnosis came as a surprise to her, as she had not previously exhibited the typical ADHD characteristics while in school. Initially, she was in "complete denial", as she never thought of herself as a person with ADHD. Similar to Patrick's fears, Intan struggled with the idea of other people knowing about her depression and anxiety. While she knew that "there's nothing to be ashamed of", but "sometimes I, I get like, I get scared or anxious of how people would think of me. I don't want them to treat me differently". She resented the time when she was first diagnosed, when her family and friends acted as if "they were walking on eggshells" around her, being "extra careful" and "extra, extra nice", treating her like something really fragile. All Intan wanted was to be treated the same as everybody else.

> *… so, asking people, I think it will save me more time. But, because I'm the type of person who cannot do it, I definitely cannot do it, I get like very stressed about it if I have to umm…, like talk to people sometimes. So I just, I'll just Google it or something until I find the answer. If not then, that's when I'll consider asking other people. But so far, it hasn't come to that point yet, or very critical.*

Intan's time away at the hospital made her extremely dependent on lecture notes to catch up on her classes. She lamented, and was frustrated with, the lack of information in some of the uploaded lecture notes. Intan recalled one example: "the entire slides were just pictures, pictures, pictures, and I, I, I look at it and I felt like, I felt like, my heart just like sank. How am I supposed to study from this?" Her fears and inability to ask for help from her lecturers and course mates added to her stress in navigating her academic life in the university. Despite having disclosed and registered herself at the Wellbeing Centre, Intan still found herself to be "quite scared" to approach and seek help from them. For Intan, technology was a safer space to navigate because, after all, "technology don't have feelings" and "it won't judge you". Viewing herself as a social misfit among her course mates, Intan also struggled to connect with the people around her. She attributed this to

[15] The Sijil Pelajaran Malaysia (SPM) is a national exam in Malaysia equivalent to the British GCSE, and provides the opportunity for Malaysians to continue their studies to pre-university level.

her “Asperger-like” tendencies and characteristics, such as having trouble reading people’s emotions and social cues.

5.6.1 The plot of determination and dependency

Challenges came one after another, but Intan was determined to do what she had to do. She was always on the search for software applications to help her focus on her studies and finish her assessment tasks. Due to recent life-threatening health issues, Intan was trying to keep up with her academic work. Her hospitalisation threw her off schedule, but she was adamant on not seeking help from others, if possible. She preferred to “solve [her] own problems by [her]self”. So Intan relied on technology – her most dependable companion. Together, they have explored unknown territory, and battled through a series of trials since high school. Her relationship with technology has broadened and deepened even more now that she is at university. In Intan’s own words, “I’m like hundred per cent committed to it”. To her, the relationship with technology has changed from “my boyfriend to my husband”. Intan’s dependency on technology was evident – it is very much a part of her.

My response: I was very impressed with how Intan held up during the interviews, despite having gone through a gruelling medical treatment recently. She sounded optimistic and was very detailed in explaining her current medical health condition, on top of her other disability diagnoses – ADHD and clinical depression. There was a genuine rapport between us, and I could tell she was comfortable with sharing her experiences with me. I remember feeling intrigued by her stories, and being the youngest of all the participants, she worked seamlessly with technology. Intan was exposed to technology from the age of 11, compared to Anna, Chee Seng, and Patrick, who all had access to technology from around 15 years of age. Although a gap of only a few years, her identity and relationship with technology seemed to be cemented far stronger than in the other participants.

5.6.2 Intan’s I Poems

I Shouldn’t Be Treated Differently

I guess
I’ve never
I’ve never
I think
I went
you don’t just have
you have
I never really realize
I got
I think

I don’t really tell them
I try not to
I mean
you know
I rather not tell

It’s a Part of Me

I cannot live
I feel like
I just
I don’t know what to do
I think
I’m the most
It’s really just
it’s a part of me
I think.
I can’t really separate
I really need it
I need it

I really
I cannot really separate myself
my mood

you know
I have
I think
I try not to like talk about it
I think

I signed up
I think they know
I think
I never really
I was quite scared to
I think
I just didn't
I didn't really wanted to
I just let go

I think
I didn't want to
I just kept it to myself
I just didn't
I didn't want to be
I just kept it to myself
I couldn't
I, I was only worried
I didn't know
I never realize them

I had ADHD
I was like "What?"
I've always been
you know
I can focus
I mean
I don't really
I wasn't
I wasn't
I think
I go to school
I didn't know

I was
I knew what it was
I never thought of myself
I can focus
I was really like: "What? ADHD?"
Doesn't sound like me
I've always
I think
I've always

I only
I don't have any reason to go
you know
I don't ask people about it
I like
you know
I just go online
I've never join those
I'm not the kind of person
you know
Because I don't know

I found it very uncomfortable
I don't get access
I get like moody and cranky
I think
I have work to do
I don't have internet access
I get really anxious

I find it out by myself.
I learned
everything by myself
I just google
I usually just
I just risk it
I just do whatever
I don't
I usually do everything by myself

I don't know something
I will just google it
I look up YouTube.
I don't
I don't
I just google it
I just
I don't really
I feel
I don't do that

I do have
I try not to
I'm trying to study
I just delete it
I switch off
I know
I'll turn it on soon
even if I hide it
I know
I switch off
I don't get messages
I mean

I've never
I can't separate myself
It is me
it's completely me
I mean
I mean it won't judge you
you can just
if you don't understand
you can
you can
you need
you can
you know

I would not have been able to cope
I would not be able to
I definitely
I was
I feel
I would have
I would not have
I guess

I realized
I never
I mean like
I think
I was

I shouldn't be treated differently
I understand
I know
I don't

I mean
I don't really know

Intan was careful about disclosing her condition to anyone. While she mentioned that she knew that "there's nothing to be ashamed of", her first I Poem reflected her struggles in accepting her ADHD diagnosis, in particular. She tried to avoid talking about it in order to not draw attention to herself. Intan's statements of negation – "I don't", "I try not to", "I rather not", "I try not to", "I never", "I just didn't", "I didn't", "I couldn't", "I don't", "I've never", "I'm not", "I shouldn't" – revealed her reluctance to identify herself as having a disability to others. On the other hand, Intan embraced technology completely: "It's a part of me", "I cannot really separate myself", "It is me", "It's completely me". Technology has become her identity – a part of her.

5.7 Summary

This chapter has introduced and considered the individual disabled students' stories in detail by seeking plot voice and constructing I Poems to draw out the participants' personal accounts of their past and present experiences. The stories were also presented within a socio-cultural context, through detailed biographies, allowing the reader a more situated understanding of their experiences. These personal accounts demonstrated unique, diverse, and complex relationships with technology, both past and present, in supporting the students' participation in the university. While it was a mixed bag of past experiences in their engagement with technology, the participants' I Poems – "I can be whoever I want to be", "I can breathe", "I rely on it", "Your brain is flying", and "It's a part of me" – revealed a deep and personal relationship with their technology. These I Poems suggested that technology afforded them the opportunities and strategies to participate in the university.

Past research on disabled students and higher education seemed to point to ill-fitted, disconnected, and disadvantaged discourses and experiences, much differentiated from that of their non-disabled peers (Fernández-Batanero, Montenegro-Rueda, & Fernández-Cerero, 2022; Fuller et al., 2009; López-Gavira & Moriña, 2015; Riddell, Tinklin, & Wilson, 2005). This meant that being disabled in the university field would likely result in experiences of standing out rather than fitting in. In the following chapter, however, some of the participants' accounts suggested otherwise. The next chapter will illustrate the disabled students' experiences with technology using Bourdieu's analogy of fish out of water/fish in water – their 'feel for the game'. Here, I will consider the different

positionings of the participants, after which I will discuss how they used technology to meet the academic and social demands of the university.

CHAPTER 6: FISH IN WATER, FISH OUT OF WATER – DISABLED STUDENTS' EXPERIENCES WITH TECHNOLOGY IN THE UNIVERSITY

> *… when habitus encounters a social world of which it is the product, it is like "fish in water": it does not feel the weight of the water, and it takes the world for granted.*
>
> (Bourdieu & Wacquant, 1992, p.127).

6.1 Introduction

From the outset, this is a small study of a group of disabled students from a particular case university in Malaysia. Bourdieu's inter-related concepts of *habitus, field*, and *capital*, provided a critical framework to tease out the enablers and barriers of effective and meaningful use of technology to participate fully in university life. While generalisation from the findings is not the key focus, Bourdieu's conceptual framework was used to establish trustworthiness and maximise transferability of my case study. To enable a deeper and richer understanding of how technology was used by this group of disabled Malaysian university students, I developed thick descriptions and interpretations that incorporated contextual, biographical, and interactional analyses as described in the previous chapter: Chapter 5. These disabled students' individual stories prepared the way for further discussion presented in this chapter.

The goal of this chapter then, was to capture and locate the multiplicity of the disabled students' voices when talking about their relationship with technology – the third step of the *Listening Guide* – locating the multiple voices of participants' relationships with technology. In particular, contradictory and competing discourses were sought to highlight the complexity of these students' experiences. After all, the research shows that marginalised experiences involving social stigma and shame are bound to be multifaceted – "fragmented, discontinuous, incoherent, or incomplete" (Sorsoli & Tolman, 2008, p. 500). While the previous chapter focused on individual narratives, this chapter considers the multiple voices collectively, revealing similarities and differences among the participants' experiences in their use of, and access to, technology to manage and negotiate their position in the university.

In this chapter, I attempt to probe into how the disabled students were able to use their digital resources and strategies to navigate and gain their positions as university students in the higher education space. Drawing from their stories, I first considered the ways in which *digital capital,* i.e., access to, and use of, digital resources and skills accumulated by the students, and *habitus,* i.e., the dispositions and trajectories they brought to the field, were played out in the *field*, i.e., the university. To put it simply, I illustrated the different positioning of the students' participation in the unfamiliar field of the university with their accrued digital capital and established habitus in Section 6.2: Feel

for the game. This is followed by a discussion of the transformation of students' evolving habitus, and the ongoing accumulation of digital capital, to meet the academic and social demands of the field.

Next, in Section 6.3: Playing the game, a collective discussion on the enabling digital experiences were teased out to paint an overall interpretation of the students' experiences in the university as a whole. Here, I attempted to answer the third research question: **3) How do disabled students access and use their digital capital to participate in the university?** The goal of this section was two-fold. First, it considered the role of technology from the perspective of the students. This was undertaken to counter the prevalent perceived notions of technology that were typically filled with stereotypes and myths from non-disabled perspectives. Second, it highlighted how the students used technology meaningfully to participate in the university from a positive perspective. Often, disabled students' experiences are viewed from a limiting perspective. The focus is often on what they cannot do, rather than what they can do. Instead, I prioritised and identified their experiences in developing strategies and techniques that were unique to them to manage their impairments and how they negotiated their participation and resistance in the university environment using their digital capital.

6.2 Feel for the game: position-taking in the university

The university represented the social space or field where the game took place. The players, i.e., disabled students, competed for certain positions within this field, and how they were able to play the game depended on their habitus or embodied disposition. Their acquired habitus was related to both the conditions of their early lives as well as the current settings they were in. To illustrate each participants' positioning, or 'feel for the game' in the university, I drew upon Bourdieu's analogy of fish in or out of water. If and when the disabled students' habitus and embodied disposition matched the field, they became like fish in water. They swam about unconsciously and with much ease, moving seamlessly through water like it did not exist. They did not even know they were in water. Conversely, when the students' ways of being clashed with the field's structures, a mismatch, they would flounder like fish out of water. These students would struggle and constantly try to stay afloat in the water. As they accumulated adequate forms of capital in the process, they could survive … and some might even thrive. The crux of understanding Bourdieu's 'feel for the game' was that to him, a large portion of our engagement with activities in our lives are rooted in this concept. How well the disabled participants played the university game then was determined by the fit or lack of fit between their habitus and the institutional field.

The following discussion illustrates the different positioning of each participant and their engagement with the field. These accounts demonstrated how the participants' trajectories, and their existing digital capital determined how they operated and engaged meaningfully in the university field. The interview data revealed the participants' highly complex experiences, rather than fitting neatly into either fish in or out of water. It was not a case of simply either standing out or fitting in. Instead, their

experiences were on a spectrum between these two positions, in varying degrees of fit (see **Figure 14**). Two participants successfully engaged with the demands of the field, while having a strong sense of the game rules. They held a strong position in the field, possessing relevant and high stocks of capital to move with relative ease in the university space. Despite experiencing significant setbacks, the two participants – Patrick and Intan – were able to continue playing the game successfully. For example, Patrick was found to be a natural fit in the university environment. He knew the rules and had a strong 'feel for the game' (Bourdieu, 1990). Armed with profitable capital, Patrick fitted in well and navigated through the university field with ease. Similarly, Intan's well-formed habitus enabled a smooth transition into the university field. Having profitable digital capital allowed her to move seamlessly in the field despite having to deal with her impairment effects.

Two other participants – Anna and Chee Seng – revealed initial signs of struggle, but not to the point of being like fish out of water. While their established habitus were largely incongruent with the field when they first entered the university, their habitus was actively transforming and changing to match with, and adapt to, the logic of practice of the field. They were developing their position in the field, accruing valued capital on their academic journey. For Anna, through accumulating digital and social capital in the university, she increased the 'feel for the game' particularly in meeting the demands of the field. Her habitus was slowly evolving to match the field. Likewise, without having digital capital, Chee Seng would be like fish out of water. For him, gaining and having relevant digital capital was a game changer in staying in the game.

However, one participant – Felicity – who seemed to have the most well-formed habitus and possessed valued capital before coming to the university, was showing signs of possibly being excluded by the field. Despite knowing the rules of the game through her previous educational trajectory, this participant was failing to meet the demands and expectations of the field. Felicity was struggling to stay afloat and trying hard to keep her head above the water. Meeting only the bare minimum of her academic demands, she was very close to being a fish out of water.

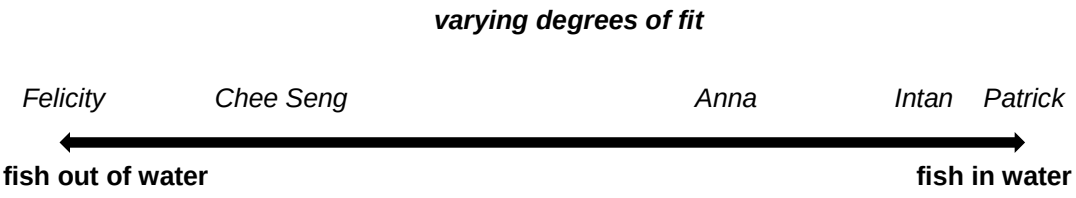

Figure 14: *Participants' positioning in the university*

6.2.1 Patrick: Fish in water – Fitting into the field

Patrick seemed to be a natural fit coming into the higher education environment. Despite coming from a small town, and being the first in his family to enter university, he had the 'feel for the game' (Bourdieu, 1990) and adjusted quickly in meeting the requirements of the new field. There were times in which he was intellectually challenged, but Patrick rarely struggled in terms of his academic work. He understood what was expected, including the finer details of academic assessment. In fact, he welcomed the challenge and took pride when he was able to solve difficult assessments or tasks. Patrick also often assisted his friends at other universities in their academic work. From the interviews, his early sustained access to technology in the home, and the friends he had during his pre-university days provided the development of the valued digital capital needed in the university. For example, during his A-Levels, Patrick wanted to do Economics. Although the subject was not offered and taught at the small college in his hometown, he was determined to study and register for the exam on his own. He was able to access the study materials online, and got textbooks and notes from one of his friends who was studying at a more established college in a large city in west Malaysia. Patrick communicated with them often via Skype. Here, Patrick's past circumstances pushed him to accrue and develop profitable cultural and social capitals needed in the university field.

> *I think is because I'm quite fortunate to, to enter university like this. My parents didn't go to university, my elder brother didn't. So ya, so I think the exposure like really helps, even before this like pre-university, like uh, secondary school Form 4, Form 5, uh, because I was, uh, I was attending Chinese independent school, just like, um, one of the best school in town, like, although it's like pretty small town, uh it's, it's I would say like some privilege, privilege students, those are like tech-savvy students.*

Armed with these profitable capitals, it was evident that Patrick had navigated through this new field with ease and fitted in well. He was a very driven, ambitious, and resourceful young man. In the university, he actively participated in the community during his first year of studies, joining clubs and societies as well as holding a leadership position on the student council. These social interactions further increased Patrick's capacity to cope and to accumulate valued capital that he was able to draw upon when needed.

Patrick experienced a major emotional setback in his second year. His long-term relationship with his high school girlfriend ended. This incident affected him tremendously and triggered many other mental health issues that he kept under wraps prior to this. He was in a very bad state until his friend alerted someone from the Wellbeing Centre to contact him. This was Patrick's first time speaking to someone about his mental health issues professionally, and soon after, he was clinically diagnosed with depression and Bipolar disorder. Despite this, his ability to keep up with his studies was not heavily affected. Having high levels of social and digital capital, Patrick was well-positioned to deal with this major crisis relatively unscathed in terms of his academic grades.

He used his digital cultural and social capital to his advantage, compensating for the classes he missed due to his panic attacks and depression. He prided himself on not using the extensions that were given to him due to his mental health illness. It was obvious that being self-reliant and independent was important to Patrick.

Patrick also seemed to understand and know the 'rules of the game' in the university field he was in. Describing how there were unwritten rules that were expected of university students, he said:

> *… because the thing with university is that … we university students are, we are quite free to do a lot of things and … the thing is, if you want to excel, you have to do, you, you have to put in extra efforts, and there is no written rules anywhere you should do this and that. You go out and you know, find your own things, uh, to do ((laughs)), so ya … because you're like expected to know certain things, but they don't explicitly tell you ((laughs)).*

The evidence also showed that Patrick accumulated his cultural capital through his social capital. He was very driven to improve his knowledge beyond his university course. Independently, he was taking extra online courses from other universities, stating that "I've done a few from *Coursera*, I'm still doing ... and I used to do some courses from *edX*". One of his friends introduced this site to him. This exemplifies the notion of capital begets capital (Bourdieu, 1988). This account of Patrick is illustrative of students who come into the new field with valued capital and well-established habitus – they fit into the environment naturally, like fish in water. They survive and thrive even when the condition of the water changes.

6.2.2 Intan: Going with the flow – Getting on in the field

Intan's transition to university from high school seemed smooth and without any fanfare. She fitted in comfortably in the new field, a typical case of a well-formed habitus in familiar fields (Bourdieu, 1989). As Intan was a local resident to the area, she was on familiar ground, traveling back and forth between home and university often. Despite gaining admission at one of the Malaysian public universities, which cost only a fraction of her current university's fees, her mother preferred Intan to be at this university. Coming from an affluent background, having high economic capital meant that Intan had access to various forms of technology from a young age. Having grown up surrounded by technology in the home, technology was "just something that was always there", something she never actually thought about. She explored and experimented with all kinds of technology without fear. It was just part of her life as far back as she could remember. This is a classic example of fish not knowing they are in water.

Very similar to Patrick, Intan's circumstances facilitated the accrual of the relevant capitals during her pre-university days. Due to her mental health conditions, she did not go to school much during her high school years. Studying mostly on her own, Google and YouTube were Intan's teachers

and best friends. So, when Intan entered the university, her high stocks of cultural capital underpinned her 'feel for the game', despite her ongoing challenges due to her mental health issues, ADHD, and her recent diagnosis of a life-threatening medical condition. She always managed to "solve it on [her] own" with the help of technology. The evidence showed that Intan's dependence on technology increased tremendously in this new field.

> *… so very, very, dependent on it. All of the work, all of the assignments, they are all done online, all of them are something to do with computers like PowerPoint or a lab report, something like that. Before this, I could actually, um, go a day without using laptop, like a day, two days. It's like, I don't really think about it, but now I have to on it every day ((laughs)) to check my email, to like check my grades or something like that. There's always something I have to do.*

While Intan profited from her economic and cultural capital, she lacked social capital. Particularly in the university, she struggled to socialise and connect with her course mates, particularly when in a large group. Due to her anxiety and ADHD, Intan specified that she needed to sit alone to focus on lectures and not be distracted. Gathering social capital was not Intan's priority as she wanted and needed to focus on her studies. Her actions might be interpreted by others as being anti-social.

> *I cannot listen to two people at once, that kind of thing … it won't go into my head. So, I really need to like take extra attention in class, so I just block everyone out. Even when they talk to me, I just kind of don't response sometimes ((laughs)) … that's why I'm not really close with them. They are all really close to each other because they are always like together in class and talk to each other.*

> *Because in class, like uh, it's like when they're all bonding, I'm there studying ((laughs)) that kind of thing, you know, I mean like, if you want to, like, hang out or something outside of class, that's fine, but in class, I want to study. So, I don't really talk. I don't talk in class. I just try to focus.*

Intan's lack of bonding social capital made it difficult for her to seek help and support during challenging times. For example, during the period where she missed classes due to her hospitalisation. Intan was extremely stressed by one particular lecture that she missed because the lecture notes uploaded by the guest lecturer were filled with images only. Intan commented: "so it's very, very difficult for me ... those kind of slides very, very, very, very difficult to study from … I'm just like, how am I going to study for this?" Despite this, she could not approach the lecturer nor her course mates to seek clarification or information. While Intan acknowledged that it would save more time if she could ask, but "I definitely cannot do it. I get like very stressed about it if I have to". She found it extremely difficult to seek support from others. Unlike some university students whose social networks aided the development of a feel for the game through their "access to collaborative study groups, peer-review of draft submissions, the sharing of resources and skills, and practical

and emotional support" (Watson, 2013, p. 422), Intan could not draw any benefit from her current social networks within the field. Instead, she compensated for this lack of social capital with technology. Technology was her "best friend for life".

Intan's narrative illustrates a typical university student in a heavily networked contemporary university field. What is evident here is that having profitable technological skills not only allowed Intan to move seamlessly in the field, but to survive and thrive despite her impairment effects. When talking about her medical health conditions, ADHD, and mental health challenges, she realised how it would have panned out differently if the technology she has access to now did not exist. She said:

> *I feel like if I was like born during that time, those times, you know, like, I would have struggled so much. I would not have been able to like, you know, study at the same space as my other classmates, so, I guess it just kind of like helps me that way also, I mean like it keeps me, like uh, it keeps me from failing, from repeating, that kind of thing, cause uh, I don't really know what would have happened …*

It was obvious from the interview data that Intan was extremely concerned with her grades. Accruing academic skills and doing well in her assessments were her top priorities and her immediate motivation. She lamented how she had to "put in extra effort just to like do what normal people do", and having to work extra hard and "use a lot of different ways to do what people do normally". Comparing herself to a friend, Intan was annoyed that "she doesn't study as much as me, but she always gets higher grades than me." She shared: "I think about studying quite a lot". Yet, Intan prided herself on finding strategies through technology to compensate for her disability-related challenges. She managed to use her ease with technology to keep up with the demands of the field.

> *They had specific, they had the same topics, so it was quite easy to watch, I mean, you had to watch an entire lecture, that's like a drawback, but uh, I mean it's quite effective studying…*
>
> *…and also because they have the, there's specific websites online, with like notes and questions and explanations, so you just go to all of them and read everything.*

As such, Intan found technology to be the safest and most reliable way to meet her academic needs, and to get on in the field. After all, "technology doesn't have feelings", she said, "definitely it's safer" and "it won't judge you or anything". Most importantly, "if you need extra help … I mean, it's easy, you can just, if you don't understand, you can just go through over and over again, you can take your time with it, and if you need extra practice, you can, you know, look up online …"

6.2.3 Anna: Jumping into the deep end – Adapting to the field

Anna's first year at the university as a foundation student was "a bit of a nightmare". She struggled to fit in, particularly in her first semester. Unlike Patrick and Intan, Anna's transition to university was akin to jumping into the deep end of the pool with minimal swimming skills. Anna used Braille as her main tool for reading and written communication, and had minimal exposure to technology for academic purposes during her primary and high school days. She attended a Malay language medium national public school, and her family, particularly her mother and father, spoke exclusively Mandarin in the home. Anna's "predisposition, tendency, propensity or inclination" (Bourdieu, 1977, p. 214), as structured by her family upbringing and educational experiences – her existing habitus – was somewhat incompatible or mismatched with the university field when she first entered at the beginning of her journey. In Anna's own words: "it's like a culture shock" and "it was overwhelming".

However, while Anna struggled with her academic assessments initially, she quickly adapted to meet the demands of the new field. It was not so much a case of not understanding the 'rules of the game' in the field, but rather, navigating and transitioning to different forms of accessing knowledge and information, and having to learn new ways to communicate. Fortunately, when thrown into the deep end, Anna had 'floaties' that helped her to keep floating above the water while accruing the necessary skills to swim. Her profitable capital was her floaties – her swimming aids. There were several distinct accounts from Anna's interviews that demonstrated what Bourdieu (1986, p. 249) called the 'multiplier effect' – another example of capital begets capital. As illustrated in Anna's accounts below, her economic and social capital were powerful mechanisms to aid her 'feel for the game', and particularly, to facilitate the acquisition of the linguistic and technological skills much needed in an English medium university.

One account that clearly stood out for me was what started her love for the British English language, and the lengths to which she went to develop her English linguistic skills after her brief encounter with a British piano examiner. Even though English is not the official language of Malaysia, as a former British colony, English is prized and widely used as a language of education and business, especially in the urban cities of Malaysia[16]. Until 1969, English was the medium of instruction in government schools. Anna did not have the initial familial experience with, or exposure to, the English language in her childhood years. However, Anna's obsession with the British English language and its accent in her teenage years might have stemmed from her primary school experiences where she recalled her teachers looking down on her and her mother because they could not converse in English. She recalled: "just because I didn't speak English, they actually

[16] My father, who was educated in an English medium missionary school, made it a point to speak to his children in English at home. He went to great lengths to encourage us to pick up the English language. I remember taking the Cambridge English Language (1119) exam outside of my public education where this test is conducted locally, but sent overseas to be graded by the University of Cambridge Local Examinations Syndicate. Among middle-class Malaysians, having this extra certificate brings you ahead of the pack – a form of highly valued cultural capital.

looked down on me". In some ways, it might be Anna's way of dealing with the hurt she felt at that time. She rejected the Malaysian version of English because her teachers rejected her and her mother. Anna claims that she never could understand it, saying:

> *I didn't speak English before I was fourteen because I thought English was just like any other Asian languages and, and there's no significance to speaking English because I just couldn't understand it anyway, why do I have to speak it?*

Anna had access to private Western classical piano lessons as a child. Her experiences of learning and practicing the piano, specifically the imported graded piano examinations of the UK-based Associated Board of the Royal Schools of Music (ABRSM)[17], is typical of many middle-class ethnic Chinese Malaysian families. Green (2011, p. 13) observed that "musical cultural imperialism or colonialism took place primarily through the export of Western classical music as a status symbol and cultural icon". In many ways, these piano lessons and examinations were associations of high social and cultural status in Malaysia. For the middle-class in Malaysia, Leong (2008) observed that music education among the middle-class was seen as a pathway to maximise a child's potential, by providing an extra skill to get ahead when compared to their peers. It was seen as a worthy long-term investment, with many families scrimping and saving to pay the high-priced fees. As a highly valued cultural capital, "piano both represented and provided an avenue to upward mobility" (Kok, 2011, p. 80).

Anna commented:

> *Before this, I was a child up till I was fourteen, I didn't know that English, um, is English. I thought it just sounded like any other Asian languages … I took my piano lesson when I was eleven … at the age of fourteen, I had my first piano examination and, um, the piano examiner, he's, he's British, and the first moment I listened … when I went for my grade 1 exam, that's my first exposure to the British accent … from um there I thought: oh, I wanted to speak like this. And that's why I started listening to the BBC …*
>
> *But after I met that inspiring person who just change my life, like I mean, piano exam is a brief encounter, it's just like 8 minutes or something? But it, it, it surprised me, I mean,*

[17] The Associated Board of the Royal Schools of Music (ABRSM), as observed by Tan (2011, p. 115) is "ultimately mechanisms of a colonial hangover that continue to drive the engine of music learning in Malaysia", particularly among Chinese middle-class communities. As an ethnic Chinese child in Malaysia myself, I had my weekly ABRSM classical piano lessons and yearly examinations – which made up most of my growing-up years, and so did the majority of my middle-class ethnic Chinese friends from school.

how much it's done to my life … couldn't forget that, I would never, never forget that.

This particular experience illustrates how Anna's past schooling experiences, i.e., feelings of being looked down upon and rejected, and her access to economic and cultural resources, i.e., classical Western piano lessons, were drivers that mobilised her towards the attainment of her English linguistic skills. In turn, this spurred Anna's acquisition of profitable digital skills. Through technology, she could access educational resources such as BBC online radio, and social interactions with English native speakers in online communities at home. Although she had access to technology at school, her motivation and exposure were lacking. Listening to English podcasts was her first meaningful experience with technology, where Anna "felt amazed and sort of enlightened". She knew then that she "could actually have access to so many things". Furthermore, these podcasts became her "main source of learning" and made her "realize I am actually an audio learner". She also recalled how limited her reading experiences were with the Braille books she had access to through the Malaysian Association for the Blind (MAB) library, who imported books mostly from the United States. In comparison, with access to e-books, "my experience became more and more enjoyable" and most of all, "I got to read the kind of books that I love".

Another distinct observation from Anna's interviews was the differentiation between the role of education institutions and social networks and the positive effects this had on Anna in accruing profitable digital skills. Anna shared instances where her high school teachers tried introducing technology, particularly screen-readers (i.e., JAWS) to her at school. However, she did not take to these technologies. Instead, Anna's uptake of technology was highly influenced by her social network – her sister and her friends who are blind. She said:

> *I think it all started when I ask my sisters, I, I mean, my my, well one of my sisters to actually find some online radio station like the BBC that I can stream, and so at that time, she actually downloaded things for me and stuff, I don't, I didn't use any of the screen readers like JAWS or NVDA.*
>
> *… we actually, um, my sister and I actually tried to find a way so that she didn't, she don't have to like manually download or play things to me, so actually tried to, I mean Googled for some screen readers and stuff. So, that's when I was introduced to my first screen reader, it was called Thunder.*

Before coming to university, Anna was introduced to the iPhone by her blind friend after her high school exams. Learning to use the iPhone was not a struggle for Anna because of her blind friend's support, guidance, and assurance. The main iPhone feature that stood out for her was the Voice Over screen reader software.

> *Oh! the coolest thing … the cool thing about Voice Over, while JAWS is not as developed*

> *as Voice Over … Voice Over could read all the emoticons and emojis, and so it was so, it, it, it felt, I mean, I felt great because I could use it without, without, without being able to see it, just make me feel so good, I mean, I can express myself better.*

When Anna first came to university, she struggled with using JAWS despite having the constant support and help of the Wellbeing Centre. One of the main reasons was that she "wasn't really comfortable" with JAWS' default robotic voices. It was during her second year at university when a new Blind student friend managed to change the robotic voice on JAWS to the one that she had on her iPhone. This seemingly small modification completely changed Anna's experience and initial reluctance to use JAWS – "he made my whole experience more comfortable and he made me feel, basically, feel more comfortable with JAWS."

These examples confirmed that habitus is not fixed but dynamic and changeable to a degree depending on the influence of the social environment in which an individual is immersed for any prolonged period of time (Grenfell, 2004) – "they are durable and transposable but not immutable" (Maton, 2012, p. 52). Evidently, Anna's habitus was evolving, and now in her second year of her undergraduate degree, she was continually gathering profitable capital that correlated more strongly with the requirements of the field. At the same time, the university field itself was evolving together with, and in relation to, Anna's evolving habitus that she brought to the field.

6.2.4 Chee Seng: Going against the tide – Resisting the field

Gaining entry into this university was a battle for Chee Seng, who had to fight for his place. As with most things in his life, everything seemed like a battle for him. Chee Seng always felt like he was a misfit in society – "you couldn't find a way out, you know, you're always trap[ped] in a situation where you don't, you yourself don't understand why". While Patrick and Intan's habitus were well-formed and easily adaptable to the field, Chee Seng experienced a strong sense of displacement as he entered university, like a fish out of water. It was a struggle for him to fit into university life, an outcome resulting from Chee Seng's differential access to valued and legitimised forms of capital before entering this field. Fortunately, he survived and thrived, but not without "fighting" hard for his place in the university. It was like swimming against the tide.

At home, Chee Seng recalled that his earliest relationship with computers at the age of 15 resulted in extreme opposition and hostility from his parents.

> *No matter how much my parents against me using laptop, I would fought my way out of it, ya. I would. It's a stigma, a social stigma that computer is not good for children. Children use computer for gaming, it's not healthy, but I don't care, lah. I mean, it's not that I don't care, but I couldn't function. So I need computer to function. So, if you're not going to allow me to use computer, I would, I would find my way.*

Although he constantly had to fight with his parents on this issue, to Chee Seng, it was his only way of surviving, “it’s like, it’s like a necessity, it’s just like air that you breathe. Ya, we need technology to, to survive. Without technology, we can’t even survive.” In hindsight, Chee Seng felt that having access to early diagnosis and the available assistive technology, definitely put him in a better position. Chee Seng struggled to get a diagnosis even after he suspected that there was “something wrong with me”.

> *Uh, back then I was suspecting I was having ADHD, uh, but there isn’t anyone that I can talk to … no-one … no, I have no idea, it has become so severe, because if I would be diag- diagnosed with ADHD, started to learn assistive technology that cater to my needs since young, I wouldn’t have, ((laughs)) I wouldn’t have gone through that because at that point, it was the uh C-PTSD uh, when C-PTSD started, I was, couldn’t even function properly.*

Unlike Intan, Chee Seng lacked economic, social, and cultural capital. Coming from a middle-class family, and studying in a foreign-based university would have been a strain on his parents’ hard-earned savings. For Chee Seng, access to technology boiled down to whether he could afford to buy it.

> *… because it was very expensive for me as well, should I buy it, should I not buy it? Because if I buy it, it might help and I’m wasting the money, and it took me a year to decide whether I should buy it. Then I bought it and it turns out that that is the first time I ever finish a book.*

Economically disadvantaged, Chee Seng took a year to decide to buy a Kindle, a technology that was life-changing for him. Unfortunately, he lost it and was unable to get a replacement due to the cost. The dated MacBook that Chee Seng was using at the time of the interviews was given to him by his partner and he had only had access to it for the past two years. Chee Seng talked at length about how the MacBook’s features were such a stark difference to a typical laptop. The features of the MacBook, such as being able to open, view, and access multiple windows quickly, *Papers* for Mac, and an open-sourced green filter helped Chee Seng tremendously in dealing with executive functioning issues. Although it often had lagging issues as it was an old 2008 MacBook, he still found it better than not having access at all. He stressed a few times that if there was one technology that he had to choose for his academic activities, it would be having access to a MacBook.

Customisation of technology is important for students with ADHD and Dyslexia, according to Chee Seng. For example, small provisions such as allowing earphones/headset during exams made a significant difference to his focus and concentration levels. His major breakthrough was when he was given the provision of using a computer for his final exams. Chee Seng’s grades improved tremendously as a result. From here, Chee Seng’s confidence and self-esteem grew. It was

evident that he was slowly gathering capital relevant to the field. His habitus was evolving within the university despite having assumed the identity of a 'problem' child and student as he was growing up and in his schooling life.

> *So, by giving you that simple provision that allows you to realise that actually you are just, uh, as capable as other, uh, other student, it's just that you need the technology for you to communicate with the world. You just need, you just process information differently … you memorised things differently and you write things differently, that's it.*

While the provision of using the laptop during exams was a game-changer for Chee Seng, he felt that in terms of technology, this was where the support stopped. Not having enough, or having non-functioning, power points in lecture rooms, and not having enough room space on the lecture chairs to put his laptop were physical barriers for him.

> *… so, if you talk about the university as an environment that would, uh, assist students with learning disability, I would say no. Because you are still depending on the individual to try, uh, to find a technology that would help them.*

In Chee Seng's case, it took large amounts of personal resilience and courage to question and resist the field, and to keep on swimming. When asked why he was so persistent in 'fighting' for his rights, despite all the challenges he faced with the Wellbeing Centre, Chee Seng specifically pointed out that he was taught and challenged in his classes to question everything. Studying "cultural, politics and media", and having access to "journal articles" online provided the avenue for him to accrue valued capital in the form of information within the field. Armed with relevant information, Chee Seng was able to question the established practices within the university and advocate for himself. As a result, he was developing a stronger positive identity of himself.

> *So, like you really need to speak up for yourself, or else no-one is going to speak up for you.*
>
> *Uh, I become more confident, lah. I become more firm, and I become resourceful as well to find information ((laughs)). Did I tell you about the Person with Disabilities Act? It's like, it's listed in the Person with Disabilities Act, learning disabilities is covered, education institution is supposed to accommodate learning disability, and every learning disability is different, and therefore, you should listen to the person who have the disability.*
>
> *… you have to fight for yourself or else, no-one is going to fight for you. Not even the Wellbeing Centre.*
>
> *It's not only going to affect my mental wellbeing, I might have committed suicide, who knows, because of the stress that I couldn't proceed, and that would also create issues in my family, because I'm spending my parents' money to study.*

Throughout the interviews, Chee Seng recounted highly complex experiences of his use of technology in the university to manage his disability-related issues. He explored and experimented with technology through trial and error, to ensure that he met the academic demands of his course. He worked hard and did not take the social and structural barriers in the university passively.

6.2.5 Felicity: Staying afloat, treading water – Surviving in the field

Felicity came into this university as a mature student with past higher education experiences and skills. During the interviews, she strongly exhibited a "feel for the game" and having "practical sense" (Bourdieu, 1990, p. 66), as well as displaying a nuanced understanding for the rules of the game in the higher education field. However, despite being on a full-time PhD scholarship, Felicity was surviving by the bare minimum in relation to her current academic demands. Rather than a fish in water, she was like a duck on a pond, paddling frantically to stay afloat, seemingly fine on the outside, but struggling on the inside. Despite having profitable capitals previously accrued in her past university and work experiences, Felicity said she was not ready for her first year defence review that was due in two months (at the time of the interview). She planned to take leave of absence from her PhD studies, citing that it had been difficult juggling her work, a care-giving role, and her mental and physical health challenges. At this point of our interviews, Felicity's engagement with the field was akin to treading water, keeping her head above water by remaining upright and pumping her legs, but not making progress towards her goals. It was obvious she was struggling to keep up.

> *… the combination of the physical pain from all the accidents I had, and all the mental exhaustion, you know, I have from depression, and then also from taking care of mum, you know, and taking care of my best friend's dad, all that has accumulated to make things very exhausting.*

Even with a habitus that was relatively well-aligned with the demands and expectations of the field, Felicity was negatively impacted by her current circumstances to further accumulate capitals legitimated by the field, particularly with the academic demands of her PhD study. Despite making the effort to meet other PhD students, meaningful connections were not made. Even though she had good relationships with her work colleagues in the university, "it doesn't actually move your studies". Felicity could not tap into her social networks to accrue the relevant capitals needed to advance her PhD studies. For Felicity, securing cultural capital with high currency, such as a PhD degree, was a pragmatic decision to advance her career. To her, it would provide "credibility because society sees the title". This is particularly so in Malaysian society. However, the interviews revealed few signs that this was a priority for her at this time. While Felicity recognised the value of her PhD studies, it was definitely not a be-all and end-all situation for her.

> *… you discover all of this online, lah, you know, helps you to maintain your sanity ((laugh)) when you're doing your PhD. Because you do need something, you know, to*

> *transport you, you know, into another world, to just help you remember that, this is not all there is. Even if this doesn't work out, at least, I still have this and everything is going to be fine.*

Due to her recent spinal injuries, Felicity was grappling with mobility issues. Coupled with her depression and anxiety and her care-giving duties, she was often left with extreme physical and mental exhaustion. Her mental illness and physical health conditions were obviously affecting her ability to sustain her studies. Yet, she insisted that even though she was not ashamed to be identified as disabled, she would not categorise herself with others whose "disabilities [were far greater than [mine]". Maintaining an identity of a capable person and not having to lean on others was important to her.

> *I don't have a problem if, uh, anyone wants to identify me as disabled. Because I know what the definition of disability is … uh, if I'm hesitant to do it, it's not because I feel that there's something shameful, it's just because I've seen other people who, um, face far greater disabilities than me, lah, you know, and I'm not sure whether I can categorize myself you know into the same kind of spirit, you know, because it's nothing compared to what I'm dealing with, you see.*

Felicity stands out among the participants as the one with the least experience with technology during her formative years. Upon reflection during and between our interviews, she recalled and shared many stories where technology was instrumental in helping her deal with her mental illness, particularly during her undergraduate studies, humanitarian work, and her teaching responsibilities. Technology gave Felicity a sense of control and independence. During her undergraduate years, in terms of her academic demands, online lectures and information enabled her to "at least have the barebones covered, lah". With technology, "at least you can still do something, even if it's not even up to what you feel is an acceptable standard, lah".

> *I think you know for people who are going through acute anxiety, or extreme exhaustion, it's very helpful, you know, because you may not have enough energy to even pick up the phone, but sending out an email, you know, or you know, like sending out, you know, a text message, um, that's something that you can, you might have actually the energy for, you know, so it's like reducing barriers, lah.*

While she had good access to mental health support, Felicity strongly felt it was these online connections that ultimately pulled her out of her depression. Technology gave her a platform for fostering meaningful connections, and to locate valuable sources to cope with her anxiety and depression.

> *I mean they listen to you, but I don't think they can, they fully aware of what it is that I'm trying to work on or say to them … So, now what I'm discovering is ok, I mean, technology does fill that gap, you know because for me, you know, I've always felt that*

> *depression and anxiety, and anxiety, the the diagnosis that I have, yes it helps me clinically in terms of being able to give me medication, but it still doesn't help me understand, you know, my condition, you know, so that's where the online reading actually, you know, like helps, you know, that's where being able, you know, to engage possibly, you know, with other people, you know, who may be able to relate possibly helps.*
>
> *… at least being able to find out: Hey there are other out there who are having experiences that I can relate to, at least it helps you feel like you aren't being, um, irrational where you feel that, ok, I have anxiety and depression, I do agree, but somehow I don't feel this is the whole picture, so it validates, lah, you know, that part where it's like I feel there's something more, you know, at least I feel that it's not an over-reaction, lah.*

Technology also provided Felicity with a safe space, particularly for communication when she was dealing with paralysing issues that arose from her past humanitarian work. It gave her "a lot more mental space" to work with. When asked if SMS felt safer for communication, Felicity responded without any doubt: "They, they really are, lah, they really are, lah, so you know, it's actually a trigger point, lah, for you, and at least it helps to mediate the process, you know"

> *It's actually very very very scary. Because even now also, I'm still on medication, off and on, for anxiety, right? Um, so even now also, you know, it's quite still scary, you know, but it feels helpful sometimes to have a buffer zone, when things get very overwhelming.*
>
> *… and you know, I was the, and I was the special officer, in charge of sexual abuse cases and refugee cases. So, it's really like around the clock, wan lah, and since then, I mean, until now also I cannot bear the sound of the phone ringing, be- because you're, even now when I hear the phone ringing, I'm like, I straight away think police station, you know ((laughs lightly)). Even until now, you know, so even when I am in a better space, even until now also, when I hear the phone ringing, you know I get very "紧张" you know like, you really, your body tense.*

Technology was also about practicality and functionality to Felicity. In the process of taking her leave of absence from her PhD studies, having access to journal articles was crucial for her. The flexibility to be able to do research anywhere, anytime was also considered precious. Upon reflection, technology made it possible for her to function on a daily basis in dealing with her impairments and responsibilities, albeit to the bare minimum. In fact, many things "wouldn't actually have like been possible otherwise". Felicity's interview data demonstrated she was highly dependent on technology to navigate her daily responsibilities even though she had not realised this before the interviews.

> *… now that my anxiety is, is not as bad as it used to be, you know, but I think the combination of anxiety when I'm around people and exhaustion just for doing, you know,*

anything, means that being able to do research, you know, at home is very very precious, lah.

… so I carry my iPad with me whenever I know I want to do work, because that's when I download my, um, my work there. Um, one of the places that I go to for treatment, for my neck and my exhaustion is, uh, Tung Shin Hospital for acupuncture and they have very fast Wi-Fi there …

The following section discusses how the disabled students collectively developed strategies through technology to overcome their challenges in the university. Specifically, I identify how the disabled university students accessed and used technology meaningfully to support their academic studies to meet the demands of the field.

6.3 Playing the game: participating in the university

I sought out to 'listen' attentively to the enabling voices of the disabled students in their relationships with technology. In combing through the interview data, I asked the following questions: In what instances did their relationship with technology enable them to participate fully in the university? What labels were used to describe their uses of technology? By tuning in to how the students meaningfully used technology to participate in their academic work and life, we get a sense of what was highly valued in the university. As a whole, the interview accounts suggest the sustaining role of digital capital in the disabled students' successful participation in the university. Underpinning their experiences in this study was that having profitable digital capital legitimated their position in the field. Digital capital seemed to hold high currency in the field. The pertinent question here, however, is in what ways did their portfolios of digital capital, both accrued and accumulating, enable them to meet the demands of the academic field? What are the related themes that emerged from the interview data? In line with the 'fish in water' analogy, I will illustrate below the role of digital capital as swimming gear. The following paragraphs will discuss how technology supported the students to keep swimming, and to develop additional digital skills to continue playing, and ultimately, winning the university game.

6.3.1 Technology as swim fins: Empowerment and flourishing in the university

In my listening to how the students' spoke about their relationships with their technology use, the empowering role of technology in their lives was dominant. In swimming training, swim fins increase the swimmer's propulsion and speed through the water. Swim fins allow one to power through the water at a velocity that regular swimming cannot. Technology does for disabled students what swim fins do for the swimmer, propelling them forward with far less effort using the same amount of energy. One clear example was with Chee Seng. To Chee Seng, technology enabled and empowered him to do what he was not able to do before. Technology propelled him

through life, making things possible. One particular life-changing moment for him at the university was the accommodation to use a laptop during his final exams. He said:

> *My marks jumped from borderline fail to Distinction … my first, my first exam in this university using laptop. That is the first time ever I'm able to answer exam normally, because usually I struggle to even write. Distinction, I was wow! I can actually get Distinction. It's like finally I can breathe.*

From failing to thriving, technology provided a way for Chee Seng to occupy a legitimate position in the university. He was finally winning the game. "Emancipation" was one of the words he used to describe how technology had supported him, past and present. Other candid remarks about technology were strewn throughout our interviews: "It changes everything!", "It's just like air that you breathe", "Spiritually awakening", and "I'm empowered". E-reader technology such as a Kindle enabled Chee Seng to finish reading a book for the first time. It boosted and supported his reading skills at university. Simple provision of the right technology cannot be underestimated with disabled students. Being given the right technology changed the course of an academic career for these students, particularly those who had a later diagnosis in life. In Chee Seng's case, it made it possible for him to continue thriving in his studies.

When Anna spoke about her relationship with technology, it was similarly filled with empowerment stories. For example, to her surprise, the speed of her reading increased tremendously with the digital format. Anna managed to read over 80 e-books in a year on her iPhone compared to 60 Braille books in four years. This was a "fascinating discovery" to her. In Anna's own words, technology "gives me a sense, a sense of empowerment". Compared to Braille books, she had more access and choice in terms of e-books where her reading experience became more enjoyable. With e-books, Anna got to read the kind of books that she loves.

She also shared her past technology experiences that did not give her a sense of freedom. It was an important aspect of technology to Anna. She remembered one such experience:

> *… so before this, I was using my mom's old No- Nokia, and you know, you just can't install anything in Nokia, there's no voice and things. So I just … I just didn't get the sense of freedom? I didn't feel, I didn't feel free because buttons, tactile, and I'm not a tactile learner, and it make me feel more blind than ever. I, I, I had to describe it that way, but I know it's a strong word.*

The tactile buttons of the old mobile phone felt similar to her experience with Braille, where she had to memorise things "blindly". In comparison, Anna said she felt free when using the laptop, as "I can spell anything like however I like". It gave her a sense of control. Anna felt rather intensely about how technology made her feel. Words used to describe her enabling experiences with technology included "amazed", "enlightened", "dependent", "discovering", "freedom", "enjoyable"

and “original”.

For both Chee Seng and Anna, technology empowered them to accept and be who they were. Technology made them feel they were capable, in control, and confident. For example, Chee Seng said, by “having access to computer and Internet, in other ways, allow me to be who I am now … just by giving me the access to keyboard, things changed”. For Anna, “it is definitely typing because, um, I can write freely the way I want to write. So many times, it’s just, just makes me feel so original? and it just makes me feel like I can be whoever I want to be, ya.”

Technology also empowered Felicity in dealing with her physical and mental exhaustion. Being able to get around conveniently and safely via GrabCar or UberRide online was very precious to her, as “driving actually takes a lot of energy, you know, out of me”. It has given her the capacity to cope, and be more independent in terms of mobility. Knowing she was still a capable person without heavily relying on others despite her conditions has helped her maintain her identity and to still “hold a certain amount of self-esteem”. Felicity commented:

> *So, just being able, you know, to do that, so that you feel that, ok, I can step out of the house, you know, without needing people to assist me is very powerful ... it’s freedom, but it’s also, um, being able, you know, to maintain an identity, you know, that of yourself. I mean, it’s, it’s, it may not be a problem to people around you, you yourself want to feel that you’re capable person and that you don’t need to lean on people, you know, so, so, that’s nice.*

Like Felicity, being independent and self-reliant was important to Patrick. He was yet to use the provisions provided to him by the university because of his mental health illness. Patrick mentioned that he had no intention of using the time extension for his assignments. He was thriving despite having to deal with debilitating mental exhaustion. Having access to online information and lecture notes made it possible for him to catch up and compensate for the difficult times. It gave Patrick a sense of control to maintain his academic performance. In terms of learning and having access to information, Felicity recalled her liberating experiences with technology during her undergraduate university days. Having access to online lectures, seminars, and talks from renown universities and institutions, she said:

> *I think being able to access classes and master classes online ... I discovered years ago and just being able to listen those lectures, you know, uh, so you have people like Margaret Atwood, let’s say, like giving like talks, you know, I mean, literally feel like your brain is flying, you know, like elsewhere … And it was, I mean if, I mean that kind of feeling, when you’re able, you know, to listen to an idea, you know that helps you fly, that’s very very liberating, you know …*

For Intan, the realisation of the impact that technology had on her was empowering. Similar to Patrick’s experiences, having access to relevant technology had also made it possible for her to

thrive in the university. Intan mentioned that she got annoyed at people who liked to trivialise the impact of technology. She felt this was because "they don't have the kind of dependency that I do". Intan said:

> *… but when it comes to having these like problems, technology honestly is just like a life saviour, I don't know how I can study without it? Ya, because I mean if I miss classes, at least I know I have something to, you know, to look up … like, if I was born earlier, I would not have been able to cope with anything, I would not be able to, like, study, or like, get a degree or anything. I definitely would not be able to do that.*

The common thread among the participants was that a lot of things would not have been possible without technology. It had empowered them to flourish and participate meaningfully in the university, despite having to deal with issues related to their impairments and medical health conditions.

6.3.2 Technology as swim goggles: New ways of seeing and connecting in the university

In the participants' reflections on their use of technology in the university, the narratives also gravitated towards regarding technology as new ways of seeing, or seeing clearly, when it would otherwise not have been possible. Referring to swim goggles, they are used mainly for protecting the eyes from chlorinated water and allowing the swimmer to see clearly underwater. Swim goggles also protect the eyes from irritation and keep one comfortable when swimming. It makes the swimming experience, particularly for new swimmers, more enjoyable.

Applying this analogy to Anna's experiences, she spoke about technology as a pathway to experiencing new information she had not previously had access to. She reflected on her very first experience with technology, online BBC radio and podcasts: "I felt amazed and, and, um sort of enlightened and I knew that, um, I could actually have access to so many things. It's all about discovering new things." It became Anna's main source of learning and made her realise that she was an audio learner. She felt this impacted her in a very good way. On using accessible technology in the university, Anna recalled:

> *Oh well, it was a culture shock when I went, um, for my Foundation, but after that tough semester, I sort of got through it? I got comfortable, so it didn't take me long to adapt, to be honest. Because it is seeing as I am an audio learner and, um, technology is more audio learner oriented, so that's why I'm comfortable I suppose?*

Likewise, when asked about his relationship with technology, Chee Seng equated it to someone with serious short-sightedness problems being prescribed glasses. He went on to say:

> *Without, you can't see everything. With it, you can see something. I think the problem with learning difficulty is that, it's very implicit, it is invisible. So, even though I can see, I can't see clearly because of my neuro-transmitters and how they function differently. The*

> *uh, that's the problem, lah. So with medication, uh, with technology, that allows me to see the world clearly, lah.*
>
> *Uh, for example, so without Kindle, I couldn't read properly, uh, without my earphone, I wouldn't be able to, uh, focus in everyday situation, uh, without my laptop, I wouldn't be able to write, uh, I can, but it's very difficult, lah, I wouldn't be able write … My, my vision would be completely blur, lah, without all this technology. Ya, I would get lost in somewhere and it takes me 3 hours just to get on.*

With clearer and improved sight, Chee Seng was able to better navigate through university. Having his learning disabilities diagnosed later at university, Chee Seng did not have access to the medication he needed. He often experienced brain fog. During these times, digital technology provided an alternative pathway for him to function in the university. Chee Seng recalled: "Before meds, I was living in a very foggy kind of environment because of the processors and what not, I couldn't really see anything. Laptop, having access to laptop is the only way for me to sort of connect to the world." Like the benefits of wearing goggles, technology provided a way for Chee Seng to view things clearly when things were foggy, and this helped in connecting with the world around him.

Similar to Felicity's account, accessing information online gave her an opportunity to look at things in a new way. For her:

> *I mean, literally, your, your, your laptop becomes a window into the world, lah, you know, because being able to access these ideas, you know, being able to look at things in a new way, you're not going to get that from your colleagues here, you know, or your family and friends.*

When she experienced deep depression, being able to connect with like-minded people who understood her ultimately brought her out of it. Felicity found that her own social circles could not provide the fulfillment she needed in terms of understanding her mental health issues. She said it was "very difficult for [me] to meet people who understand what it is [I'm] trying to say" as "language doesn't facilitate that actually, it has to be experiential". So, having discovered resources, and connecting with a humanitarian worker on the other side of the world with humanitarian psychology experience was very helpful for Felicity. The connections she found online, "being able, you know, to feel that someone understands" was crucial to her healing process. Although her condition was stable with medication and counselling, "every now and then, like say, I [felt] down or depressed, there's always a lot to read, you know, on the Internet, right?"

For Patrick, technology provided a pathway to new knowledge. He said: "the physical tangible things around us [are] very limited but once you're connected to the Internet, you get a whole lot of other things, and I think it's, um, it's like a major source, kinda like knowledge, entertainment,

everything, everything that I can think of." Having access to online courses related to his field of studies was enriching as Patrick enjoyed being intellectually challenged and gaining new perspectives. It gave him a sense of satisfaction and fulfilment. Intan also reflected on her current access to technology as being very different from her high school days. Through technology, "it's like you can connect to anyone, that kind of thing. You can have like, uh, you can get advice from anybody … regardless of age or like, you know". The physical and geographical space vanishes in the digital sphere. Intellectual and social connections therefore were not limited to within the university, but extended beyond the physical campus.

6.3.3 Technology as swim snorkels: Endurance and persevering in the university

A swim snorkel acts as a breathing apparatus, allowing the serious swimmer to stay underwater for long periods of time while focusing on perfecting their swimming technique. It is also said that because the swimmer does not need to take the time to breathe, they can get a better feel for the water. Additionally, wearing a swim snorkel forces one to keep the head even and straight, thus achieving better body positioning while swimming. Having to manage one's physical and mental impairment effects can take their focus and energy away from the academic tasks at hand. It has been found that disabled students have to work extra hard and use more time in academic-related matters compared to their non-disabled counterparts in the university (Seale, 2014). Technology can support disabled students to go the distance in terms of participating in the university.

Intan's experiences in the university is an example of the need for endurance and perseverance. At the time of our interview, she had just commenced her studies six months previously. In that short period, Intan had gone through the gruelling effects of her critical medical health issues. Having just been hospitalised for three weeks for her neurological condition, access to the Internet and course materials online were crucial for her. To keep up with her studies and assignments, her technology was like her set of snorkels, allowing her to 'breathe', and still catch up while away in the hospital. Intan's reliance on technology was very apparent, "it's really just part of my life, it's a part of me … I really need it to do everything. I really, I cannot really separate myself from it." She recalled:

> *… even my mood is greatly affected by technology. If I don't get access to Internet or something, I get like moody and cranky. Mostly, uh, I think, mostly because I have work to do and then I don't have Internet access, like my phone dies or something, I get really anxious.*

The fact that Intan had no access to network connections during the latter part of her hospitalisation revealed how dependent she was. It was a very difficult time and "so suffering" for her. With no stable network connection, Intan was constantly worried and concerned about missing her classes and having to complete her assignments and other university activities. This was not

surprising, as Intan's dependence on technology increased tremendously when she entered university.

> *All of the work, all of the assignments, they are all done online, all of them are something to do with computers like PowerPoint or a lab report, something like that. Before this, I could actually, um, go a day without using laptop, like a day, two days. It's like, I don't really think about it, but now I have to on it every day.*

Her relationship with technology in the university changed status "from my boyfriend to my husband". Stating that she was 100 per cent committed, "or else I'm going to get left behind", Intan was aware of the difference between high school and university. From her interviews, she understood the rules of the game early, and was committed to finishing her studies well. Intan also noted that when she missed her classes, downloading lecture notes from Moodle was not enough. She needed to compensate by going "on to YouTube and look for more questions … for more information. I actually had so many tabs open on like several different websites like just looking for information". Evidently, Intan possessed valued digital capital to play the university game well, despite her health challenges. Although she had just started her studies, her interviews revealed that she was in this for the long haul and was determined to win the game.

Like Intan, Chee Seng's story was one of tenacity and perseverance. To him, having access to technology was likened to finally being able to breathe. In the university, technology made it possible for him to find resources that he needed to fight for himself. Chee Seng would have dropped out. He said: "I might have committed suicide, who knows, because of the stress that I couldn't proceed". Having an unseen impairment, he had to constantly advocate for his rights. His experiences with the Wellbeing Centre reveal that they lacked awareness and the capability to handle his specialised condition. He said: "it's very emotionally stressful when you are trying to push something to management just by yourself." However, equipping himself with adequate knowledge and gaining confidence through online communities who shared the same challenges enabled him to endure and persevere over the previous three years of his university study.

Technology played a major role in providing the tools and resources for Chee Seng to persist in his studies. Each time he discovered an enabling technology, it was like having glasses that he could see with: "oh ok, I finally have glasses that I can see, you know. Oh, finally the visual is clear to me now, so you know, every single thing, like the in-ear headset, Kindle, for example." At the time of our final interview, Chee Seng reflected and realised that he had come a long way since he first stepped into the university. Now in his final semester, he looked forward to graduating and making his mark on the world. When I mentioned that I could feel a sense of accomplishment in the way he was speaking, Chee Seng said: "Uh, confident, lah, I would say. I am no longer that low self-esteem, you know, and for me to manage on my own … I am confident to, to say what is correct

and what is incorrect, like I'm no longer being, uh, easily put down by people". He is a great example of going against the odds and coming out triumphant.

Compared to the other disabled participants, Felicity viewed technology very much in terms of practicality and function. She mentioned that prior to our interviews, she had not thought much about the role of technology in her life. She did not realise that she was actually quite dependent on it to carry out her daily activities and responsibilities. Essentially, Felicity said that "I wouldn't be able to function or socialise". On further reflection, she claimed:

> *… in terms of technology, I think it helped me … you know, in remaining in touch, you know, with people, you know, who could support me, and who I could connect with, to giving me an avenue to seek information that I wouldn't otherwise, you know, be available, ok, to understand my illness and also, you know, to seek, you know, coping mechanisms.*

In dealing with her mental health issues, Felicity tended to rely on technology for communication and in dealing with people. Having the avenue to be able to WhatsApp via her mobile phone and email her counsellor, psychologist, and psychiatrist had been very helpful for her. She found "it's nice sometimes to be able to deal with them, you know, in a much more, with a lot more mental space, you know, over email". For Felicity, a simple text app such as WhatsApp was extremely helpful. Like swim snorkels, it allowed her to breathe underwater. She added: "for people who have to deal with emergency situations all the time. This is not something that most people understand, that the sound of the phone ringing can actually be very traumatising. It's easier to send text message or it's easier to send WhatsApp." Communicating via technology provided Felicity with a safe space to think and respond whenever she felt over-whelmed. These are what she called "management strategies" to deal with her physical and mental exhaustion, and her PTSD. Having adequate mental space to function was crucial for her.

For Anna, the transition from high school to university was like a nightmare. Switching from Braille to digital technology as her main mode of communication took time and effort. Despite having an affinity with technology in general, this transition period was frustrating for Anna. She persevered and by the end of her first year at university, she had embraced and come to rely on technology to support her studies. With technology, Anna realised how much more she could do in terms of resources and knowledge. It gave her the independence to explore and discover things she had not previously had access to. All the small wins with technology throughout her foundation and first year of her undergraduate degree encouraged Anna to participate fully in the university. Now half way through her studies, Anna was well-adjusted and comfortable with using technology. When asked how her relationship with technology was now, she exclaimed: "that's the important thing in my life because without it, I wouldn't feel empowered and confident." Our interviews revealed that

Anna was thriving well in the university. In her own words, she felt that “this is the only place that I can fit in”.

6.3.4 Technology as swim kickboards: Staying afloat and surviving in the university

In swimming, kickboards are used as buoyant devices that allow one to stay afloat relatively easy while focusing on perfecting swimming techniques. Kickboards also benefit the beginner by providing floatation and stability as they practice proper kick mechanics and breathing techniques. This was evident in the disabled students’ experiences when talking about technology use in the university. Like a kickboard, technology supported the students as they learnt to navigate the academic and social demands of the university. It helped them stay afloat and survive – to continue participating in the university – while they accrued profitable capital.

Anna shared her struggles when she first started her foundation year. Having to prepare her PowerPoint slides using the braille machine took a lot of time. By the end of the semester, she realised that digital technology was a more feasible aspect of her activities. Like the kickboard that helps swimmers stay afloat while focusing on improving their leg strength and kick technique, using relevant technology allowed Anna to accumulate and improve her academic strategies in the field.

As Anna accrued more digital capital, her habitus evolved. Now in her third year in the university, she was in a much better position to meet the demands of the academic field, compared to when she first entered university. She said that her “first year was a bit of a nightmare” as she was still relatively dependent on braille as a whole. Having to use the scanner at the Wellbeing Centre was challenging and limiting. Print scanners operate in similar ways to photocopiers. Once the scanner scans the print material, it transfers the scanned document to print scanning software, i.e., Optical Character Recognition or OCR software. The software then translates the scanned document into digital text. A screen reader is then used to read the text provided. Anna was solely dependent on the Wellbeing Centre staff to assist her with using the scanner.

> *I don’t know how to do that, it’s kind of, they actually tried to teach me, but it’s, it’s a bit tricky because, um, sometimes the scanner, I mean, would sort of like the wording would just,… sometimes they would misspell things,… you would have to have a person to check the spelling, so that’s why I couldn’t actually use it on my own.*

Chee Seng also used technology as a kickboard to survive in his life and to participate in the university. He said: “Without technology, I probably wouldn’t be able to live now, ya, I wouldn’t survive”. To compensate for the effects of his learning disabilities, Chee Seng relied on technology to function and survive. A clear example was having the provision of answering his final exam using a laptop in the university. This provision freed him up to focus on answering the exam questions rather than struggling with his ADHD, Dyslexia, and Dysgraphia neuro-processing issues. Chee Seng explained in depth:

> *I was always struggling with exams because you have to write, and I can't write, uh, so from getting computer, from uh, from having access to, uh, technology like computer and keyboard, I can type, uh, that, from there my language started to improve a lot, I started to write poetry.*
>
> *… because typing we don't need, we we cut down the process of writing. You don't need to think to be able to write down. So, as long as you don't have to write, you can process about your sentence structure, you can process about learning, it's still difficult, but at least … So, it lowers down the workload for your cognitive processing and your neuro activity.*

Technology gave him hope. He said: "It was a relief, it was uh suddenly I, I feel like there was hope, you know, it's really that feeling like, ok finally I can see myself, uh, having a future." Chee Seng drove home his point of how technology had affected his life tremendously in terms of surviving in this world with the following comment:

> *The reason why I'm here talking to you, it's because of technology, assistive technology or technology, if you like. Without computer, I would stop, I would have stop reading, and I wouldn't be able to get resources. I'll probably be a very depressed child, I'd have committed suicide now because I have no resources for me to gain, gain access to … I wouldn't be able to write thesis, I wouldn't be able to tell you, "oh, things that I've been through, without the technology that I'm still alive here' ((laughs)). Ya ((laughs)).*

In Felicity's case, technology allowed her to do the bare minimum required for her PhD studies. At the time of the interviews, she was exhausted and struggling to stay afloat, having to deal with several issues in her life. Barely making substantial progress in her studies, she was just hanging onto the kickboard, stagnant and not able to move forward. Felicity knew it as well, and at the time of our interview, she had put in an application for leave of absence from her studies.

> *… but I know already I won't make my first year defence … So um, I've asked, you know, for time-off, um, I suppose it helps, so so where I am, you know, at the moment is I'm going to be asking for time-off, uh, where technology is helpful since the university is so far away, it's helpful to be able to email your supervisor, email to get things, you know, sorted out. Again, you know, if I want to do research, there's a lot of resources available there online.*

For Felicity, at least for now, technology was supporting her to do what she could do. She said:

> *… you know, like considering where I am right now, because I could not have foreseen that I would be so physically inept, incapacitated, ya, incapacitated, you know, right now, mental exhaustion is no joke, lah … you know, all these things at least help you to do things at a minimum.*

In supporting her academic studies, Felicity found herself very fortunate to have access to journal articles via a phone app wherever she was. This made doing research easier when she was dealing with her physical and mental exhaustion. She struggled with mental fatigue as "the drive is so long and tiring" to actually focus when she got to university. Felicity also spoke about how it was helpful that her supervisor directed her to online resources. Here, technology allowed her to have the flexibility to follow-up on her PhD work. For example, Felicity commented: "I always bring my iPad along because my reading are, you know, all in there you see, so I can actually do my research there while I'm waiting to see the doctor." Technology, like a kickboard, provided Felicity with a tool to hang on to at least to stay afloat.

Similarly, Patrick also experienced mental exhaustion due to his depression and panic attacks. At times, it would take days to recover. During these difficult times, he "didn't attend most of the classes". Having access to lecture notes on Moodle and other online resources was crucial for Patrick to keep up and stay afloat. So far, technology had kept him ahead in his academic studies despite his mental condition. Rather than having to request leave of absence, technology gave Patrick the liberty to miss classes, as well as the much-needed space for recovery. To him, without access to technology, especially the Internet, "it [would] be impossible".

Like Felicity, Intan found technology a safe place to navigate. After all, "technology doesn't have feelings". She was concerned with how others viewed her, and felt uncomfortable when people, including her family members, started treating her differently due to her mental illness. Intan revealed that she wanted to be treated "normally", and not "something really fragile". With technology, Intan said:

> *… definitely it's safer and, you know, I mean, it doesn't, I mean it won't judge you or anything, right? So, even if you like need extra help, and then like obviously like compared to in class, where if you don't understand, you need to ask the teacher in front of everyone. So, that's very difficult, sometimes you don't want to, like, want people to know that you have that … knowledge, I mean, it's easy, you can just, if you don't understand, you can just go through over and over again, you can take your time with it, and if you need extra practice you can, you know, look up online, ask people online, so it's a lot, ((laughs)) much, much, much, much more easier.*

For Intan, the ability to be able to customise her laptop was a vital strategy to cater to her personal learning needs and her recently acquired neuro condition. This experience was very similar to Chee Seng, where he also spoke about customising his laptop to suit his learning preferences. Both Intan and Chee Seng have ADHD. For example, to deal with her ongoing neuro-related eye problems, Intan needed to customise her laptop. She said:

> *I think, for my eye, there's this, because like sometimes the screen is, the light is quite shining, ya, quite glaring and I cannot really study at night because then my eyes, you*

> *know, will start blurring. So there's this app that kind of like, like changes the lighting to make it more suitable for, you know, to make it more suitable for looking at it at night, so it's been a lot easier for me now because my eye doesn't like strain as much anymore.*

Besides her eye issues, she also had problems of concentrating due to her ADHD. For this, Intan used an application called "Self-Control", productivity apps, and other browser extensions that helped her to keep track of her studies. During the periods when Intan was hospitalised due to her medical condition, YouTube videos provided a way, like a kickboard, to catch up on her classes. These digital strategies supported her to keep swimming and stay ahead in her academic studies. She recalled:

> *Last sem, I think I missed, uh, I was hospitalised, so I missed a class on Chemistry, and then after that, I couldn't catch up at all, because I missed the first class, so after that, it was just a blur. So, I just watch a lot of, I watched MIT videos. They have those lecture videos, so I just watched all of those and then, by the end of the semester, I got really really good at Chemistry ((laughs)).*

Suffice to say, the affordances of technology as effective strategies to overcome the students' disability-related challenges were dominant in the participants' related experiences in the university, albeit in varying degrees of fit and choice. Collectively, having relevant digital capital seemed to be an important factor in playing the university game. The disabled students shared many instances in which technology was an enabling tool throughout their university academic career, and in their social relationships both inside and outside of university.

6.4 Summary

This is the third of the findings chapters. It draws together the research findings and results based on the analytical framework underpinned by Bourdieu's three-level analysis. Through this framework, I have offered empirical findings on the case university's socio-cultural and technological landscape (Chapter 4), and introduced the participants and their personal accounts of the disabled students' use of technology in the university (Chapter 5). The participants' experiences proved to be complex and intricate due to intersecting historical, social, cultural, and political issues. In this chapter, what was clear is that for these students, technology provided a dominant pathway to manage and negotiate their position and identity in the university field they were in. I found the disabled students' 'feel for the game' was present in varying degrees of fit. Additionally, what was unique about these students' experiences was that they revealed particularly strong psycho-emotional and social aspects in their relationships with technology. I also highlighted how these students used technology to support their participation in the university.

The focus of the next chapter is to move this conversation forward, to critically discuss, in particular, how and why technology impacts disabled students in meeting their academic and

social demands. Here, research questions four and five will be addressed. I also considered how technology was managed, negotiated, and strategised by these students to participate successfully in the university. Then, I will present some insight into the barriers to participation experienced by the participants, after which the implications for digital inclusion policy and practices in the university will be put forward. Finally, this will be followed by the limitations of my research and further research recommendations.

CHAPTER 7: DISCUSSION – MOVING FORWARD

> *… scientific work provides, in this case, a strange experience, bringing the stranger closer without taking away any of his strangeness, because it authorizes the most familiar closeness with the strangest aspects of the stranger … a particularly powerful form of socio-analysis.*
>
> (Bourdieu, 1990, p. 146).

7.1 Introduction

The transition into a new field such as a university comes with a complex set of socio-cultural relations, particularly as disabled students. Using Bourdieu's set of conceptual tools, I found that the students' relationships with technology in their participation in the university were both enabled and constrained by a host of inter-related internal and external factors. This was evident in the experiences of the participants in this study, as reported in Chapters 4, 5, and 6. In this chapter, I seek to move forward by highlighting how the variations and parallels in the students' experiences of technological practices were linked to broader issues of the social space they were in. Both enabling and disabling outcomes and opportunities were discussed in relation to wider digital participation and inclusion for disabled students in the university context – distinctive to Malaysia as well as connected to wider global concerns. These findings specifically addressed research question **4) How might disabled students' digital capital impact their participation in the university?** By understanding these factors, the university can promote an environment that champions an inclusive academic experience for all, or in Bourdieu's terms, to "redefine the game" (Bourdieu, 1988, p. 172) so that all students can successfully win in it, particularly disabled students.

Here, the final research question was also addressed: **5) How might the dominant structures of the university culture, practices, and mechanisms perpetuate digital exclusion and barriers among the disabled students?** I 'listened' and sought out, in particular, the systemic barriers in accessing and using technology in meaningful ways. I also searched out disabling experiences that might be silenced or filtered through systems of power, and socio-culturally constructed factors and beliefs. Even when the participants were given the space and time to 'speak their mind', there were instances of self-silencing. Coming from a similar political, socio-cultural background allowed me, in some ways, to be attentive to these subtleties in the participants' stories. In seeking these silences, I asked myself: what am I not hearing? This question helped me to be attuned to the subtle discourse of internalised ableism or self-loathing that might overshadow their own voices. They might choose to speak in socially and culturally accepted ways rather than expressing their feelings or own opinions. This focus is particularly important among Malaysian students as we are generally taught from a young age to conform rather than to stand out. The disabling structural and

internal conditions that the students experienced in the university may have been conditioned within themselves as an individualistic problem within this cultural framework. These students may not be able to identify it as disabling, but instead, might indirectly claim ownership of these structural and psychological barriers as their own individual problem; a form of internalised oppression.

Dokumaci's (2018, 2023) concept of the habitus of ableism resonated strongly with how the students acted to create their own affordances in order to participate, navigate, and live within an ableist environment. Conversely, the affordances of the ableist world are more available to non-disabled bodies and minds. When we are able to uncover and acknowledge deeply ingrained institutional and individual beliefs, habits, and dispositions within universities that privilege certain groups, but act against disabled students, then we will be able to enact more inclusive policies and practice for all students. Ultimately, these findings have implications for the university sector in the management and implementation of their inclusion strategies, policies, and practice, both online and offline.

I start by first discussing how the students converted their digital capital to participate in the university in three key areas: 1) meeting academic demands, 2) building meaningful social networks, and 3) new constructions of self-identity. I then discuss instances where they were not able to access and convert their digital capital into tangible positive outcomes in the university. Structural and other disabling barriers were found to include: 1) technical and accessibility issues, 2) ableist attitudes and stereotyping issues, 3) institutional culture and governance barriers, and 4) loss of control and disempowerment issues. On this basis, some implications are drawn for technology support practices in the university. This chapter concludes with the limitations of the study and suggestions for further research.

7.2 Increasing participation and individual life chances in the university

The focus of this discussion is to bring to light the differential outcomes and consequences derived from the participants' access to, and use of, technology in the university. More specifically, I sought to fill the gap in our understanding of the third level of the digital divide – how the students' digital capital, existing and accruing, impact their participation and life chances in the university.

7.2.1 Meeting academic demands

The students' experiences showed that technology, in its various forms and functions, was a vital component in their successful participation in the university. For meeting academic demands in particular, technology supported and afforded the participants the opportunity to improve their position in the higher education field. They all expressed their aspirations of succeeding in the university, and had high expectations of themselves in finding strategies to meet the academic demands required of them. Other than Felicity, the doctoral student, all the undergraduate

participants were extremely concerned about their grades and how they were performing in their studies. It was evident that they had set out to 'win the game' when entering the university field. The affordances provided by technology were characterised as having an empowering effect, providing a pathway to succeed in their academic career. These affordances might have seemed ordinary to their non-disabled peers. For the participants, technology made it possible for them to participate and take their position in this field. Having high stocks of digital capital in the university seemed to suggest they were able to 'redefine the game', despite the functional and structural barriers involved.

7.2.1.1 Converting digital capital to academic competence

For all the participants, technology empowered and legitimised their position as university students. The accrued digital capital enabled them to participate in the academic activities required in their studies, including accessing lecture notes and academic resources, doing research online, working on assignments and course assessments, and communicating with peers and lecturers. In Watson's (2013) research on widening participation in higher education, she described academic capital as legitimated forms of academic skills and knowledge. In her study, academic capital was found to be one of the key forms of capital that underpinned a 'feel for the game'. This, in turn, can be translated to academic attainments and awards such as grades and marks awarded which are highly valued forms of cultural capital. What was particularly evident in this study was that the students were able to convert their digital capital into profitable academic skills that were valued in the university. With increased academic competence, these students established stronger positions in the field.

One distinctive example of the successful conversion of digital capital to academic competence was Chee Seng. At the beginning of his entry into the university, Chee Seng was struggling in the field due to his undiagnosed learning disabilities. Once this was sorted, and with the university's provision that allowed him to take his exam using a laptop, he experienced a significant turning point in his academic career. The outcomes were immediately tangible with direct impact on his ability to continue to participate in the university. With one of his subjects, his grade went from a borderline pass to a distinction. Another notable instance that illustrated positive conversion of digital capital to academic skills was the building of referencing and citation convention skills. Chee Seng commented that digital referencing tools such as Zotero and Mac Papers were his 'life saviour' for his written assessment tasks. This technology affordance of achieving his academic potential experienced by Chee Seng echoed that of the experiences of other university students in Seale et al.'s (2021) study. These disabled participants from five global North countries shared similar sentiments about technology, particularly in supporting their learning in the university. Like Chee Seng, among the benefits frequently mentioned was how technology supported them in terms of time management, organising essays, and locating references and relevant information efficiently.

Patrick and Intan had to miss classes for a substantial duration due to their impairments. Their high stocks of digital capital were key to compensating for the lectures and course content they had missed. They were able to locate and access the needed course content online to build their academic capital, despite not being able to physically attend lectures. Through their digital capital, Patrick and Intan were able to continue their engagement with their academic courses without much struggle, despite not being able to attend face-to-face classes from time to time. What is most interesting was how they were able to access additional lecture notes and academic resources of the same content from other established universities abroad. This significantly increased their understanding of their course content and enriched their learning, while accruing more academic competence in the process. As Intan commented, this would have been impossible if she had been born in pre-Internet times. Evidently, both Patrick and Intan were able to convert their digital capital to highly valuable academic skills to continue being legitimate players in the field, despite having to deal with the effects of their impairment.

7.2.1.2 Digital capital as building resistance

Although the participants experienced social and structural barriers in the university, they did not take it passively on most occasions. The students exhibited signs of resistance rather than acceptance of the effects of their impairments. More importantly, even when faced with barriers in accessing academic resources and support services, they were able to resist and counteract the situation via their digital capital. This was in opposition to the common conceptualisation of disability, and media representations in Malaysia that often portray disabled persons as passive, dependent, and without agency (Ibnu et al., 2021; Teng & Joo, 2020). None of the disabling experiences shared by the participants were mentioned to invoke pity or charity. Instead, they related the challenges they faced within the university as their personal responsibility. These students focused on how they could find strategies to overcome these challenges the best they could. This was evident in several of the participants' I Poems where digital capital enabled them to build resistance while facing adversity in the university due to their impairments. Chee Seng's '*I Can Breathe*' and Felicity's '*Your Brain is Flying*', among others, explicitly described their resistance through the use of technology.

The accrued digital capital, past and present, played an instrumental role in shaping their self-determination when facing marginalisation in their interactions with the university. The students were able to mobilise their resistance through technology-supported resources and social networks. The affordances of using technology to speak out and demand accessible academic resources and assessments were highlighted by the participants. A few of them pointed out that without a doubt, technology made it possible for them, particularly in accessing relevant information and materials on disability and advocacy. These affordances were especially valued by the students. Having access to these resources online enabled them to think critically and build their confidence to seek justice for themselves. Although this process of accessing information

online was very similar to their non-disabled peers, the conversion of digital capital to build resistance seemed more significant to the participants, enabling them to thrive and flourish, and position themselves as legitimate players in the university game. Technology can be a space of resistance for disabled students, and can offer “the possibility of radical perspectives from which to see and create, to imagine alternatives, new worlds” (hooks, 1990, p. 341). Spaces of marginality need not only be a site of pain and deprivation, but can be transformed to a place of resistance. Particularly for the participants, their digital capital in the form of resistance had direct enabling effects on their academic careers and their outcomes in the higher education field.

7.2.2 Building and participating in social networks

Apart from the meeting of academic requirements, the university as a social field is also characterised by social interaction and connectedness among students, academics, and administrative staff. Having a sense of belonging and being part of a university community is part and parcel of being a university student. This section describes and discusses the social practices of the participants within the university, and how their digital capital created and represented a rite of passage for them to participate in the wider university community.

Building social capital in the university is crucial. According to Bourdieu (1986), social relationships are like membership of a group to which one can gain access and benefits to the resources held by the group members. In other words, having social capital allows students to tap into their social networks to increase meaningful engagement and participation in the university. The more valuable social connections, the better the gain from these relationships. In the context of this study, having the right social networks, be they online or offline, can facilitate a ‘feel for the game’ in the university. For the participants, it was found that their digital capital became an empowering instrument to accrue valuable social capital. This social capital, in turn, provided access to beneficial resources, both actual and virtual, to compensate for their impairment effects.

7.2.2.1 Converting digital capital to social capital

Anna, Chee Seng, Felicity and Intan all experienced and accrued valuable social capital, particularly the bridging type, through their digital capital. Past research has found that disabled students often lacked in bridging social capital (Riddell et al., 2005) where their social circle mainly revolved around their family and close friends or bonding social capital. Disabled students typically lacked the wider networks outside their close-knit social circle. Digital capital allowed them to make social connections beyond their existing networks to new social networks, building and expanding their social capital. For example, Lewthwaite (2011) observed that, through social media networks such as Facebook, the disabled participants in her study accrued valuable bridging social capital beyond their typical social group. These students were also able to access academic and social resources beyond the confines of their university campus. This increase in social participation and sense of belonging that are afforded through online interactions and platforms by disabled people

has also been noted by other researchers (Dobransky & Hargittai, 2016; Ragnedda & Ruiu, 2017; Kaur & Saukko, 2022). For the participants in this study, these new social connections acted as a bridge to potential valued resources, information, and opportunities that their existing offline social networks could not provide.

For example, through an international community forum, Anna was able to connect with various people from around the world and learn from a native English speaker from the UK. One of the participants who she connected with remains a close friend. He is from another country and they have not met in real life. Chee Seng also developed online friendships across the world. Joining specific online ADHD and dyslexia communities gave him the confidence and tools to speak out and advocate for himself. He also had access to economic resources such as his MacBook through his partner that he met online. For Felicity, it was the social connections with strangers she made online that she felt ultimately pulled her out of depression. Intan also said that through her online activities, she had access to all kinds of people of all ages and from all walks of life. Her worldview expanded and exceeded her limiting group of peers at school and university. In these instances, digital capital was converted to valuable bridging social capital that had direct benefits for the students. All the participants, on reflection, felt that their lives would have developed very differently for them in terms of communicating and connecting with others had they had no access to the Internet and computer technology. While Riddell et al. (2005) identified a lack of social capital in disabled university students compared to their non-disabled peers, digital capital created strong bridging effects to compensate for, and expand, the typically closed circle of social networks and friendships of the students in my study. Through online disability forums, blogs, and websites, some participants found acceptance, understanding, and support. Others found solidarity, camaraderie, and resources to mobilise activism. These findings align with those of several research studies with young disabled people in online contexts (Ellcessor, 2016; Ellis & Goggin, 2015; Kaur & Saukko, 2022) and disabled people in general (Dobransky & Hargittai, 2016; Jaeger, 2012; Ragnedda & Ruiu, 2017).

Particularly within the higher education environment, the evidence in this study revealed that technology provided a strong link and afforded enabling means to accrue other valued social capital needed to succeed in the university. This included the ability to transfer prior offline social networks into online social networks. For Patrick, it was evident that this was an important way of maintaining his social networks formed prior to coming to university, as well as extending his networks within the university. Communication technologies such as Skype, WhatsApp, and Facebook were prominent features of Patrick's social interactions with his former college friends, and his current university course mates. Interestingly, having a university email address was an important status symbol for him. Compared to the rest of the participants, Patrick also focused on building friendships within the university more than the rest of the participants. He was actively involved in the university's student council, societies, and clubs. Here, Patrick experienced what

Ragnedda and Ruiu (2017, p. 27) identify as “enlargement of social networks”. He was able to convert his digital capital to both bonding and bridging social capital that was of value for his continuing participation in the university. Similarly for Felicity, digital capital also enabled her to maintain her existing connections for her much needed emotional support while studying abroad. Having family and established support structures through online communication were vital for Felicity’s mental health, while being away from home. Like Patrick, Felicity gained both bonding and bridging social capital through her digital capital during her undergraduate years.

7.2.2.2 Digital capital as site of radical possibilities

Disabled persons are often made to operate, at times unknowingly, at the periphery and on the margins of an ableist society in most areas of their life. As well, technology has been criticised for its design and functioning from non-disabled perspectives and normative assumptions (Goggin, 2018). Past research work on disability and technology has predominantly come from the medical sciences and engineering. Technologies specifically related to disabled people are usually framed as solutions which are highly technical, sophisticated, and innovative approaches to solve or rehabilitate specific impairment issues, typically known as assistive technologies (Goggin, 2018). While not diminishing the importance of these areas of research, there is a dearth of critical understandings of how pervasive the effects of generic technology or universal design has been on disabled people’s everyday personal and public lives (Burgstahler, 2021; Kaur & Saukko, 2022) . Evidence from this study has revealed a heavy reliance on access to mainstream technologies such as mobile phones and laptops by the students rather than the use of assistive technologies per se. This finding demonstrates that in terms of physical access to generic technology, disabled students are on par with their non-disabled peers, at least in the university environment. Similarly, Seale and colleagues (Seale et al., 2010; Seale, 2013; Seale et al., 2015; Seale et al., 2021) consistently found that disabled students had high levels of confidence in using technology to support their learning in the university. Similar to the students in Seale et al.’s study (2015), the students in the current study rated their confidence levels as being high. On a scale of 1 to 10, all except one student rated themselves as 5 and above on their confidence levels, with most students choosing level 7 (29%), then level 8 (19.5%), level 6 (17%), level 9 (14.6%), level 10 (12.2%), and level 5 (4.9%). Additionally, these students also reported a high level of access to, and use of, commonly available learning management systems such as Moodle; social media applications such as Google search, YouTube, Facebook; communication technologies such as email and messenger; online library databases, blogs, and online communities, among others. This was also observed by Fichten et al. (2020, p. 28), who found that a “blurring of the division between assistive and general use technologies has allowed students with disabilities access to a vast array of technologies from which to choose”. Increasingly, we see disabled university students exhibiting digital agility in their use of mainstream technology, particularly mobile technologies, to compensate for the effects of their impairments. As reported earlier, a majority of disabled university students had access to mobile smartphones and laptops.

However, as Goggin (2018, p. 80) pointed out, “many technologies assume and inscribe particular notions and power relations of disability, without this being apparent, explicit or contested”. Yet, the experiences shared by the participants in the current study offered many transformative accounts of technology. In short, digital capital can be converted and retransformed into positive offline outcomes (Gómez, 2021; Ignatow, 2020; Ragnedda et al., 2022). For these students, digital capital provided a site of radical possibility, a pathway to move from the periphery to the centre, to be legitimate participants in the wider university community. For example, Felicity increasingly found that technology afforded her vital strategies in managing her social networks, especially in relation to her mental health issues. Simple and generic mobile applications such as WhatsApp and SMS provided her with much-needed space in her communication with people. Commonly used asynchronous online communication technologies, including email, afforded what she called a “buffer zone” when things got too overwhelming due to her acute anxiety and extreme exhaustion. Being able to still participate in her daily responsibilities in an accessible way was important to Felicity’s identity as a capable person as well as her sense of belonging.

For Anna, who has been blind most of her life, digital technology, although flawed in many ways, gave her a new-found freedom. It was a perfect fit right from the beginning, according to her. The impact a typical mobile smartphone had on Anna was very significant. To her, her iPhone represented new opportunities for agency and independence, what Lewthwaite (2011, p. 318) pointed out as a “technology of the self”. Lewthwaite (2011) found that social networks (e.g., Facebook), as technologies of the self, afforded disabled students the opportunity to integrate and assimilate to the university student culture by building social capital. Similarly, through her mobile phone and laptop, Anna accrued and built the valuable capital needed to fully participate in university life. More than anything, unlike using Braille which made her feel “more blind”, her iPhone was a source of empowerment and enlightenment. The affordances provided by her digital devices, the ability to spell and write words freely as they are, made Anna feel that she could craft her identity more authentically. It liberated her from Braille where she felt she was made to memorise how to spell words “blindly”. Through digital technology, a wealth of accessible books was available for her. Anna’s sentiment seemed to suggest that Braille, a type of assistive technology albeit non-digital, heightened her disability identity, while digital assistive technology functions such as those found in her iPhone and laptop made her feel empowered. This interaction with technology not only afforded Anna the opportunity to successfully participate in the university, but also opened up possibilities and opportunities for her to be part of the wider community of people with similar interests through online communities and forums. Like the students in Seale et al.’s (2021) study, technology afforded Anna her independence, which meant not having to rely on others. In other words, she developed new constructions of an empowered independent self through her digital capital. Similarly, Kaspi-Tashor, Heiman, and Olenik-Shemesh (2011) found that blind college students’ use of technology benefitted their academic and socio-emotional outcomes.

As the following sections reveal, other participants in the current study also demonstrated novel constructions of a new self-identity.

7.2.3 New constructions of self-identity

More than a decade ago, a landmark text investigated digital technologies of the self (Abbas & Dervin, 2009), inspired by, and based on, Foucault's concept of technologies of the self. Foucault et al. (1988, p. 18) defined such technologies as those "which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, and conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection or immortality" (p. 18). Abbas and Dervin (2009) highlighted the opportunities of digital technologies for "staging and transforming the self/selves" (p. 2) and constructing multiple identities. These technologies allowed multiple encounters that would go beyond physical location and time, enabling social connections that were not previously available.

The idea of linking constructions and expressions of identities with technologies, however, is not new (Turkle, 1995, 2006, 2008). This theme has been explored by many scholars to understand digital technologies as they have become pervasive and increasingly ubiquitous in every aspect of our daily lives, linking the notion of new identity negotiation and construction with digital technologies in the online or virtual space, then back to the 'real' offline environment. Identity, as a relational notion (Abbas & Dervin, 2009), is formed throughout one's life course, and changes in contact with significant others both online and offline. For most disabled students, their individual social identity is often marred with exclusions in the offline world. The concern is that these exclusions are brought into the online digital space, reinforcing the stereotyped and stigmatised identities of disability (Garland-Thomson, 2015; Goggin, 2018; Jaeger, 2012).

The participants in this study demonstrated and strongly ascribed to the notion of technologies of the self. At the same time, there were instances where "technologies of power, which determined the conduct of individuals and submit[ted] them to certain ends or domination, an objectivising of the subject" (Foucault et al., 1988, p. 18) were also at play, likened to a double-edged sword. Technologies of power will be discussed further in Section 7.3. As technologies of the self, the students experienced new opportunities to construct and build identities other than what had been ascribed to them in the past. Here, the students' digital capital afforded them agency and resistance. Furthermore, they exhibited a strong psychological and emotional connection to their technology. The affordances of digital technologies of the self that were dominant among the participants included self-advocacy and self-determination. I will now discuss these affordances and describe how they enabled and benefitted the students to continue participating in the university.

7.2.3.1 Converting digital capital to self-advocacy

Among the participants, Chee Seng experienced the most disabling structural and cultural barriers throughout his time at the university. At the time of the interview, in his third and final year, Chee Seng had displayed confidence in self-advocating for himself and others. However, he said this would not have been possible without digital access to disability resources and critical engagement with technology during his early years in the university. In other words, Chee Seng's digital capital acted as a form of bridging capital that helped him to develop his critical consciousness about his own ideas about disability in order to effectively advocate for himself in disabling instances structured by the university's policies and process. It was a matter of academic survival for Chee Seng, "a matter of life and death". The university barriers mobilised him to self-advocate in matters related to his impairments. He now proudly claims to be a politically conscious disability activist and has no qualms about identifying himself as disabled.

Chee Seng felt he would not have been able to meaningfully affect change in his life as a dyslexic and ADHD university student without having digital technologies at his disposal. In his words, "having access to computer and Internet … allow me to be who I am now … I probably wouldn't be able to live now, ya I wouldn't survive". This finding matches that of what Heiman and Olenik-Shemesh (2012) found among students with learning disabilities (e.g., dyslexia). They found a positive correlation between technology use and psychosocial outcomes related to disabled students' wellbeing. Furthermore, Chee Seng was able to advocate for himself because of his digital capital, both in terms of digital devices or externalised resources, and as accumulated digital competencies or internalised abilities (Ragnedda & Ruiu, 2020). Fortunately, according to him, he was able to convert his digital capital into positive outcomes in relation to gaining important resources to request disability accommodation, and to develop digital skills and strategies to work with his learning disabilities. Chee Seng felt he would have left university otherwise. This finding matches what Lewthwaite (2011) found with her participants facing the most disabling barriers. This group demonstrated "the most complex understanding of social costs and affordances with technology" (p. 339). Like Chee Seng, advocating for themselves was a matter of survival to continue their academic career. However, for Lewthwaite's participants, it was limited to having their advocacy and political expression to meaningfully affect change only on online social networks such as Facebook. On the contrary, in Chee Seng's case, the Internet offered an effective politicised space for him to actively participate within the online network to enact change on campus. The flexibility of the Internet network provided Chee Seng with the space and time to reflect and edit before commenting between interactions and communication. This buffer was unlike real-time face-to-face interactions that disabled students, particularly those with ADHD and/or dyslexia, struggle with. This affordance was experienced by all the participants in this study to varying degrees.

Jaeger (2012) spoke extensively about how the Internet could be an effective organising tool for advocacy among disabled people. While organised advocacy work and campaigning for disability rights has a long history in developed nations, developing nations such as Malaysia have lagged far behind, so it is extremely difficult to create sustained impact. However, the opportunities afforded by the Internet and online social networks might spur disabled groups and civil society to intensify their advocacy. For Chee Seng, it was through his own self-advocacy that he developed the necessary skills and confidence to pursue university-wide advocacy for animal rights on campus. This work was activated online predominantly through Facebook. It was a successful campaign, according to Chee Seng. He was very proud of his advocacy project and how his self-confidence had grown as he experienced first-hand the power of a collective voice in affecting change on campus.

It is, however, important to point out that this form of collective advocacy was possible and allowed because the university was foreign-based. In Malaysia, there is a long record of punitive laws for social activists. This strategy might not work in most local public universities in the Malaysian context. This becomes problematic as advocacy work is seen as defiance against the authorities. This example is important for considering the effect of context on students' capacity to develop social and digital capital and convert it into self-advocacy. Disabled Malaysian students may be more likely to come into higher education lacking self-advocacy skills, and as a result, tend to shy away from requesting accommodations or voicing their need for help and support. Furthermore, many simply would not know their rights as disabled students, like some of the participants in this study. For those who do, some would feel guilty or bad when requesting accommodations, viewing it as a burden on others, or worse, as something shameful.

7.2.3.2 Digital capital as self-identity

Transitioning to university is a critical life milestone. In Malaysian culture, gaining a university degree represents and provides opportunities to change one's life course. It is also a time characterised by self-discovery and personal development, particularly in being independent and self-reliant. For many, it is the students' first time away from home while adapting to a campus culture which is very different from their high school environment. This is particularly difficult for disabled students. While this is a period of constructing new personal and social identities for most university students, disabled students are more likely to experience complex aspects of identity construction and development. This includes having to negotiate their identity in their social relationships with different actors within the university as well as in online spaces.

For Anna, having experienced an older tactile feature phone with keypads, her encounter with the touch-screen smart phone (e.g., iPhone) with a built-in *Voice Over* app was a game-changer. The difference between the two phones was apparent to her, the buttons on the feature phone resembled the Braille that she found too restrictive. Anna clearly disliked the association with using

a technology that heightened her disabled identity. Her first I Poem, *'I Didn't Feel Free'*, explicitly expressed how trapped she felt when using Braille. On the other hand, digital technology such as her iPhone and laptop brought out her "original" self. Here, Anna embraced a new digital identity that allowed her to build new social networks online. These meaningful connections with technology built her self-confidence, overcame isolation, and enabled beneficial communal activities that she could not previously participate in. The accumulation of digital capital further increased her social and academic participation in the university. In her words, she could now "be whoever she wants to be". Anna identified herself as being confident with using technology, and at times, even surpassed those of her sighted friends and course-mates. Most importantly, as reflected in her second I Poem, *'I Can Be Whoever I Want To Be'*, Anna accrued digital capital increased her positive self-identity, particularly her self-determination and self-affect.

This was noticeable across all the participants apart from Patrick. While having access to technological resources and skills was beneficial for Patrick in supporting his academic requirements, he experienced unwanted surveillance on the online social networks on campus with regards to his clinical depression and Bipolar disorder diagnosis. To him, to be perceived as having mental health problems was problematic. Patrick was subject to rumours over social media about his psychological fitness for an elected position on the university student council. This intrusion was unexpected and unwelcome for Patrick, and caused him extreme anxiety, particularly when he was campaigning for the election. Patrick's experiences of the social network as a technology of power is further discussed in the next section of this chapter.

7.3 Barriers to participation: Unequal rules of the game

In recent years, attention has been drawn to the dominant ableist framework of academia and the resulting bias in policies and practices (Brabazon, 2015; Shallish, 2017; Campbell, 2020; Brown & Leigh, 2020). The literature describes the effects on disabled university students who experience ableist institutional, social, and cultural barriers that prevent them from fully participating in the university. Additionally, disabled students who have intersecting marginalised identities were found to be excluded further (Aquino, Alhaddab, & Kim, 2017; Shallish, 2017). Taken for granted by the non-disabled community, the university environment was found to be "a seemingly neutral world" that "affords the normate body, while putting other bodies out of place" (Dokumaci, 2018, para. 6). The following sections provide a glimpse of some of the barriers that the students experienced that hindered their full participation in the university.

7.3.1 Technical and accessibility barriers

In the global North countries, accessibility issues have been long debated (Burgstahler, 2022; Fichten et al., 2020; Seale, 2020), with policies and guidelines for accessibility having been put in place. However, the case is very different in the global South. While there is no doubt about the

positive impacts of technology on disabled people, easy-to-fix accessibility issues are still problematic, even within education institutions. For example, in terms of online learning materials in the university, scanning of pages from books as images into PDFs was still an issue. Chee Seng often needed to convert reading materials to a format that he could read more effectively. With these inaccessible PDFs, he had to go through several steps to convert them to a format that he could use to suit his learning needs. This experience was similar to that experienced by Anna. Her screen reader could not read scanned images as PDFs. For Anna, the Wellbeing Centre assisted her with this issue by informing the lecturers involved as well as converting the documents to an accessible format that she could use. She recalled that after she had informed the people at the Wellbeing Centre, the problem just 'magically' disappeared after a while.

Chee Seng had an unseen impairment and late diagnosis which meant he had to take his own initiative to inform his lecturers about his grievances on inaccessible resources. However, not all the lecturers were receptive and willing to accommodate him for various reasons. It took extra and ongoing effort and time for him to fix the resources compared to non-disabled students. Among all the participants, Chee Seng experienced some of the most disabling instances throughout his academic career. Hence, even among the disabled cohort, certain people encountered more discrimination, marginalisation, and stereotyping because of their impairment type or category.

It is important to note that previous findings, such as Seale (2014) observed, revealed that despite having policies and guidelines in place, some disabled university students still encountered inaccessible digital resources and services. The relationship between disabled students and their technologies is highly complex. While there is no doubt that accessibility is an important element in the digital inclusion equation, it is not enough to view the overall issues from this perspective alone. Further understanding of digital inequalities among disabled students requires a conceptualisation of technology as multidimensional, and its interaction with varying factors in context-specific circumstances (Goggin, 2021; Tsatsou, 2021; Roulstone, 2016). The participants in this study confirmed the complexity of this relationship, highlighting the need to focus on socio-cultural, political, rights-based, and social justice aspects in relation to technology use.

7.3.2 Ableist attitudes and stereotyping barriers

Unlike Anna, Chee Seng had to repeatedly 'prove' his disability to get the accommodations he needed from the Wellbeing Centre and his school. His experience of trying to gain assistance from the Wellbeing Centre was filled with intimidation and dismissive responses. This left Chee Seng feeling discouraged and defeated, especially when he was there to seek for assistance for psychological distress. His experiences revealed instances of disrespect and unequal power relations between students and institutional bodies. Chee Seng's accounts were contrary to the official university's statements and guidelines on providing disability services. The university prided itself on supporting disabled students with "a team of trained professionals". On the university's

website, and in the student handbook and in the Wellbeing and Learning Support brochure[18], disabled students were promised assistance through the Disability Advisory Service, regardless of the nature, severity, and/or types of disabilities, as follows:

> *The Disability Advisory Service is strongly committed to equality of opportunity in its provision for all students at the University. If you require support for any disability, you can get assistance with queries regarding access to alternative formats such as large print and braille, admissions and registration, alternative examination and timetabling arrangements, disability assessments for academic purposes, liaison with libraries for enhanced services such as extended loans, recommendations to academic staff about reasonable adjustments for classes or exams, residential accommodation or time management.*

In the student handbook, it is specifically stated that this campus has been "designed with students with disabilities in mind" and even acknowledged that "not all forms of disability are easily recognisable". However, Chee Seng's story illustrated differential treatment and structural inequalities towards his psychosocial and learning disabilities. Intan, also with unseen impairments (ADHD and depression), experienced similar treatment from her school's disability liaison. Although she had disclosed her conditions and was officially registered with the Wellbeing Centre from the beginning, she had only approached the centre once, seeking counselling and support. Due to her initial negative and condescending experience with her school's disability liaison, Intan was deterred from requesting future assistance when she needed it most from the Wellbeing Centre. When asked about seeking out her school's disability advisor, who was also her assigned personal tutor for her course, she was adamant about not speaking to her unless it was unavoidable.

Although the examples above might be the one-off experiences of the participants, the main caveat remains – even when policies are in place to support disabled students, access to support is ultimately in the power of one person or group of people, i.e., the Director of the Wellbeing Centre or the Head of School, for example. This one person would determine which 'reasonable adjustments' were appropriate for the student and for what duration. What was clear in Chee Seng and Intan's experiences were the significant impact of interpersonal experiences with key people in the university system. This illustrates that the relationship between institutional policies and practices, and the people tasked to implement them is crucial. From the findings of this study, there seemed to be a lack of knowledge and training among academic and support staff in implementing these disability support services and accommodations.

For both Chee Seng and Intan, their disabling experiences revealed stereotypical and discriminatory attitudes due to their unseen impairments. In this university, faculty members

[18] In keeping with the anonymity of the case university, relevant links and references can be provided when requested.

displayed resistance to accommodation requests, exhibited discriminatory attitudes, and made stereotypical statements. As a result, despite the university having official disability policies and support services in place, the services were not accessible without assertions from the students themselves. For example, Chee Seng had to demand and insist by compiling research evidence to demonstrate that his request for accommodation was valid and needed. Even then, he experienced condescending language and behaviour from the university's disability support services staff. Using Goode's (2007, p. 44) term, Chee Seng had to "do battle" to access his rights while already struggling with his impairment effects. For those who were unable or did not have the energy to "do battle" with the system, they dropped out of university – like fish out of water. Hadley and Archer (2017) confirmed the barriers that students with learning disabilities faced when accessing disability support services, including having to provide documented proof of their disability. The researchers also found these students needing to assert themselves and learn self-advocacy skills to access accommodations. Similarly, Albanesi and Nusbaum (2017) found such exclusionary attitudes toward students with hidden disabilities in their investigation of institutional barriers and resistance to campus disability inclusion.

7.3.3 Institutional culture and governance barriers

Transitioning from school into the university constitutes an enormous change for most students. The university culture of independent learning and self-reliance within higher education can particularly disadvantage disabled students. Past research has found that these unspoken university expectations negatively affect disabled students more than their non-disabled peers (Goode, 2007; Fuller et al., 2004). Evidence from the participants' interviews in this study confirmed that the preferred strategy was to work things out on their own rather than seeking support, whether from their social circles or university support services. Unfortunately, within a culture that perpetuates not wanting to be different or standing out from the crowd, accessing important disability support services was often relegated to the last option when all other strategies had failed. This was compounded by their past negative and dismissive experiences of seeking support. Hence, help and support were usually sought when things got out of control or when the student reached the point of desperation. This is supported by Lewthwaite (2011) who found that disabled students experience intense academic pressure to be self-sufficient. The ability to undertake independent study is highly valued in the university. Similarly, in many instances, the participants in my study strived to exhibit a normative university student identity. Being self-reliant was important to them. The students expressed one of their main concerns as not wanting to be seen to be using their disability as an excuse. Disclosure of disability seemed to be viewed in a negative light akin to declaring a weakness needing 'special' help, rather than being different in terms of executive functioning and processing. Hence, many students were reluctant to disclose for fear of being discredited as a legitimate university student. Goode (2007, p. 42) offered an explanation and highlighted how disclosure "acts as a symbol of and repository for a complex

nexus of issues and social relations" for university students. This is particularly so for those with mental health illness in the higher education context where risks outweigh the benefits of disclosure (Riddell et al., 2005). The negative connotations that come with being disabled are still prevalent among Malaysian students and society at large.

On top of the negative connotations that come with disclosing a disability, there are only minimal benefits for the students to disclose in terms of financial incentive in Malaysia. Unlike in developed countries such as the UK, the USA, and Australia, financial support comes with a medical-evidenced disability disclosure in the universities. Disabled Malaysian students are therefore thrown into a conflicted position, having to manage their disability in ways that do not compromise their academic and social participation in the university. Rather than risking the extra-visibility of exposing their disability, many students choose to not disclose and suffer in silence. They carry the academic burden of having to work harder to fit into the university's requirements and environment. Again, this is the result of an ableist framework that is so entrenched within the university culture and beyond.

In speaking of how the institutional culture and structures influenced university students in the field, Riddell et al. (2005) found that "institutional culture plays a major role in determining the backcloth against which disabled students and other non-traditional groups experience a sense of either validation or marginalisation" (p. 58). Even within the circle of students, preferential treatment towards certain types of disability was observed. This was evident in the different treatment of Anna who is blind, and Chee Seng who has hidden impairments. In this respect, certain sub-groups were required to fight considerably harder to request disability accommodations and provisions. There was considerable pressure to prove their disabled identity, and that they needed reasonable adjustment for their impairment as much as other disabled students. This situation within higher education is not new for university students with hidden impairments. Riddell et al. (2005) pointed out decades ago that certain disabled groups were subjected to, and experienced, greater discrimination and barriers in the university – the othering of the 'Other'.

7.3.4 Loss of control and disempowerment Issues

Unlike their non-disabled peers, disabled students often have to manage disclosure of their disability identity, especially those with unseen impairments. Past research has suggested that learning and mental health-related impairments are among the highest prevalence disability categories in the university setting. This demographic was consistent with this study. Among those who were willing to disclose the nature of their disability, 85% were reported to have had either learning and/or mental health-related impairments. While awareness of mental health issues is increasing among the wider Malaysian population, the stigma and discrimination that surrounds having a mental health illness is still widespread, as it is still considered a taboo subject among the general public. Recent findings were more encouraging among Malaysian university students in

terms of their knowledge and attitudes towards mental health issues, although this did not extend to a willingness to disclose. Researchers found that almost 70% of the 496 university participants in a private Malaysian university would not want people to know they had mental health-related impairments (Despande, Ngadimon, & Yaacob, 2020).

Similarly, interviews with the participants in this study, particularly those with mental health-related impairments, revealed anxieties and concerns about unwelcome intrusion into their diagnosis and public exposure of their disability. However, to access accommodation from the university, students were required to register with the Wellbeing Centre. Although all disclosures with the Wellbeing Centre were strictly private and confidential, this did not alleviate their concerns. For example, both Patrick and Intan demonstrated a strong sense of connectedness and belonging within the university community from the beginning, yet they were wary about disclosing their mental health issues. Specifically for Patrick, this fear was further exacerbated by online social networks as a form of surveillance into his private life when rumours around his mental health issues were circulated among the university community on social media. Patrick experienced a loss of control as he felt there was no way to explain his side of the story, or how others might perceive his mental illness.

This particular incident mirrors the issues Lewthwaite (2011) found in her study of disabled university students who were active on Facebook. Like some of Lewthwaite's participants, Patrick found unwanted intrusions into his identification with mental health illness for the first time from unknown wider circles within the university community. The participants in Lewthwaite's study experienced "anxieties relating to extra-visibility and concern with disability intruding on their self-representations, objectifying them as Other" (2011, p. 325). For Patrick who was crafting his identity as a legitimate player in the university, this situation threatened to discredit his reputation and the capabilities he had worked hard for. In a culture that emphasises hard work and merit, this created extra burden and anxiety for Patrick to maintain the internalised high expectations of himself. He was not alone in this predicament. While Vaccaro and Kimball (2017) found that students with mental health diagnoses often experienced denial or shame, students from certain cultural backgrounds, i.e., Chinese and Japanese, grappled with stigma and shame issues far more. This demonstrates that the intersectionality of multiple social identities adds layers of complexity into the lives of disabled students. This intersectionality of identities must be considered when implementing policies and guidelines, including technology-related ones in a multicultural and diverse community such as Malaysia.

7.4 Implications for digital inclusion practices in the university

Digital technology permeates the everyday lives of our university students. The ubiquitous presence of technology in the university in all aspects of academic management, services, and course delivery is undeniable even in developing countries such as Malaysia. Yet, in the discussion

of policies and practices for disabled university students, digital inclusion is rarely touched upon and is often overlooked. This mirrors the exclusion of disability issues in broader discussions about the digital divide and digital inequalities (Dobransky & Hargittai, 2021; Goggin, 2021; Goggin, Ellis, & Hawkins, 2019). This study sought to address this gap in our understanding of digital technology access and use in the university, particularly focusing on disabled Malaysian students. The analysis and findings of this study highlighted the affordances of digital technology in increasing disabled Malaysian students' academic participation and life chances in the field. Through the individual participants' stories, the students demonstrated using effective strategies by converting their digital capital to enhance further academic competence and social identities that were valued in the university. This meant that digital capital increased their successful participation and sense of identity as university students. On the other hand, structural and institutional barriers, and the resistance of some members of staff remained stumbling blocks for these students.

To be digitally included means that disabled students are able to access the affordances proffered by technology use to participate in the university and wider community. Specifically, universities should support their students to: 1) access and use digital technology and resources that have direct impact in supporting their academic and social activities; 2) be informed and empowered in making decisions and meaningful choices in terms of their use of digital technology and resources; and 3) use digital technology and resources to increase and promote their full economic, social, and political participation in higher education and wider community. Ultimately, engagement with these technologies should result in experiences that students can consider to be useful, fruitful, and significant, and that have relevance to them in both their online and offline lives.

The role of the university should therefore focus on harnessing the strengths and capabilities of digital technology to support the increasingly diverse body of students, particularly those traditionally at risk of exclusion. At the same time, to enable the full participation of disabled students, universities have to remove digital barriers, and other discriminating practices, procedures, and processes within the university. The core question here is: How can universities, through technology, support the successful participation and inclusion of disabled students? Additionally, what are some of the strategies that universities in Malaysia can adopt to support digital inclusion among disabled students? The following section discusses the implications for inclusive digital practices to increase the students' participation and life chances in the university.

7.4.1 Digital inclusion through universal design principles

One of the main barriers that was found to exclude disabled students' participation in higher education is obtaining accessible teaching and learning digital resources (Fernández-Batanero et al., 2022). Similarly, even in advanced countries such as those in North America and UK, disabled university students continue to face problematic and discriminative practices related to their use of technology (Fichten et al., 2020). This is despite having disability policies and guidelines in place.

With accommodation provisions mandated by law in these universities, why are disabled students' needs still not met?

Within higher education in developed nations, disability is typically linked to the notion of "reasonable accommodation" (Campbell, 2023, p. 8), and universities having to fulfil their legal obligations. This language of obligations and compliance seems to suggest and positions disabled students as requiring 'special' attention and as being a burden. The onus and responsibility lies on the part of disabled students to disclose their impairments or medical health conditions with evidence of proof in order to receive learning support, provisions and accommodations. This current practice inherently requires students to declare that they are lacking, or in some form of personal deficit, and therefore needing to request 'special' help to succeed in their academic career (Burgstahler, 2022).

Madriaga et al. (2011, p. 917) had long argued for a socially just pedagogy that moves beyond reasonable accommodations in higher education, where disabled students "do not have to disclose and seek 'special' allowances to engage in higher learning". The accommodation practices and process to address disabled students' needs were found to be highly complex with subtle forms of discrimination (Burgstahler, 2022; Dolmage, 2017; Titchkosky, 2011), further segregating disabled students from their non-disabled peers. This accommodation approach, a taken-for-granted practice, to disability support and providing accessible services in the university, in Bourdieu's term (2000, p. 185), had become "ordinary order of things". As reviewed earlier in the thesis, the accommodation model of retrofitted remedies for providing access had been suggested as a pervasive form of structural ableism (Dolmage, 2017). This model suggests that disability is an individualised problem or deficit (Burgstahler, 2022), and that disabled university students are treated as supplementary, as burdens, as costs (Wieland, 2021). Further, past research revealed that rather than supporting inclusion, special provisions were seen to be exclusionary and build resentment among non-disabled peers (Madriaga & Goodley, 2010). Crucially, provision of accessibility through accommodations can be particularly problematic, and barriers potentially heightened among Malaysian university students due to cultural and psycho-social factors as evident in the findings of this study. They do not want to be marked out as different from their peers.

Hence, the accommodation-only framework adopted by universities to address accessibility needs can instead become a systemic barrier to some students. Alternatively, implementing universal design (UD) principles in higher education including the universal design for learning (UDL) principles and accessibility standards such as Web Content Accessibility Guidelines (WCAG) was said to level the playing field for disabled students (Burgstahler, 2015, 2021, 2022; Ellis et al., 2021; Kent, 2015a). Burgstahler (2022, p. 242) summed up these principles and standards by offering two simple guidelines to address most accessibility issues in the university – "provide

multiple ways for participants to learn, to demonstrate what they have learned, and to engage, and ensure all technologies, facilities, services, resources, and strategies are accessible to individuals with a wide variety of disabilities". When students have ready access to digital technology and resources that have direct impact on their academic and social activities, it increases their successful participation and inclusion in the university.

Universities then should be focused on building strategies and solutions that are guided by universal design principles – providing accessible digital support and services for all without singling out any particular group. The basic principle of digital accessibility should result in universal access: "good access is seamless, and available without individual requests" (Kroeger & Kraus, 2017, p. 228). If permanent digital universal access solutions are in place from the start, disabled students who fall through the cracks or choose not to identify themselves to the university will still be able to access these digital technologies and resources without individually requesting accommodations. Making accessible technologies and resources available for all students create a safe space for disabled students to access them without drawing unnecessary or unwanted attention to their impairments and needs. This is important as it has been found in this study that, particularly within a community and culture such as Malaysia, disabled university students generally lack self-advocacy skills and are fearful of standing out due to their differences. Rather than disclosing their impairments to access support, many depended on finding solutions on their own, at times even apologising or feeling shameful when asking for help and support.

In addition, digital changes can be made quickly compared to taking the approach of changing or retrofitting physical environments. In other words, digital barriers are relatively easily and cheaply fixed compared to physical and socio-cultural barriers. The rapid post-COVID-19 technological responses in higher education confirmed this (Ewing, 2021). Having said this, best practice in the university should be that digital accessibility must be addressed at the start rather than retrofitting (O'Neil Green et al., 2017). This can be done by employing a digital strategy "that moves beyond accommodations and modifications" and "where accessibility options are standard from the point of release" (Brabazon, 2015, p. 62).

For example, among the provisions that could be automated is for university students to have access to specialist software together with other generic, mainstream software such as Microsoft Office. This inclusive strategy immediately removes the first-level accessibility barrier for many disabled students. Students do not need to seek out anyone other than for typical technical support to access these software packages. Additionally, all university computers and laptops that are available for students' use should be access ready with common specialist software pre-installed. Other example would be to provide captioning for all teaching and learning media content. While captioning is increasingly a common build-in feature in mainstream social media and online contents, it is still an access support that must be requested by students in the university. Making

this accessibility feature the standard practice would benefit the whole student population including disabled students. With this in place, there would be less need for individual accommodation requests. After all, it is the most commonly requested form of support in the university (Ellis et al., 2021; Kent et al., 2017). When an accessibility feature such as closed captioning is fully integrated into the university delivery system from the get go, most students will be digitally included, regardless of needs and abilities.

Burgstahler (2022, pp. 244-245) shared some important suggestions made by current and past disabled students in making online learning more inclusive at the AccessCyberlearning 2.0 (2019) workshop:

> *• Offer multiple ways to gain knowledge, such as through a video paired with printed materials.*
>
> *• Provide all materials that are accessible to students with disabilities at the same time they are provided to other students.*
>
> *• Caption videos to benefit a wide variety of students, including English language learners, those in noisy (e.g., airports) or noiseless (e.g., libraries, buses) environments, individuals who want to search content, in addition to people with hearing and learning disabilities.*
>
> *• Design videos to include audio content for visual elements of a video whenever possible (e.g., have the credits and other information at the end of a video spoken by the narrator) to maximize access for individuals who are blind or otherwise cannot see the screen. Consider adding audio description to describe other key elements of the content presented visually.*
>
> *• Provide text descriptions for all visuals.*
>
> *• Use accessibility designed documents (e.g., PDFs, PowerPoint slides).*
>
> *• Engage with students in multiple ways.*
>
> *• In online discussions, to help students, especially those with learning and communications challenges, provide a specific focus to each discussion question, provide guidance in how to answer the question, engage in and guide the discussion, and summarize the group of responses.*

These above examples suggest that the universal design framework can offer more equitable and inclusive access and engagement opportunities for every university student, including disabled students. With the advancement of technology such as AI-based technologies including automatic captioning and language translation, virtual and augmented reality, voice-based searches, wearable technologies, among others, more mainstream built-in accessible technologies are

readily available for disabled students than before. These built-in accessibility features aligns with the universal design principles. This approach, without a doubt, is “almost always beneficial for *all*” (Fichten et al., in press, n.p., italics in original). Hence, to be an inclusive university, it is imperative to move from providing accessibility through accommodation to equal participation and engagement for all through universal design – this is true inclusivity.

7.4.2 Digital inclusion through building a shared narrative of disability discourse and language

In the case of Malaysia, the process for students securing accommodations are even more complicated as higher education public institutions in the country are not yet legally bound to provide such accommodations to disabled students. As a growing number of disabled Malaysian students are entering the nation’s universities, this exclusionary institutional practice is becoming more apparent and problematic (Nasir & Efendi, 2020; Paramavisam et al., 2022; Yusof et al., 2020). At the moment, there are no legal avenues for disabled university students in Malaysia to seek redress should they experience discrimination and exclusion due to their disability needs. Disabled university students were also overlooked and neglected in the Malaysia Higher Education Blueprint 2015-2025 (Ministry of Education, 2015) where disability inclusion was not touched upon. Further, Malaysia’s longstanding practice of making policies related to disabled people and disability issues without their involvement had failed to address the needs of the disabled community thus far (NST, 2022). At the time of this writing, there are no information as to what will replace the Malaysian Plan of Action for People with Disabilities 2016-2022 which had now expired. Amendments to the Persons with Disability Act 2008 promised empowerment and enforcement to protect the rights of the group. The related Ministry was reported to have said the amendments to the act was to be finalised by June 2023 but is now postponed to be tabled in the Malaysian parliament in 2024 with no identifiable date (Bernama, 2023).

However, while it is imperative that laws are put in place to protect and support disabled Malaysian university students, past research has shown that this is not enough. Evidence from this case study also demonstrated that despite having disability policies in place, as Faith University is a Malaysian-based UK-owned university, the participants still face structural and societal barriers. Alarmingly, some of the participants found the leadership of the campus disability service centre as well as lecturers engaging in harmful and biased practices in response to requests for reasonable accommodations. Similarly, another case study of one particular university demonstrated this pervasiveness of an ableist campus culture, including discriminative treatment from teaching faculty members (Albanesi & Nusbaum, 2017). Other authors (Fichten et al., 2020) found problematic ICT-related practices that create unnecessary barriers for disabled students where some professors in the university disallowed students from using their personal mobile technologies in class. Kroeger and Krauss (2017) and Seale (2020) also found that legally binding accommodations in the university do not guarantee equitable, positive, or respectful experiences,

technology-based or otherwise. Hence, it would seem rather short-sighted to depend solely on formal policies to design and implement inclusive practices related to campus accessibility.

As discussed in the earlier section, the universal design framework appears to be the best way forward to support digital inclusion and full participation of disabled university students. However, for universal design principles to be successfully implemented, the campus climate needs to be aligned with the disability consciousness and awareness of the main actors within the university. Unfortunately, this was found to be limited among non-disabled university members in this study. Majority of the university community lacked knowledge and experiences in interacting, or communicating, with disabled people. This was evident from the participants' stories including life-threatening and distressing instances that were filled with humiliation, rejection, and ridicule from lecturers, peers, and administrative staff, intentionally or unintentionally. To add to this, the deviant societal disability narratives that the disabled students themselves have internalised further problematise their identities as legitimate members of the university community. These self-limiting perceptions can be more disempowering than any other barriers. To counter these limiting disability narratives on campus, ableist, discriminative, and euphemistic discourse and language need to be challenged and changed.

To be a truly inclusive university for disabled students and other marginalised groups, there is a need to go beyond meeting legal obligations and mandatory requirements. Facilitating compliance is only a small part of making university services accessible for disabled students. Hence, the role of the campus disability support office, while facilitating accommodation requests, should be proactively championing an inclusive campus disability culture. Disability support offices were found to be a key element in successful participation of disabled university students (Moriña, López-Gavira, & Morgado, 2017). Hence, for universities without a disability support office, it is crucial to start one. Disability support office is also typically disabled students' first point of contact after their university admission to their study programs. Efforts to reframe and challenge the deficit disability narrative and language used across the university can be facilitated from here.

However, while one would expect the disability support office would be influential in more positive disability narrative and discourse within the larger university culture, some of the participants of this study encountered discriminative, stereotypical and biased experiences. As mentioned earlier, they found some of the disability support officers in leadership roles to perpetuate disempowering perspectives on disability and disability-related access. These harmful practices from disability support office staff suggest how deeply persistent the dominant narrative of disability as an individualised problem and burden within the Malaysian community. As Goggin (2021, p. 259) rightly pointed out, while there are shifts in the conceptualisations of disability as a social, cultural, political, and human rights issue, disability was and is still often seen as "a form of illness, disease, or other health condition that needs to be treated, cured, or fixed". This outdated understanding in

the approaches to disability is further compounded with a weak disability law that failed to protect the rights of disabled Malaysians (Abdullah et al., 2017).

Clearly, progress to enact stronger national laws and policies will take time. However, one immediate inclusive strategy within the university that can be carried out is to engage a disability office director that is knowledgeable, trained, and aligned with social and human rights approaches to disability to work towards a shared disability discourse and language on campus. From here, efforts to reframe the disability support office's values about disability is by ensuring all staff are informed and trained on the core concepts of social justice and rights-based approaches to disability practices, and recognising the dynamic nature of disability. Then a disability audit of processes and practices within the disability office service delivery should be conducted including language used in all forms of communications and resources. After which, this could be rolled out to university-wide disability audit across all departments on their online and offline resources and services, as well as teaching and learning practices.

Additionally, a consistent and sustainable way to achieve a collective understanding of disability is to develop a comprehensive and accessible online disability inclusion toolkit for all levels of the university community. For students, this could be introduced during orientation week, and for staff, during their induction into the faculty with ongoing periodic trainings and workshops. This toolkit should include the university's foundation principles and values with regards to disability, inclusive concepts and strategies such as university design for learning and disability as diversity, and stories and perspectives from disabled students and academic and administrative staff. Additionally, best practices of digital accessibility including an updated list of available accessible technology and their uses should be included in the toolkit so that students can make informed and meaningful choices to support their studies in the university. A campus awareness and outreach activity should also be delivered each new semester to increase disability presence within the university community. Further, disability studies can be introduced into the general university curriculum as generic or elective courses to provide opportunities for university students to explore deeper understandings of disability and diversity.

Other initiative such as a special yearly campus event specific to raising disability awareness should be organised to engage disabled people, including national and international speakers from a wide range of industries and fields. Participation from disabled students and/or disabled academics to tell and share their stories in these events should be encouraged and celebrated as integral part of the university community. First-person narratives are powerful. When real disability stories are put forth and prioritised, the less stereotypical narratives are perpetuated. Increasing the visibility of disabled students would counter the often ableist assumptions about them. On-going efforts of disability awareness events could be rolled-over to online spaces. Jaeger (2012) identified the Internet space as an ideal tool for challenging established disability perceptions and

to craft alternative representations. To Jaeger, the Internet is a perfect platform to change the dominant societal narrative of disability, one that is often associated with discrimination, stereotype, and stigma. With the rise of social media access and participation, disabled people's online presence and representations are becoming more mainstream than before. Online communities can go beyond physical time and space, creating a sense of camaraderie among like-minded people together in their awareness and advocacy agenda.

These types of events could also be incorporated as part of promotion and marketing events for the university. From an economic standpoint, a disability-friendly and inclusive campus environment could become a selling point for any contemporary university to increase student enrolment and presence amidst the saturated numbers of universities in the region. More importantly, such events involve the wider campus community such as academics, students, and administrative staff. These events provide opportunities for meaningful interactions and create opportunities for organising and advocating for disability rights together, not only to reimagine disability in a new light, but to find ways to integrate and promote inclusive practices and attitudes in all aspects of campus life.

Another practical strategy could be a mentoring programme involving both disabled and non-disabled seniors paired with junior students would provide opportunities for disabled students to develop leadership and advocacy skills, as well as for non-disabled students to interact with disabled students. These types of university-wide mentoring programmes would be valuable as noted by Leake, Burgstahler, & Izzo (2011) and Kimball, Friedensen, & Silva (2017). Supportive peer networks "can facilitate the normalization of disability for students" (Kimball, Friedensen, & Silva, 2017, p. 67). Hence, such mentoring relationships and peer support networks are much needed to cultivate and promote inclusive interactions, engagements, and communication among students across the campus. Non-disabled students have limited exposure to interactions with disabled people, which largely contributes to stereotypical and biased perceptions of disability. Negative pre-conceived concepts and misrepresentation in the media reinforce, perpetuate, and frame disabled people as non-human (Jaeger, 2012). These unrealistic conditions typically lead to social distancing as well as social discomfort around disabled people as noted by Nasir and Efendi (2020) among Malaysian university students. Providing opportunities for disabled students and their non-disabled peers to work together collaboratively offer the chance for meaningful interactions and deeper mutual understanding. Building meaningful relationships and establishing friendships with diverse groups of people can promote campus environments that are more accepting and inclusive. Making the campus inclusive then would become a shared responsibility rather than an individualistic and exclusive pursuit.

Strategically, the strengths of the disabled students should be capitalised in the campus disability and learning support services. Having disabled students as part of the support services team

would elevate their presence on campus, and normalise disability as a form of diversity, rather than a deficit. For example, the participants in this study demonstrated digital competence in their later academic years that came with learning through trial and error, and testing out what worked well. Several participants reported that it would have been less painful if there had been someone similar to guide them or share their experiences when they needed it. Having been through similar struggles themselves, senior students should be involved and recruited to induct new disabled students into the university, especially in relation to digital access and resources. The university should also consider electing disabled students as disability ambassadors from each faculty or school as points of contact for disability-related matters. This approach would promote active participation of disabled students to connect with the wider university community, and provide empowering opportunities for them to practice leadership as well as enact change on campus. These opportunities would minimise the social isolation that disabled university students are often reported to experience (Nasir & Efendi, 2019, Paramavisam et al., 2022). Engaging and involving disabled students to contribute their strengths to the community would create a deeper sense of belonging and would facilitate greater participation in university life.

Strategies, initiatives and activities such as those mentioned above were proven to be effective, critical, and far-reaching in the efforts to changing the limiting and outdated disability narratives on campus, albeit in more advanced countries (Fichten et al., in press; King et al., 2020; Kroeger & Krauss, 2017; O'Neil Green et al., 2017; Seale, 2020). For localised and culturally-appropriate solutions and strategies, the inclusive "nothing about us without us" approach of prioritising the voices and opinions of disabled students should be considered and adopted. This involves on-going consultation with current disabled students in the university as well as working with civil societies in the country in building a shared narrative of disability discourse and language in the university and the wider community.

7.4.3 Digital inclusion through mainstreaming disability rights in the university

The ambiguity and underdeveloped national disability laws (Tan et al., 2019), and outdated conceptualisations of disability as medical, welfare, and charity cases (UNICEF, 2014) in Malaysia put disabled citizens at risk in accessing and being included in higher education. The findings of this study confirmed with other Malaysian studies that disabled students' participation in higher education still remain most overlooked, misunderstood, and marginalised (Nasir & Efendi, 2020; Yusof et al., 2020). Despite Malaysia being a signatory of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) since 2008, and ratified in 2010, disability awareness, especially from a human rights perspective, is still limited within the nation, as it is around the Southeast Asia region (Nasir, 2023).

Internationally, for the past decade, fundamental shifts are seen prominently from biomedical, welfare, and charity perspectives to adopting social justice and rights-based approaches to

disability across a range of domains and life dimensions (Goggin, 2021). In particular, access to and use of digital technology is deemed as a disability right. For example, having the rights to accessible ICT and the internet are stipulated in Articles 9 and 21 of the UN Convention on the Rights of Persons with Disabilities (UNCRPD, 2006). Other global initiatives include the UNESCO's Internet universality indicators (Souter & van der Spuy, 2019), where the framing principles are rights-based, openness, accessible to all, and multi-stakeholder participation; the Global Initiative for Inclusive Information and Communication Technologies (G3ICT, 2022), a UN-established international organisation whose mission is to promote disability rights in the digital age; and the Web Content Accessibility Guidelines 3.0 (WCAG, 2023) by W3C Web Accessibility Initiative group that is based on the principles of accessibility, internalisation, privacy, and security.

In the most recent publication on digital accessibility rights evaluation index, G3ICT (2020) reported that Malaysia's capacity to implement ICT accessibility is low as there are no specific governmental agency to address digital inclusion, no consultation with disabled people's organisations in the ICT accessibility policy making, and also no ICT accessibility courses at the universities. It is clear from this report that digital inclusion had not been given a priority in terms of increasing the full participation of disabled Malaysian citizens. Evidence from this study confirmed likewise. Here, Malaysian universities can play a crucial role to extend the efforts of advancing the full participation and inclusion of disabled citizens, particularly through higher education.

In tandem with international advancement of inclusive and accessible ICT, the framing of digital inclusion as digital accessibility rights in higher education would potentially shift and close the gaps of the disability digital divide and counter the deficit accounts of disability and access. In other words, the mainstreaming of disability rights within the university's procedures, processes and practices could spearhead the transformation needed to address broader digital inequality and structural barriers that prevent full participation of disabled students to higher education. This premise is based on disabled students' rights to equal opportunities to participate and access higher education including accessible ICT and internet. As Jaeger (2012, p. 36) emphasised: "accessibility of the Internet is really a human issue. It involves technology, but it truly is a matter of civil rights, social inclusion, equality, and human dignity". Critically, adopting and utilising international accessibility standards and instruments in the digital inclusion policy and practice framework would bring Malaysian universities up-to-par in the region and globally.

This rights-based focus is also in line with universal design principles as a wide-ranging approach to digital inclusion as discussed earlier. When digital technology, be it devices, applications, systems, or services, within the university are accessible to all as standard practice, it minimises disabled students' need to go through applications and request to have equal opportunities to accessible technology. Therefore, the tenets of disability rights-based approach – a combination of "duties to refrain, duties to protect, and duties to provide" (Fisher & Robinson, 2023, p. 3) – can be

used as an important guide for developing effective roadmap towards a digitally inclusive university. Prioritising all digitally-related services, process and practices to benchmark against international accessibility standards is foundational to a digital inclusion agenda within the university.

More importantly, for Malaysian higher education institutions, the crucial first step would be to consider a university-wide monitoring compliance policies for digital accessibility from point of release. Lazar, Goldstein, & Taylor (2015, p. 179) clearly listed why this proactive approach of investigating, monitoring, and ensuring accessibility is necessary:

- *If an organization doesn't know which technologies are accessible and which are not, there's no way to have a permanent solution*
- *Reactively responding to inaccessible IT causes a time delay and unequal access*
- *Reactively responding to inaccessible IT is more expensive*
- *Reactively responding to inaccessible IT may lead to lawsuits*

Particularly from students' perspective, the current and typical approach of individual accommodation causes a delay in accessible resources for disabled students. This time delay is a form of discrimination and a barrier to participation. Having a monitoring compliance policy would also address issues of persistent inaccessibility among disabled students despite having specific technical accessibility standards regulations in place as raised by some authors earlier. As Lazar et al. (2015) also observed, the missing link in the implementation of accessibility regulations and laws in many countries is compliance monitoring. In the university, compliance monitoring ensures that digital accessibility procedures adhere to the said accessibility standards they claim to follow. One example of effective compliance monitoring is on the technology procurement process. Detailed documentation with clear procedures on meeting accessibility requirements on all IT procurements within the university (i.e. hardware, software and operating systems, learning management systems and services) is a straightforward type of accessibility compliance to enforce (Lazar et al., 2015). This digital accessibility compliance procedures can be rolled out to other university processes such as library services and resources, and teaching and learning methods, practices, and activities. This might include mandating university regulations on following best digital practices benchmarked to international accessibility standards guidelines (e.g. best practices for library services and resources, best practices in online learning, best practices for designing teaching and learning resources, etc.) Taking this built-in, up-front digital accessibility requirement approach in all of the university's processes and services centres digital accessibility as a normative, rights-based practice, rather than an afterthought.

The above approach is one way universities can enact digital accessibility rights that fulfils the duties to refrain, protect, and provide sustainably. It removes digital structural barriers that prevents the equal participation of disabled students proactively instead of reacting to complaints and crises

as some of the participants in this study encountered. Critically, as noted earlier in the discussion, digital exclusion among disabled students is not solely due to inaccessibility and functionality of technology but also differential qualitative experiences in using technology, which in turn, impact and affect different outcomes and opportunities. What particularly stood out from the participants' interviews was how emotionally connected they are to their technology, how it made them feel about themselves, and how their use of technology created affordances and pathways to developing positive self-identity, self-advocacy, and increased empowerment and independence. Access to these technological affordances, however, didn't come without significant struggle and resistance especially in the initial years of these students' university lives. There were many instances shared by the students where their rights were dismissed and violated, hence their ability to equally compete in the field was compromised.

While having clear organisation accessibility monitoring compliance policies and best practices are necessary to move towards a digitally inclusive university, full participation and inclusion of disabled students also entail social acceptance, and a sense of belonging – i.e. being seen and acknowledged as legitimate players in the field. Negative stereotypes and the associated stigma towards and among disabled students remain a stronghold in Malaysian higher education institutions (Nasir & Efendi, 2020; Paramavisam et al., 2022; Yusof et al., 2020), including empirical accounts from the case university. Medical, welfare, and charity framing of disability are still prevalent in local media representations and within the Malaysian community at large. In order to fight these ableist perceptions, attitudes and practices, disabled students in my study had to go through significant resistance in changing their outcomes and trajectories in the university. For one of the participants, their stories were filled with constant self-advocacy battles for accessibility rights, while putting up with discriminative and demeaning responses. Due to the country's conservative political and social-cultural climate, advancing disability advocacy and activism to afford substantial social change is a slow and painful process. A recent international report (Bureau of Democracy, Human Rights and Labour, 2022, p. 1) on human rights practices in Malaysia was particularly grim, where they found, among others:

> *… serious restrictions on freedom of expression and media including unjustified arrests or prosecutions of journalists, censorship, and enforcement of criminal libel; restrictions on internet freedom; substantial interference with the freedom of peaceful assembly and freedom of association; and serious government restrictions on or harassment of domestic human rights organizations; …*

Despite this volatile political climate, and lack of consciousness of disability rights among Malaysian disabled students (Nasir & Efendi, 2020), instances of empowered self-identity and self-determination arose from the participants' access to technology – particularly in gaining access to disability-related online resources and various online disabled advocacy communities network. Access to the internet also afforded the building of bonding and bridging relationships which had

direct positive impact on the students' academic and social participation in the university. These findings gave us an indication that the internet sphere can be a fertile ground in raising disability rights awareness in Malaysian universities, both at a systemic and individual level. As Jaeger (2012) had previously pointed out, the internet is a perfect platform to participate, organise, and mobilise disability advocacy and activism for social change.

Tapping on online platforms and their affordances to advocate for disability rights especially digital accessibility rights appears to be a progressive way forward as disabled university students are already in the digital space. Advocating and increasing the visibility of disabled people online and their participation in ordinary life, and providing opportunities for the wider community to be involved in disability online networks, forums, events and activities, could break the barriers of social distancing between disabled and non-disabled people typically experienced in the physical context (Jaeger, 2012). Through these wide-ranging online opportunities of sustained engagement and social connections (i.e. valuable bonding and bridging social capital), disability rights can be normalised as part of, in Bourdieu's term, the rules of the game within the university field. When disability rights are uphold from the outset, disabled students do not have to rely on seemingly subversive strategies to compete in the field. Policies, decisions and solutions taken within the university would then stem from the premise of duties to refrain, protect, and provide. This is particularly critical for disabled students, whose identity and position in the university, and wider society, had always been historically tied to overcoming or working around exclusions. Essentially, mainstreaming disability rights would open-up critical pathways for full participation and social inclusion of disabled students in the university, including digital inclusion.

7.5 Limitations and further research

The previous section offered some considerations and implications for implementing possible practical approaches toward establishing a digitally inclusive university based on the findings of this study. They include strategies that could be planned and implemented within the jurisdiction of the higher management levels of the university. To this end, it has been a challenge to grasp the full extent of the complex relationship between the disabled students and their technology. This research study, therefore, is not without its limitations. Further research would extend and widen this area of knowledge, particularly for Malaysia, building on the findings and implications of this study.

7.5.1 Expand research sample to include broader range of backgrounds and various disability groups

This is a small intensive case study at one British university based in Malaysia, focusing on the experiences and life stories of disabled Malaysian students. It was necessary to keep the sample small to realistically carry out in-depth engagement with the participants within the time constraints of a doctoral study. The voice-centred approach to analysis taken in this study also necessitated

reasonable and manageable interview data. The analysis process required multiple readings of the transcripts while listening to the recorded interviews. It was a laborious and time-consuming task, but vital to the motivations and aims of this study. Therefore, from the outset, this study does not claim to make broad generalisations for disabled university students across multicultural Malaysia.

Besides the small sample size, the homogeneity of several factors associated with the participants meant that my study only managed to capture a fraction of the complexities that underpinned their relationship with technology. My study involved participants with a range of sensory and physical impairments such as dyslexia, attention-deficit/hyperactivity disorder (ADHD), mental health conditions such as anxiety, clinical depression and Bipolar disorder, and blindness. There are many other impairment intersections which may influence different experiences of technology access and use in the university setting.

The majority of the participants were from the middle class and of Chinese descent. While one of the participants was of Malay descent, coming from the upper-middle class, her experiences would be far removed from that of the majority rural and lower-middle and poor Malays in the country. Complex and dynamic intersections of identities such as ethnicity, religion, and social class cannot be denied. While it would be beneficial to include the whole spectrum of disability and cultural groups, it was beyond the limits of a doctoral study. Further investigation is needed into this intersectionality and the multifaceted nature of disabled students, particularly those from the lower-middle class and poor Malaysians in public universities.

Larger research studies that encompass both breadth and depth to capture the multiple and inter-related identities of all disabled groups would deepen our understanding of their uptake or rejection of technology use. We also need alternative and transformative accounts and narratives of technology use that reflect the diversity of our cultural, political, and social settings. There are "critical silences", as Roy and Lewthwaite (2016, p. 483) argued, in mainstream understandings of disability and technology. Similarly, Goggin (2018, p. 87) highlighted the lack of disability technology research exploring "uses, meanings, and cultures" in various cultural and social settings, particular in countries where "varieties of capital and geopolitical resources are scarce". Even in a dedicated publication focused on disability in the global South (see Grech & Soldatic, 2016), only one out of the 37 chapters explored the relationship between disabled people and digital networked technologies. This vacuum is even more pervasive in post-secondary and higher education studies. We, especially researchers from the global South, who are working in the field of disability studies need to challenge and rethink our own tendencies in ascribing to unexamined methodologies and approaches in our research. Rather than erasing the complexity that our cultures bring, our differences and distinctiveness should be acknowledged to enable the missing disability discourse and nuance experiences to emerge in our part of the world. Critical and intersectional perspectives on disability and technology are crucial to our understanding of the

"messy realities" of the disabled university students. Alan Roulstone (2016, p. 3), a key scholar in disability and technology, argued that to fully understand the complexities at play, one needs to "seek international evidence, to acknowledge diverse social and cultural contexts, to register disabled people's perceptions and experience". More importantly, if the university sector's agenda is to advance and promote the full participation of disabled students, understanding the complex interplay between their multifaceted nature and diverse identities and the technologies in their daily lives warrants urgent attention.

7.5.2 Extend opportunities for participatory methods and inclusive approaches with research participants

As a non-disabled person, I acknowledge that I can only empathise and imagine as far as I can on how it would be to live with disability. I was acutely aware of my position in the field, and did what Bourdieu (1999, p. 609) advised, "to reduce as much as possible the symbolic violence exerted", particularly in researcher-participant relationships through "active and methodical listening" during the interviews. While in the process of re-telling and writing the participants' stories, it became clear that it was difficult, and even impossible, to tell their version of the so-called authentic truth. I struggled particularly in this phase of the research, often questioning myself if I was doing the participants' justice in my writing of their stories. In doing so, I was extremely careful, perhaps at times too much, that it became a stumbling block to the writing process.

I later found an alternative approach offered by Crossley (2017) that might solve this dilemma in my future research practice. Crossley (2017, p. 203) suggested: "another way of reducing symbolic violence of the relationship between researcher and research participant could be to take the theory of research studies such as this back to the participants themselves, and attempt to theorise their actions with them". While I did provide some ways to involve the participants in the form of member checking (the participants read and commented on their biographies and the transcripts of the interviews), it was a minimal form of research collaboration. The opportunities for collaborative research could be extended further to different phases of the research process to include what was suggested by Crossley. This may pose a challenge for a time- and resource-constrained doctoral study such as this, but should be fully explored in future research through participatory methods and inclusive approaches. Choosing this research pathway will open spaces for the disabled community to move from the margins to the centre, a space where they can choose and tell their own version of their stories on their own terms.

7.5.3 Focus on mainstream technology rather than specialist technology

When exploring disability and technology, much of the research has been geared towards biomedical and rehabilitation technologies, particularly in the medical, engineering, and health science disciplines. Here, technology was often referred to as assistive technology, i.e., specialist technology, typically very costly, to support or assist certain impairments. These assistive

technologies were specifically designed, and aimed, to rehabilitate or solve individuals' problems with disabilities. Proponents of the social model approach and disability activists criticised such technologies and the research that underpinned them for taking a limited view of disabled people, and the potential for technology to transform more widely. Various scholars and disability activists cited the limitations of specialised technologies that assumed and framed notions of disability as a body deficit, problematic, and deviant. Specialised technologies, often associated with the medical model, demarcate and isolate users as the 'Other', as though needing "luminous salvation and deliverance from disability" (Goggin, 2018, p. 83).

For example, Söderström and Ytterhus (2010, p. 304) found that affluent young blind Norwegians associated mainstream technologies with "competence, belonging, and independence". On the contrary, they found assistive technologies as symbolising "restriction, difference, and dependency". Interestingly, Anna, the blind participant from the current study, shared similar sentiments. One such example was how she rejected the use of assistive technology (i.e., book scanner[19]) at the Wellbeing Centre. To her, the book scanner was "tricky" and "misspell[ed] things", but essentially, Anna needed to depend on others to double-check the accuracy of the scanned documents for her, as she felt that "I couldn't actually use it on my own". Since using her laptop and iPhone, Anna had completely abandoned using Braille. She had not seen the need to have, or to access, a Braille computer. To her, Braille made her feel like the 'Other'. Like the young blind Norwegians, Anna associated mainstream technologies with positive symbolic value. She proudly claimed that she was more confident in using technology than some of her sighted friends. As Ravneberg and Söderström (2017) suggested, disabled young people often use technology as an identity marker. In the same way as other young people, their technology use was ultimately determined by their "desires, aspirations and needs for companionship, recognition and belonging" (p. 47). Similarly, Anna's preference for mainstream technologies clearly showed that students choose to use or reject certain technologies not only because of access issues, but also what these technologies mean to them, and how it made them feel about themselves and their self-identity.

More significantly, the fact remains that access to assistive, specialised technologies and rehabilitation services in our part of the world is lacking and very costly. As Roulstone (2016, p. 10) noted, "technology in the southern hemisphere is scarce and mediated by very different social and economic processes in low- and middle-income countries". In Malaysia, however, access to mobile phones, the Internet, and other generic technology is widespread among the population. Access to, and use of, these mainstream technologies are even higher in the universities, as shown in the findings of this study as well as in past research. Hence, it makes sense to focus on how these mainstream technologies can be harnessed to enable social inclusion and the participation of

[19] A book scanner converts physical publications such as books, magazines, printed documents into digital formats. It is usually a bulky machine, similar to a photocopier.

disabled university students. Additionally, as revealed in this study, the relationship between technology and disabled university students is complex, and difficult with institutional, socio-cultural, emotional, and psychological barriers, and is more than just accessibility barriers. Research on mainstream technology needs to go beyond deterministic perspectives, recognising that technology is socially, culturally, and politically constructed.

7.5.4 Systematic national-level data collection disabled Malaysian citizens and their use of digital technologies

There is a pressing need in Malaysia to extend our efforts to systematically collect national-level data in order to gain an accurate and comprehensive understanding of our disabled citizens' access, use, and consumption of digital technology and connectivity. Obviously, the scale and scope of such a task requires collaboration from all sectors, including the government, non-government organisations, disability advocacy groups, civil societies, private enterprises, cultural communities, families, and especially from disabled people themselves. Such data, which are fundamental to the design of digital inclusion policies, initiatives, and measures are currently largely missing. In the case of Malaysia, while there is some notable local research on disability and technology in education, the majority operates from a medical conceptualisation of disability, focusing on the use of specialist technologies, usually termed as special educational needs. These studies are often framed through rehabilitation and remedial perspectives. The documentary analysis in this study revealed that the current disability frameworks that are used have failed to consider the intersectional aspects of our disabled citizens. The media continues to stereotype and portray disability identities as being in deficit and/or needing pity and help. Equally challenging are particular notions of disability that have arisen from cultural and religious beliefs across generations. These accounts and evidence appear to suggest that we have a long way to go in terms of mobilising a social justice and rights-based conceptualisation of disability in Malaysia.

To activate and coordinate an improved-design large-scale study, the United Nations Convention on the Rights of Disabled Persons 2006 (UNCRPD), which the Malaysian government had signed and ratified, should be used to facilitate and support the transition to a more holistic approach to disability. The UNCRPD puts an obligation on signatory governments to address digital inequalities, prioritise disabled citizens' rights, and identify structural barriers to accessible digital technologies. For a start, this human rights approach has the potential to challenge the limiting constructions of disability that are deeply embedded in Malaysian society. In short, we should start telling alternative stories that challenge preconceived notions and stereotypes associated with disability and technology.

7.5.5 Expand reviews of literature and future publications to include the national language

It is also worth pointing out that this study did not include a review of the empirical literature published in the Malay language. Regrettably, in retrospect, I felt this was a missed opportunity on

my behalf to critically review and reflect on local research publications, including Masters and PhD theses that have been published in Malay in our local public universities. While it would have been extremely valuable to have included Malay publications in the review of the literature, pragmatically, access to such materials was difficult as most remain only in print format publications and are situated in certain government and higher education institutions' libraries and archives. Moreover, with the restrictions put in place for international travel due to COVID-19, it was near impossible for me to physically travel to locate these publications for critical review. No doubt, there are some local publications online. However, if solely using online rather than printed publications, the review would have been skewed and lacking the criticality expected of a scholarly study. Given the right opportunity, and with adequate funding, this is what I would embark on next. Understanding local perspectives would be a crucial shift in finding other important pieces to the puzzle. Additionally, it would also benefit local Malaysian researchers for me to publish systematic reviews of English scholarly articles on disability and technology in local publications in Malay. Having these reviews published in the Malay language would be useful for local Malaysian government officials, researchers, educators, and students in the local universities who lack the language competence to fully understand the scholarly articles in English. Having access to this information would build and widen a community of practice within Malaysia in critical disability and technology studies.

CHAPTER 8: CONCLUSION

> *… to take up a struggle which we may call revolutionary in so far as it aims to establish alternative goals … to redefine the game and the moves which permit one to win it.*
>
> (Bourdieu, 1988, p. 172).

8.1 Introduction

In this final chapter, I will provide a summary of the study that was carried out, the research questions, and the key findings. This will be followed by the research contributions of this study to the field of disability and technology. Finally, the chapter will conclude with some closing remarks.

8.2 Research summary

This research sought to explore the experiences of disabled Malaysian university students in their use of technology to support their participation in higher education. The life stories of five disabled students provided a window into their complex relationships with technology in a specific university setting. My priority was to provide alternative and transformative accounts that reflected Malaysia's unique context. Hence, the focus was on highlighting and privileging the particularities of the participants' experiences within an ethnically, linguistically, and culturally diverse nation and community. Ultimately, the aim of this study is to inform and enact changes in Malaysian universities' technology support and services – particularly in relation to digital inclusion policies and practices – to enable full participation of disabled Malaysian students.

In this study, I drew on the work of Pierre Bourdieu to make the argument that the relationship between the students and technology is not straightforward, instead being multifaceted, with a complex interplay of structural and individual factors. Bourdieu's conceptual tools – *habitus, field,* and *capital* – and the three-stage framework – *construction of research object, three-level field analysis*, and *participant objectivation* – provided a systematic approach to data collection, and framed the social-relational analysis (Bourdieu, 1984; Bourdieu & Wacquant,1992) in this research. To this end, at the heart of Bourdieu's work on higher education was to expose how the dominant structures of institutions (*field*) maintain and reproduce social inequalities. More importantly, it is here also that Bourdieu considered the role of agency (*habitus, capital*), which is of great value in our understanding of the complex social reality of the participants. In other words, my study particularly benefitted from Bourdieu's relational framework which bridged structure and agency, the objective and the subjective, connecting and linking human behaviour and practice to social structures. This allowed me to interpret and make sense of the data collected in a holistic way, taking into consideration the social, cultural, and political context of the participants.

Through a phenomenological case study, I sought to answer one main research question with its corresponding sub-questions:

> **What are the lived experiences of Malaysian disabled students in using digital technologies to participate in the university?**
>
> 1) What forms of digital capital do disabled students have access to and use?
> 2) What are the disabled students' dispositions and habitus in using digital technologies?
> 3) How do disabled students access and use their digital capital to participate in the university?
> 4) How might disabled students' digital capital impact their participation in the university?
> 5) How might the dominant structures of the university culture, practices, and mechanisms perpetuate digital exclusion and barriers among disabled students?

Chapter 4 was an attempt to make visible the invisible power relations at work in the intersecting fields of disability, higher education, and technology in the Malaysian context. The meso and macro level fields were explored and examined through documentary and media sources. Here, conflicting definitions and conceptualisations of disability by various government agencies and ministries were found to have generated a state of confusion in their implementation and delivery of services to disabled people. Additionally, media representations of disabled Malaysians were found to be steeped with stereotypes and negative connotations. Within the education field, disabled children were still found to be sidelined and segregated, despite reformed national and international policies. Demands from non-government, civil, advocacy, and parents' group for inclusive education within mainstream schools was, and still is, an ongoing struggle. Despite having inclusive educational policies since 1997, in practice, many disabled students still learn separately from their non-disabled peers within the same school. Within higher education, there was no national policy on disability-related matters until 2019. Even with the guidelines introduced by the Ministry of Higher Education, the implementation of inclusive services in the universities was vague and ad-hoc. These contextual findings of the macro and meso field situate my research within the broader socio-cultural and political make-up of my country. Next, evidence of the micro level field – the disabled students' digital capital – was provided to answer the first research question: **1) What forms of digital capital do disabled students have access to and use?** Data from the online survey showed that the disabled students in this university were generally prolific users of a wide range of technologies, having high levels of access to various types of mainstream technologies, with a majority of the respondents having mobile phones and laptops for personal use including access to the Internet in the home and at university. A majority of the disabled students were also found to be comfortable with using technology for academic purposes,

including accessing course materials, assessment, examination, presentation, and communication. The analysis of the micro level field completes our understanding of the broader structures of the university field before I moved onto analysing the habitus of the participants in the next chapter.

In Chapter 5, the in-depth stories provided a rich understanding of the students' habitus. While not deterministic, habitus influenced how each student had a 'feel for the game' and how well they played the university game. These stories provided evidence to answer the second research question: **2) What are the disabled students' dispositions and habitus in using digital technologies?** Among the findings, what particularly stood out was that these personal accounts showed unique, diverse, and complex relationships with technology, past and present. These individual storied accounts provided the backdrop for deeper investigation and critical understanding of how disabled students accessed and used technology to participate in the university in Chapter 6.

In Chapter 6, I used Bourdieu's analogy of fish out of water/fish in water to present and illustrate the students' stories and experiences with technology in the university – their feel for the game. It was found that the participants had differential engagement, with their experiences on a spectrum between the two positions in varying degrees of fit. In other words, some held strong positions while others were developing and adapting, with some showing signs of dropping out. From here, I went onto explore and probe how the students were able to convert their digital capital to valued outcomes and consequences, actual and perceived, to participate in the university. This was in relation to answering the third research question: **3) How do disabled students access and use their digital capital to participate in the university?** While the first part of this chapter addressed the participants' differential positioning in the university, the second part explored how they access and use their digital capital to participate in the university. Their accounts demonstrated the sustaining role of digital capital in how well they played the game in the university. These personal accounts suggested that having profitable digital capital, accrued and accumulating, enabled the participants to successfully meet their academic and social demands in the university. In short, having relevant digital capital seemed to be an important factor in playing the university game. More importantly, the affordances of technology were effective strategies in overcoming the participants' impairment-related challenges and barriers in the university.

Chapter 7 brought together the findings of the study where both enabling and disabling outcomes were discussed in relation to wider digital participation and inclusion for disabled students in the university context distinctive to Malaysia as well as globally. Here, the fourth research question: **4) How might disabled students' digital capital impact their participation in the university?** was addressed. Three key areas – meeting academic demands, building meaningful social networks, and new constructions of self-identity – were found to have a positive impact as a result of the disabled participants' relationships with technology. These enabling outcomes were discussed in

relation to wider digital participation and inclusion in the university context. I also specifically sought out the systemic barriers and disabling experiences that might cause one to be silenced or filtered out through systems of power, as well as socially and culturally constructed factors and beliefs to answer the fifth research question: **5) How might the dominant structures of the university culture, practices, and mechanisms perpetuate digital exclusion and barriers among the disabled students?** Here, I discussed the instances in which the participants were unable to access and convert their digital capital into tangible positive outcomes in the university. Four key disabling barriers were found – technical and accessibility issues, ableist attitudes and stereotyping issues, institutional culture and governance barriers, and loss of control and disempowerment issues. This was followed by a discussion of the implications for digital inclusion practices. I outlined three implications for inclusive digital practices including some strategies that universities can take as possible ways forward to increase disabled students' participation and life chances in the university: adopting universal design principles, building a shared narrative of disability discourse and language, and mainstreaming of disability rights in the university. This chapter then concluded with a discussion of the limitations of my study with suggestions for further research.

8.3 Original contribution of my research

At the beginning of this study, I set out to address the research gaps that I found in reviewing the literature. To recap:

- The simplistic conceptualisation and understanding of the digital divide is problematic for gaining a realistic understanding of digital inequalities and participation, especially in an increasingly diverse and complex university population. Access and use has been shown to be far more complex than mere technology ownership or Internet connectivity. It is far more than a simple case of 'technology haves' and 'technology have-nots'. The research highlights some of the complex inter-relationships that socially excluded students have with technology within the higher education context. In particular, disabled students experience technology as a "double-edged sword" (Seale 2006, p. 25; Fichten et al., 2020), and have been found to experience complex patterns of technology access and use.
- Technology has been found to be not as deterministic, equitable, and democratic as it is often depicted in the educational technology research. The lack of critical examination of the social nature of technology prevents deeper revelations of technology's educational role and value. The deterministic perspective distracts our attention from realistic understandings of actual use of technologies, ignoring the wider social and cultural uses of educational technology. Researchers have argued the case for a socially constructed positioning of technology where the role of individual agency is valued and acknowledged, which is largely unrepresented in the educational technology research.
- Seale (2014), and Seale et al. (2021) have categorised disabled university students as an invisible digitally excluded group, and as one of the most under-represented groups in

higher education compared to their non-disabled peers. They are largely invisible in the digital divide and digital inclusion research. This means that disabled university students' voices are missing in the digital inclusion narrative. There is also a disconnect of disability perspectives from the discourse of student diversity and inclusion on university campuses (Kim & Aquino, 2017). Engagement with disability within higher education is often linked to legal compliance, which immediately becomes problematic when universities do not have such policies in place, particularly universities in low- and middle-income countries.

- There are critical silences in the discussion of disability and technology in most of the world, and certainly in the global South (Roy & Lewthwaite, 2016) where there is a high incidence of disabled people. Roulstone (2016) boldly stated that the only way to understand the complexity of the nexus between disability and technology is by acknowledging social and cultural contexts, and seeking international evidence and disabled people's perceptions and experiences. Similarly, Goggin (2018, p. 87) highlighted the lack of disability technology research that explores nuanced "uses, meanings, and cultures", particularly in low- and middle-income countries where capital and resources are scarce, and where digital inequality is most profound. Simply put, disabled experiences of technology from diverse political, cultural, and social contexts are critically needed for this field to be fully and accurately understood.

My contribution of knowledge to the field of disability and technology from this research is three-fold. First, adding sociological perspectives to our current understandings of digital technology use and practices in higher education. Second, focusing on disability and technology as an under-represented area of research on a digitally excluded group in higher education. Third, highlighting and privileging the particularities of periphery experiences within an ethnically, linguistically, and culturally diverse society.

I found and confirmed that technology is a social tool. For the participants in my study, technologies are not neutral. The findings from this study strongly suggest that the participants were psychologically and emotionally connected to their technology. To them, technology was more than just a tool; it was important because of how it made them feel about themselves and their disabled identity in the university and in the community. While the individual mechanics of the students' interactions with technology were each very different, technology represented an enabling force to connect with knowledge and social activities in ways they could not before they had access to technology. Therefore, the uptake or rejection of any technology depends not only on its accessibility, but also how it is used as a bridge to communicate and represent an authentic self within the wider university community and beyond. The ability and affordances of technology to construct new identities among the students had an empowering effect. This suggests that technology can be used in ways that promote and maintain positive self-identity among disabled

students. Like other typical university students, these disabled students wanted to belong, and feel competent and independent as legitimate university students. Fundamentally, to reiterate, a digitally inclusive university should support their disabled university students to: 1) access and use digital technology and resources that have direct impact in supporting their learning and other academic activities; 2) be informed and empowered in making decisions and meaningful choices in their use of digital technology and resources; and 3) use digital technology and resources to increase and encourage their full social, cultural, and political participation in higher education and wider community.

Methodologically, the use of Gilligan's voice-centred relational analysis provided the space for me to interrogate and explore the interview data in nuanced ways. While this method of analysis had been proven to be useful with marginalised communities, my study extended the use to include a group of disabled students with intersecting marginalised identities within a reserved and conservative cultural setting. This approach demanded that I continually listen to the voices of the participants while reading the transcripts. This part of the research, therefore, was carried out multi-dimensionally, requiring the reading of interview transcripts while listening to audio recordings of the interviews, and recalling of emotions during the interview conversations. Pauses and silences were particularly important in this respect. This approach also confirmed the merit of using Seidman's three-part interviews with the participants rather than one-off interviews. Prolonged engagement was needed to build trust in a research process fraught with unequal power relations, particularly within a culture that discourages the sharing of emotions and feelings. By combining meaningful engagement with the participants during the interviews, and a data analysis approach that was attentive to the complexities of the intersecting identities, I was able to use our shared historical and contextual circumstances as a contact point to critically examine their complicated social realities. While my study cannot be considered to be representative of all disabled university students in Malaysia, I have provided a glimpse of what it means to be a disabled, middle-class Malaysian university student, and how their relationships with technology have wider ramifications for their short- and long-term participation in higher education. In the words of Chee Seng, "it changes everything!". Much more needs to be done to include other variations of disability and technology stories.

8.4 Concluding remarks

When I started this study, I wanted to find out how disabled students used digital resources and strategies in supporting themselves to fully participate within the university, especially where the national policies on disability support in higher education were lacking. I also sought out the structural barriers they experienced in the university. From the key findings, implications for digital inclusion and technology in the university were presented in the previous chapter. This was followed by a discussion on the limitations of this study together with recommendations for further

research that would contribute to the field of disability and technology, particularly for universities in Malaysia.

While my thesis focused on the disabled students in the university, I have also often thought about those who had not made it into the university, or those who did, but left without finishing their degree. The findings in my study only presented the views of those who had made it through to further their post-secondary education in the university. I would presume the voices of those left behind may point us even further to rethink or reimagine what it means to be digitally included. These overlooked voices are especially pressing because they could offer us a more acute understanding of those who are digitally excluded in our society. The pervasiveness of digital technologies in disabled peoples' day-to-day lives and across their life courses are increasing rapidly. The question remains, what happens to those disabled students who lack digital capital in terms of resources and digital literacy? How can we extend our efforts to create enabling environments that encourage the increase of digital capital for disabled people to fully participate in the university and in wider digital society, especially in a developing country such as Malaysia? From a broader perspective, will the disabled community be left further behind with the rapidly changing global digital economy, and its effects on the social and technical landscape, such as AI technologies, automation, and new digital networks?

In conclusion, through this doctoral study, I have offered a glimpse into the lives of disabled university students in Malaysia and their relationships with technology. I have attempted to capture the messy realities that the participants went through in negotiating and participating in higher education with the support of technology. At the time of writing this thesis, long after the data had been collected, the COVID-19 pandemic shook the world to its core. Restrictions in social contact during the pandemic meant that the use of remote digital technology increased exponentially and at a rapid pace across all sectors globally. This particularly affected the higher education sector and the management of academic activities, including teaching and learning in the universities. What was clear is that universities were very quick to organise and roll-out digital solutions and strategies to address this unprecedented phenomena. Suddenly, some disabled university students and staff found themselves digitally included, when before the pandemic, pleas for digital inclusion through minor adjustments were often dismissed or ignored. These instances show that it is possible to push out rapid reforms to accommodate new realities. Sadly, this also clearly exposes the pervading habitus of systemic ableism that has long existed in academia. This also means that higher education institutions can, and should, no longer ignore this opportunity to make the university environment a digitally inclusive space for the disabled community. This pathway benefits everyone. In Bourdieu's words, it is time to "redefine the game" so that everyone can "win it"!

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APPENDIX 1: RESEARCH MATERIALS

Example of interview schedules

INTERVIEW ONE

I) OPENING

A (**Establish Rapport**) Hi, my name is Helena, a doctoral student at the university. First of all, thank you for taking your time to be here for this first interview. This interview will be more like a conversation. Any information collected about you in this interview will be kept confidential. If at this point, you do not wish to continue, please let me know. You will not be penalised in any way if you do not participate in the study. Let me go through the information sheet with you before we continue. This information sheet will be given to you for keeping should you need to contact me after this interview.

Go through information sheet and consent form

B (**Purpose**) The main purpose of my doctoral study is to understand how disabled students gain access and use technologies to support their learning in the university.

C (**Motivation**) The results of the study will enable the university and educators in general on how best to support you in using various technologies for learning in the university.

D (**Timeline**) This interview will take no longer than 60 minutes and you could stop at any point if you do not wish to continue. You do not need to give any reasons for withdrawing from this interview.

Go through personal and background information (*See Learner profile)

II) BODY

Interview One (Life History: techno-dispositions)	Habitus can be analyzed in four related aspects (Reay, 2004).
1) Habitus as embodiment	**1) Habitus as embodiment**
How do you feel about using technology to support your learning currently?	Habitus is embodied; it is not composed solely of mental attitudes and perceptions. Bourdieu writes that it is expressed through durable ways 'of standing, speaking, walking, and thereby of feeling and thinking' (Bourdieu, 1990, p. 70).
How would you describe your relationship with technology?	
How would you rate the usefulness of technology in supporting your learning? Very useful <---------- ->Useless	
If you could describe technology in one word, what would that be?	
2) Habitus and agency	**2) Habitus and agency**
How do you make decisions on what technology to use?	Agency allows the potential to generate a wide repertoire of possible actions.

Were recommendations of what technology to use given to you from the university? Family? Friends?	While the habitus allows for individual agency (agency is the capacity of individuals to act independently and to make their own free choices), it also predisposes individuals towards certain ways of behaving.
3) Habitus as a compilation of collective and individual trajectories Can you recall one of your first experiences with technology? Can you describe in detail that experience? How did you feel about that? Could you describe a little about your past experiences with technology at home? Could you describe a little about your past experiences with technology your previous school/college?	**3) Habitus as a compilation of collective and individual trajectories** A person's individual history is constitutive of habitus, but so also is the whole collective history of family and class that the individual is a member of. Habitus, within, as well as between, social groups, differs to the extent that the details of individuals' social trajectories diverge from one another: "Just as no two individual histories are identical so no two individual habituses are identical (Bourdieu, 1990, p. 46). Yet, a collective understanding of habitus is necessary, according to Bourdieu, in order to recognize that individuals contain within themselves their past and present position in the social structure 'at all times and in all places, in the forms of dispositions which are so many marks of social position' (Bourdieu, 1990, p. 82).
4) Habitus as a complex interplay between past and present Do you feel that the university supports the use of technology for learning? What about your lecturers? What about your course mates? What about other friends in the university? How well do you think the university is supporting you in using technology for learning? In what ways do you think the university could support you further in using technology for learning? If there is one technology that you could recommend to your friends or course mates, what would it be? Why? Is there a technology that you wish you had access to or know how to use? Why?	**4) Habitus as a complex interplay between past and present** Although the habitus is a product of early childhood experiences, and in particular socialization within the family, it is continually re-structured by individuals' encounter with the outside world. While habitus reflects the social position in which it was constructed, it also carries within it the genesis of new creative responses that are capable of transcending the social conditions in which it was produced.

II) CLOSING

Thank you so much for your time. It was really great listening to your experiences on using technology for learning. Here is a voucher to compensate for the time taken to be in this interview with me. I really appreciate it.

Are there any questions you would like to ask me?

Would you be able to take 5 photographs of the technologies that you currently use or would like to use in the future for our next interview session? As mentioned earlier, any information collected including photographs used in the interview will be kept confidential.

*Would you be able to record down (e.g. using voice recorder) 5 technologies that you currently use or would like to use in the future for our next interview session? As mentioned earlier, any information collected including photographs used in the interview will be kept confidential.

If you would prefer other methods of capturing or recording the technologies that you use, please do let me know.

*for students who are blind or visually impaired

Let's make our next appointment for the next interview. If you prefer other method of communicating for our next interview, please do let me know. I will try my best to accommodate to your preference.

INTERVIEW TWO

I) OPENING

A (**Establish Rapport**) Hello again, _____. Once again thank you for taking your time to be here for this second interview. Any information collected about you in this interview will be kept confidential. If at this point, you do not wish to continue, please let me know. You will not be penalised in any way if you do not participate in the study.

B (**Purpose**) Just to refresh your memory, the main purpose of my doctoral study is to understand how disabled students gain access and use technologies to support their learning in the university.

C (**Motivation**) As mentioned in our first interview, the results of the study will enable the university and educators in general on how best to support you in using various technologies for learning in the university.

D (**Timeline**) Similar to our first interview, this interview will take no longer than 60 minutes and you could stop at any point if you do not wish to continue. You do not need to give any reasons for withdrawing from this interview.

II) BODY

Shall we take a look at the photographs that you have taken?
OR
Shall we listen to the recordings you have done?

Interview Two (Contemporary Experience – Digital capital)	Based on Seale et al.'s (2013, 2015) digital capital framework
Digital cultural capital	**Digital cultural capital**
1) Can you tell me some of the technologies that you use most often to support your learning? Can you explain how useful these technologies are to you? In what way do these technologies support or assist you in your learning? Have you used any technologies, and then decided not to use them? Why?	1) Technological know-how
2) How did you learn to use these technologies?	2) Informally investing time in self-improvement of technology skills and competencies
3) Did you attend any training on how to use these technologies?	3) Formally investing time in self-improvement of technology skills and competencies
4) Do any of your family members encourage you to use these technologies? Do you consult any of your family members on how to use these technologies?	4) Influence of family and institution attended prior to higher education in offering early and sustained access and encouragement to use technology

Did you have access to technology in your previous school or college? Did your previous school or college encourage you to use technology? Did you receive any training on how to use technology from previous school or college?	
Digital social capital	**Digital social capital**
When you encounter challenges or have questions in using any of the technologies, what do you do? Who do you approach most often when encountering challenges or questions in using technologies?	1) Networks of face-to-face technological contacts 2) Networks of online technological contacts

II) CLOSING

Thank you so much for your time once again. Here is a voucher to compensate for the time taken to be in this interview with me.

Are there any questions you would like to ask me?

Let's make our next appointment for the next interview. If you prefer other method of communicating for our next interview, please do let me know. I will try my best to accommodate to your preference.

INTERVIEW THREE

I) OPENING

A (**Establish Rapport**) Hello again, _____. Once again thank you for taking your time to be here for this third interview. Any information collected about you in this interview will be kept confidential. If at this point, you do not wish to continue, please let me know. You will not be penalised in any way if you do not participate in the study.

B (**Purpose**) Just to refresh your memory, the main purpose of my doctoral study is to understand how disabled students gain access and use technologies to support their learning in the university.

C (**Motivation**) As mentioned in our first and second interview, the results of the study will enable the university and educators in general on how best to support you in using various technologies for learning in the university.

D (**Timeline**) Similar to our first and second interview, this interview will take no longer than 60 minutes and you could stop at any point if you do not wish to continue. You do not need to give any reasons for withdrawing from this interview.

II) BODY

Interview Three (Reflection on Meaning – interaction of digital capital, techno-dispositions and the higher education field in using technology) Choose one word to describe your relationship with technology. Why did you choose this word? Could you share with me a notable experience that you had with technology? Why does this experience stand out for you?	

II) CLOSING

Thank you so much for your time once again. Here is a voucher to compensate for the time taken to be in this interview with me.

Are there any questions you would like to ask me? You can contact me anytime to discuss about the study or anything regarding the information you have given me during the 3 interviews.

Example of Learner profile

*Learner profile

Information about you
(**bold** where applicable)

Name:

Contact email:
(**Confidential** *This will only be used by researchers to contact you with results or possibly for more information)*

Age:

Gender: *Male* | *Female*

First language: *English* | *Other (please state):*

Educational status (**bold** one): *In full time education* | *In part time education* | *Not in education*

Employment status (hours per week; **bold** one): *Full time 30+ hours* | *Part time <30 hours* | *Part time <10 hours* | *Not employed*

Other responsibilities e.g. caring for children/dependents? *yes* | *no*

If yes, please state:

Main programme of study (**bold** one):

| *Foundation* | *Undergraduate year 1* | *Undergraduate year 2* | *Undergraduate year 3* | *Postgraduate* | *Other (please state)*

Highest previous educational qualification (**bold** one):

no qualifications |*I GCSE* | *A level* | *Foundation degree* | *Undergraduate degree* || *Postgraduate certificate or diploma* | *Postgraduate degree*

Main place of study (**bold** one):

Home/student residence | *Home/residence using a computer connected to the Internet* | *Workplace* |*University/learning centre* | *Other (please state)*

Any accessibility issues (see below for examples of what we mean): *yes* | *no*

If 'yes' and you are willing to indicate the nature of your difficulties, please **bold** all that apply:

Specific learning difficulty (eg. dyslexia) | *Blind or partially sighted* | *Deaf or hard of hearing* | *Wheelchair user or mobility difficulties* | *Autistic Spectrum Disorder or Asperger Syndrome* | *Mental health difficulties* | *Other difficulties (please state):*

Information about your technology use

1. I have access to a computer connected to the Internet (**bold** all that apply):
At home/student residence | At work | At university/college/learning centre | Other location (please state)

2. I use a computer (**bold** one):
Every day | A few times a week | Less than once a week | less than once a month

3. I access email and/or the internet (**bold** one):
Every day | A few times a week | Less than once a week | less than once a month

4. I have customised my computer* to suit my personal preferences (please see below for examples of what we mean): *yes | no*

By 'my computer' we mean a computer that you access and use regularly. Also **bold if your mobile phone has this function.*

If yes, please indicate which of the following you have customised (**bold** all that apply):

tool bar(s) and menu items
mouse buttons
background colours
icon sizes
print size on screen
language
other (please state)

5. I own the following technologies for my personal use (**bold** all that apply):

mobile phone
iPod or mp3 player
palmtop or personal digital assistant (PDA)
laptop
digital camera (mobile phone)
digital video camera (mobile phone)
webcam
digital audio recorder
assistive technology: hardware or software (e.g. screen reader)

6. In my personal and social life I do the following (**bold** all that apply):

Use social networking websites (e.g. Facebook, Twitter, Instagram)
Download podcasts
Use instant messaging or chat (e.g. WeChat, Whatsapp, FB Messenger, Telegram)
Watch videos or live TV on websites
Upload video or photo content onto the Internet
Use on-demand video (e.g netFlix)
Use advanced functions on my mobile phone (e.g. Mobile TV, Web browser, GPS or email)
Participate in online discussion groups or chatrooms
Use wikis/blogs/online networks

Example of online survey questionnaire

*for anonymity purposes, certain identifications had been changed.

Hi, my name is Helena and I am a doctoral student from the University. Through this survey, I am seeking to better understand disabled university students' access and use of technology for learning.

This survey questionnaire is aimed in particular at students who fulfil the 3 criteria stated below:
- are studying at the University
- identify themselves as having a disability or learning difficulties
- are using technologies (personal or provided by the university) to support their learning

It will take no longer than 15 minutes to complete this online survey. You **do not** have to give your name, so your answers will be anonymous.

If you would like to ask some questions before deciding on whether to complete the online survey or would prefer an **alternative format** (such as paper-based questionnaire, telephone interview, or read to you in person), you can contact me at:

Helena Song Sook Yee: helena.song@email.edu.my, mobile: 013-3648128

Thank you for your time and I really appreciate your efforts in completing the survey.

PARTICIPANT INFORMATION SHEET

Title of project: Disabled students' access and use of technology for learning in higher education

Name of researcher: Helena Song Sook Yee**,** Doctoral Student

Purpose: The main aim of this doctoral study is to better understand disabled students' access and use of technologies for learning within the context of higher education, focusing on the individual voices of disabled university students.

Do I have to take part? It is entirely up to you to decide whether or not to take part. If you do decide to take part, you will be asked to agree to a consent form in the following page. Even if you decide to take part, you are still free to stop at any time and without giving a reason.

Will my taking part in this study be kept confidential? This research project will abide and store data in accordance with the Data Protection Act (2010) and data collected in this study will be stored on a password protected computer and strictly confidential.

What if something goes wrong? To whom can I complain? In case you have a complaint about this study, you can contact the Faculty Ethics Committee, the University. Email: ResearchEthics@email.edu.my

The following section seeks to find out information about you.

1. Which category below includes your age?

- 17 or younger
- 18-20
- 21-29
- 30-39
- 40-49
- 50-59
- 60 or older

2. What is your gender?

- Male
- Female

3. First language:

- Malay
- Chinese
- Tamil
- English
- Other (please specify)

4. Educational status (tick one):

- In full time education
- In part time education

5. Employment status (tick one):

- In full time employment
- In part time employment
- Not employed

6. Main programme of study:

- Foundation
- Undergraduate Year 1
- Undergraduate Year 2
- Undergraduate Year 3
- Undergraduate Year 4
- Postgraduate Taught Courses (please specify year of study)
- Postgraduate Research MPhil
- Postgraduate Research PhD (please specify year of study)
- Other (please specify)

7. School you are currently enrolled in (e.g. School of Business, School of Civil Engineering, School of Pharmacy etc.):

8. Main place of study (tick one):
(excluding formal lectures and tutorials)

- Home/student residence
- Home/residence using a computer connected to the Internet

- Workplace
- University/learning spaces (i.e. university library; Learning@StudentCentre)
- Other (please specify)

9. Highest previous educational qualification (tick one):

- Sijil Pelajaran Malaysia (SPM)
- Unified Examination Certificate (UEC)
- Sijil Tinggi Pelajaran Malaysia (STPM)
- International General Certificate of Secondary Education (IGCSE)
- A-Level
- Foundation degree
- Undergraduate degree
- Postgraduate certificate or diploma
- Postgraduate degree
- Other (please specify)

10. Do you have any learning differences that mean you require support including equipment to enable you to study or learn effectively (see below for examples of what we mean):

- Yes
- No

11. If 'Yes' in question above and you are willing to indicate the nature of your needs, please tick all that apply:

- Wheelchair user or mobility difficulty (e.g. Cerebral palsy)
- Blind or partially sighted
- Deaf or hard of hearing
- Specific learning difficulties (e.g. Dyslexia, Dysgraphia, Dyscalculia, Dyspraxia)
- Attention Deficit Disorder (ADD)/ Attention Deficit Hyperactive Disorder (ADHD)
- Autism Spectrum Disorder (ASD)/ Asperger Syndrome
- Global developmental disabilities
- Down Syndrome (or other chromosome disorder: e.g. William Syndrome)
- Epilepsy/Diabetes/Cardiovascular conditions
- Mental health needs (e.g. Depression, Psychotic, etc)
- Multiple needs (having more than one differences as mentioned above – please specify)
- Have a disability but would not like to disclose the type.

The following section seeks to find out about your technology access and usage, both general and specialized, for learning and personal purposes.

12. I access the Internet for study purposes at the following locations (tick all that apply):

- At home/student residence
- At work
- At university/learning spaces (i.e. university library; Learning@StudentCentre; computer room)
- Mobile/anywhere
- Other location (please specific)

13. I use a computing device (e.g. PC, tablet, laptop) (tick one):

- Every day
- A few times a week
- Less than once a week
- Less than once a month

14. I access email and/or the internet (tick one):

- Every day
- A few times a week
- Less than once a week
- Less than once a month

15. I have customised my computing device to suit my personal preferences (please see below for examples of what we mean):

- Yes
- No

16. If yes, please indicate which of the following you have customised:

- tool bar(s) and menu items
- mouse buttons
- background colours
- icon sizes
- print size on screen
- language
- Other (please specify)

17. I own the following technologies for my personal use (tick all that apply):

- standard mobile phone
- smart mobile phone
- iPod or mp3 player
- palmtop or personal digital assistant (PDA)
- laptop
- digital camera
- digital video camera
- webcam
- digital audio recorder
- assistive technology: hardware or software (e.g. screen reader, speech recognition)
- iPad or tablet device

18. I own or have access to the following assistive technologies which I use to support my learning (tick all that apply):

- Alternative interfaces (e.g. voice recognition; screen readers)
- Visualisation tools (e.g. video, animations)
- Reading tools (e.g. optical character recognition; text-to-speech software)
- Recording tools (e.g. voice recording)
- Planning tools (e.g. mind-mapping)
- Communication tools (e.g. synthetic speech; symbols speech)
- Writing tools (e.g. word prediction; dictionary software; hand-writing recognition)
- Other (please specify)

19. In my personal and social life, I do the following (tick all that apply):

- Use social networking websites (e.g. Facebook, Twitter, Instagram,)
- Download podcasts
- Use instant messaging or chat (e.g. FB Messenger, Whatsapp, WeChat, Telegram)
- Watch videos or live TV on websites (e.g. YouTube, Vevo)
- Upload video or photo content onto the internet for storage or sharing
- Use on-demand video (e.g. iPlayer)

- Use advanced functions on my mobile phone (e.g. Mobile TV, Web browser, GPS or email
- Participate in online discussion groups or chatrooms
- Use wikis/blogs/online networks
- Maintain my own blog or website
- Take part in an online community, e.g. a 'virtual world' such as Second Life

20. I am able to use my personal technologies (including assistive technologies) at the place where I learn:

- Yes
- No (Please briefly describe any difficulties you have encountered)

21. As a learner, I have experience of (tick all that apply):

Information
- Using a search engine (e.g. Google) to find out about a subject
- Use an electronic library or portal (e.g. Wikipedia, subject-based resource, university's library database) to find out about a subject
- Use web forums or social spaces to find out about a subject
- Use online learning materials (e.g. manuals, tutorials, e-books, lecture notes) I found for myself
- Other (please specify)

22. As a learner, I have experience of (tick all that apply):

Software
- Use word-processing software (e.g. Microsoft Word) to write an assignment
- Use spreadsheets or data analysis software (e.g. Microsoft Excel)
- Use modelling/simulation package (e.g. geometry, CAD, 3D graphics)
- Use design tools (e.g. graphic/animation/web design)
- Other (please specify)

23. As a learner, I have experience of (tick all that apply):

Assessment
- Submitting materials for assessment online
- Accessing online revision resources (e.g. podcasts, past papers)
- Taking a computer-based test or examination
- Engaging in online assessed activities such as discussions
- Accessing online feedback on formative or summative assessments
- Other (please specify)

24. As a learner, I have experience of (tick all that apply):

Presentation
- Using a web page, wiki or blog to present information
- Using PowerPoint (or other slideshow software) to present information
- Using an e-portfolio
- Using an electronic whiteboard
- Other (please specify)

25. As a learner, I have experience of (tick all that apply):

Communication
- Contacting tutor or peers using email
- Contacting tutors or peers using SMS/text
- Using an online discussion forum to share ideas with other learners
- Accessing course materials (e.g. slides, notes, podcasts) via a virtual learning environment
- Video or audio conferencing

- Other (please specify)

26. As a learner, I have experience of (tick all that apply):

Self-Management
- Using computing device to plan assignments
- Using computing device to manage time
- Using computing device to record lectures
- Other (please specify)

27. On a scale of 1-10, how confident do you feel about your ability to use technology to support your learning (1 not very confident, 10 extremely confident)?

1 2 3 4 5 6 7 8 9 10

The following section seeks to find out information about technology related support BEFORE you started your current study in the university.

28. Were you encouraged by your FORMER SCHOOL/COLLEGE to undertake any formal ICT or technology related qualifications (e.g. IGCSE ICT, Key Skills in ICT, qualification in touch typing)?

- No
- Yes (please specify what kind of qualification)

29. Has the knowledge gained from this qualification helped in your current technology use at the university?

- No
- Yes (please explain)

30. If you needed help using general technologies (e.g. Internet, computers) to support your learning whilst at your FORMER SCHOOL/COLLEGE, what sources of support did you access?

Please tick all that apply and rate on a scale of 1 to 10 how helpful the support was (1 not very helpful, 10 extremely helpful).

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Friends from school/college									
Teachers/lecturers at school/college									
People you know who have a similar disability or learning support need as you									
Company technical support websites or help lines									
Online Networks and forums									

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Learning support staff									
Privately funded support workers									
Other									
Please explain your answer									

31. If you needed help using specialist assistive technologies (e.g. mind-mapping software or screen-reader) to support your learning whilst at your FORMER SCHOOL/COLLEGE, what sources of support do you access?

Please tick all that apply and rate on a scale of 1 to 10 how helpful the support was (1 not very helpful, 10 extremely helpful).

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Friends from school/college									
Teachers/lecturers at school/college									
People you know who have a similar disability or learning support need as you									
Company technical support websites or help lines									
Online Networks and forums									
Learning support staff									
Privately funded support workers									
Other									
Please explain your answer									

32. Which of the statements best describes your technology experience before you started on your CURRENT COURSE or PROGRAMME? Please tick the relevant statement:

- My family had a very positive attitude to technology and really encouraged me to use it
- My family had a neutral attitude to technology and didn't particularly encourage me to use it
- My family had a negative attitude to technology and discouraged me from using it
- None of these statements applies to me

33. Do you feel that your family response to technology influenced your own technology use or experience?

- Yes (please explain your answer)
- No (please explain your answer)
- Not applicable (please explain your answer)

The following section seeks to find out information about technology related support AVAILABLE to you during your study in the university.

34. Is the technology related support currently available to you better or worse than the previous educational institution you attended?

- Better (please explain your answer)
- Worse (please explain your answer)
- Same (please explain your answer)

35. If you need help using general technologies (e.g. SharePoint, Moodle, Microsoft Office, navigating the Internet, accessing social media) to support your learning whilst at your CURRENT COURSE OR PROGRAMME, what sources of support do you access?

Please tick all that apply and rate on a scale of 1 to 10 how helpful the support was (1 not very helpful, 10 extremely helpful).

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Friends or family from home									
Friends from the same course/programme									
Friends from the same halls of residence, student accommodation or house-mates									
People you know at the university who have a similar disability or learning support need as you									
Lecturers/Tutors at university									

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Workplace colleagues									
Company technical support websites or help lines									
Online Networks and forums									
Wellbeing and Learning Support staff									
Privately funded support workers									
Other									
Please explain your answer									

36. If you need help using specialist or assistive technologies (e.g. mind-mapping, screen readers, speech recognition software; computers) to support your learning whilst at your CURRENT COURSE OR PROGRAMME, what sources of support do you access?

Please tick all that apply and rate on a scale of 1 to 10 how helpful the support was (1 not very helpful, 10 extremely helpful).

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Friends or family from home									
Friends from the same course/programme									
Friends from the same halls of residence, student accommodation or house-mates									
People you know at the university who have a similar disability or learning support need as you									

	1 not very helpful, 10 extremely helpful								
	1	2	3	4	5	6	7	8	9
Lecturers/Tutors at university									
Workplace colleagues									
Company technical support websites or help lines									
Online Networks and forums									
Wellbeing and Learning Support staff									
Privately funded support workers									
Other									
Please explain your answer									

37. What kind of technology related support would you like to have at this university that is currently NOT available? Please explain your answer.

38. Other comments

39. Would you be willing to be interviewed further about your technology use and experiences? If yes, please give your name and contact details below.

You will be compensated for your time with a voucher for each interview.

Name

Email

Mobile No.

Thank you very much for your time in completing the survey.

APPENDIX 2: SAMPLE DATA

Example of reflections on research process: interviewing

After listening to the playback of the recorded audio data, it was noted that I, in several occasions, tried to finish the participant's sentences or quickly rephrase the question before the participant could answer especially when there were pauses or silences. One example, in the interview, the pilot participant was sharing about a reader system within the university where sighted students volunteer to be a reader to blind students.

PARTICIPANT:	*Yes, it is under the university. To be frank, umm…historically speaking, this reader system is, uh…has a very long history. Umm…before this, the reader system is put under, was put under library management. So the library, the librarians will put up a notice, put up a form, or put up an advertisement, to promote…uh…reader system…uh…among the university students.*
HELENA:	*Ok, asking for volunteers…*
PARTICIPANT:	*Yes, asking for volunteers. So the students will know who is their…uh…buddy, so…uh…and they will fill in the form base on their schedule. So after that, the system began to become a little bit chaotic but there is no…no…(pause)*
HELENA:	*No proper structure to manage the whole thing?*
PARTICIPANT:	*Ya…that's when the reader system was put under the counselling and career section. But now, a lot of things happen again. The system is back under the library management….*

Due to a pause, I jumped in quickly to finish the participant's sentence to fill the void. In hindsight, this should be avoided and I needed to learn to tolerate silence or a pause while the participants are constructing their stories. In this case, the actual possible reasons why the system began to become chaotic from the participant's views was cut short because I jumped in with the answer to break the pause. As Seidman (2006) cautioned, while there are no rules of thumb, participants should be given the space to think, reflect and add to what he or she has said or going to say. Adams and van Manen (2017) also reiterated on the importance to be patient and not pressure the participants to provide an answer.

On other occasions, I should explore the skill of following up on what the participant said rather than relying or depending too much on the interview guide. For example:

PARTICIPANT:	*Even though they provide softcopy version of the book, it's in image, in image pdf, yeah, so at that time, we don't really have a software like, abby reader, to translate or to describe the image format to an accessible text format. At that time, I don't, I don't have that kind of knowledge yet. At that time, there is no such software as such software as yet, that's why I, cause I'm a partially blind, so I, uh…since I was in secondary school, I use a lot of video magnifier, that's why I know a little bit about assistive device because I've been using assistive devices since I was in Form 1, so that's why…ummm…*
HELENA:	*So it was your knowledge during secondary time that you knew about this video magnifier?*
PARTICIPANT:	*Yes, yes*
HELENA:	*So how would you describe your relationship with technology?*

From the example given, I should have followed up on the use of the video magnifier. Instead of just following strictly the interview guide to ask the next question, I should ask to hear more and move the interview forward by building on what the participant has begun to share about the use of the video magnifier. This can be done by listening more actively rather than focusing too much on the pre-set interview guide. Following up by asking for more details would possibly provide distinct stories of the participant's experiences in their use of technology rather than generalities. I could follow up with this question: Could you tell me a little more about your experiences with the video magnifier during your secondary education? This would give opportunities for the participant to reconstruct some of his past experiences with this particular technology in a more concrete way. Such rich and detailed information would be valuable to the study but opportunities will be lost if I am too pre-occupied and mechanical in asking all the pre-set questions developed in the interview guide. Adams and van Manen (2017) provided some prompts that we could use if the interview seemed to be stuck: "Can you give an example? Or, can you be more specific? When exactly did this happen?" (p. 786). Phenomenological interviewing should distinctively focus on recollection of the experience itself rather than soliciting views, opinions or beliefs of the experience.

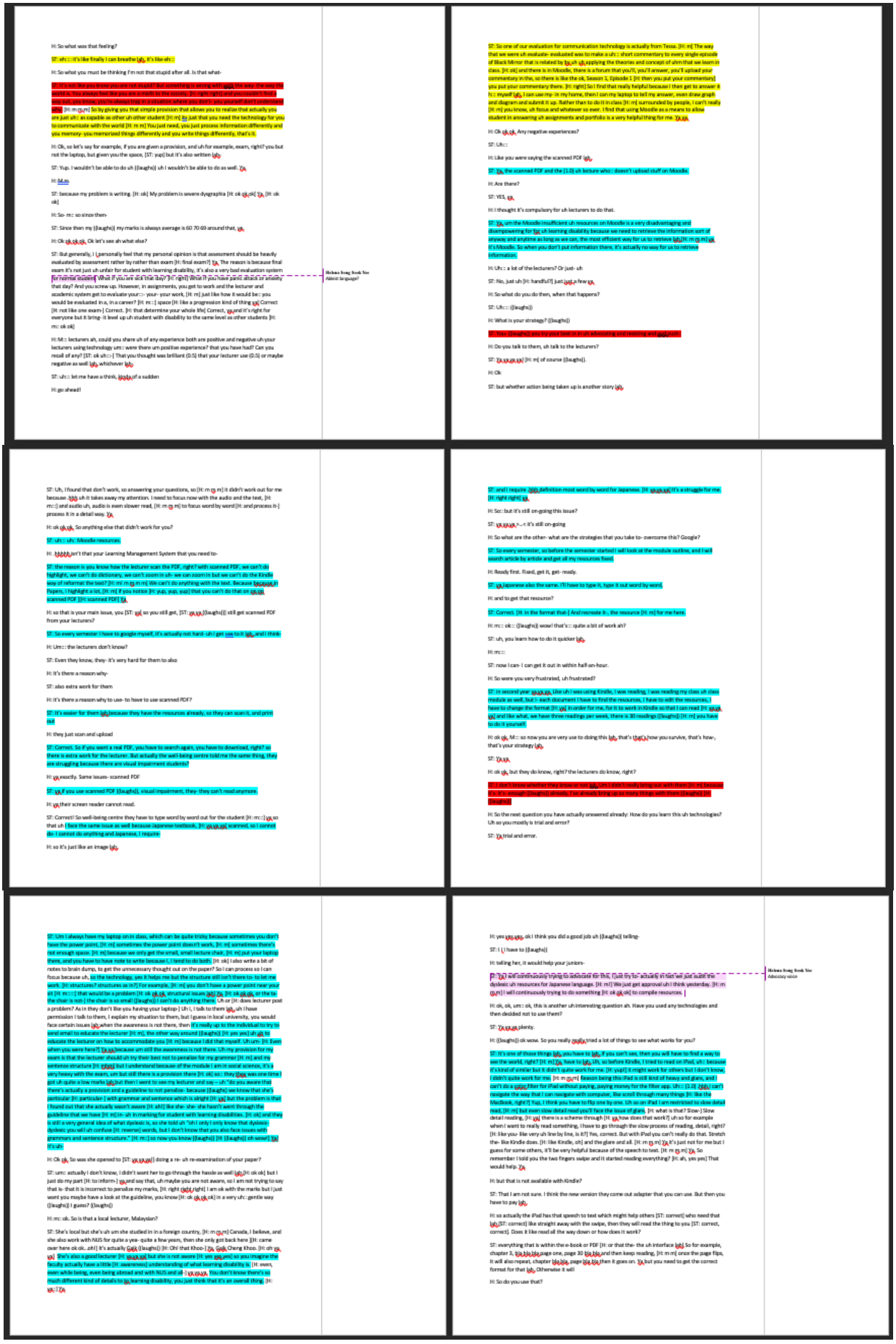
Though not intended and not in the interview guide, there were also few instances that leading questions were asked during the pilot interview. Leading questions are questions that direct or influence how the participant respond rather than independently coming from the participant's perspectives and should be avoided. The drawbacks were evident in the following example from the pilot interview.

HELENA:	*So…um…family members, ok. Do they encourage you to use technologies? I remember you mentioned they don't really encourage, and they also don't discourage you, right, you were mentioning…*
PARTICIPANT:	*Mmm..hmmm (pause) true*

HELENA:	*So at any time, do you consult any of your family members when you are using any technologies?…you are quite independent from…uh…*
PARTICIPANT:	*Yeah, quite independent…*
HELENA:	*So they don't really come and offer…eh, I think you should use this or…do they influence you in some way, like I think you should be using this, you know…*
PARTICIPANT:	*(noise interruption)…I'm sorry, again…*
HELENA:	*No, I was just wondering if your family has like, in some ways, you know, influence you; Hey I think you should be using this or you know, using that…or not using this or you know…*
PARTICIPANT:	*Oh, umm…nope, nope because pretty much, I don't know whether they have confidence in me or not but…*
HELENA:	*I am sure they have, since they don't bother you.*

Open-ended questions, rather than leading questions, would have provided more opportunities for the participant to explore any direction he wants to take. From this example, it would have been more sensible to ask an open-ended question when wanting to understand the participant's subjective experience. It can be phrased as: Could you reconstruct an experience you had with your family in terms of using technology at home? or What was it like for you in terms of using technology at home with your family? Can you give me an example? Open-ended questioning allows for the reconstructing of the participants' experiences in their own terms and choosing what were important to them rather than guided by the interviewer (Seidman, 2006). The interview guide was scrutinised again to mark out any possible leading questions.

Example of Chee Seng's interview data with colour coded indicators



Example of Anna's long I Poems

I Didn't Feel Free

I discovered
I manage to read
I read my books using my mobile phone
I hated most
we have to use Braille
I couldn't get till now.
I know that's strange and unreasonable
(that doesn't make sense) to me
I mean, there's so many things to memorize
I didn't enjoy school

I struggled in my first semester
I, I, I still have to Braille
my, my power point slides out.
I realized that technology is a more feasible thing
I think
We just sort of jumped in
I just sort of jumped in to figure things out

I couldn't
I couldn't actually read the whole thing
I sort of got through it?
I got comfortable
(it didn't take) me long to adapt, to be honest
I am an audio learner
(That's why) I'm comfortable, I suppose?
(it helped) me in everything, to be honest.
I'm still struggling with one thing now, which is PDF

I was using my mom's old No- Nokia
I just didn't get the sense of freedom?
I didn't feel
I didn't feel free
I'm not a tactile learner
(it make) me feel more blind than ever.
I, I, I had to describe it that way
I know it's a strong word.
That's what I see

I wasn't really good at typing
I have to Braille them out
I've never heard of a Braille computer
I use the conventional Braille machine
I I don't have access to textbooks
I know.
You have to memorize everything blindly
make you feel more blind
I survived

I've not used the Braille machine for quite a long time,
I finished Brailling everything out
my fingers just just ached so badly
I think there are still a lot of people very dependent on Braille still
I don't personally need it
I think quite a number of people
I don't think I need that now.

I Can Be Whoever I Want to Be

I felt free
I can spell anything
however I like with my laptop
I survived
Oh my God!
I love every single moment of me being here.

I remember
I start to use technology
I literally abandon my radio
I, I, I literally abandon my radio.
I'm ok with it, I mean
I have my laptop now
I, I, I was expose to mobile phone
I'm more comfortable reading with my mobile phone
I'm more comfortable doing my work with my laptop.

I actually prefer typing
I'm quite good at it now
I felt great
I could use it
(just make) me feel so good, I mean
I can express myself better.
(especially when) I feel, when I feel cheeky

I have most of my lecture slides…in power points
I do have to read some PDFs
I would get help to convert them to Words
I found it easy to use
I think I am just afraid of trying?
I didn't have to access Moodle

I got into it
I got myself use to it
I think with help of people here
I can read them before going to class
I was given my notes and slides in advance
I just have to get use to it
I think
I can't
I had a meeting
I felt so happy

I can write freely the way I want to write
(it's just, just made) me feel so original?
I can be whoever I want to be
I have
I feel like
I feel more
more me
(it gives) me a sense…empowerment
I struggled
my work
I still have
I still need my sister
I wasn't really technological savvy
I found strategies
I'm happy