LEARNING WITH TECHNOLOGY IN THE UNIVERSITY: A PILOT CASE STUDY OF A STUDENT WITH LEARNING DISABILITIES

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ABSTRACT

This research paper reports a single pilot case study of a larger research project that seeks to explore the experiences of disabled students in utilizing their mobile devices and Web 2.0 technology to learn in higher education. While assistive technology is often employed to support and assist disabled students, this study focuses on the affordances brought forth by off-the-shelf emerging technologies such as mobile devices and its services; and Web 2.0 technology such as social networking sites i.e. Facebook, video sharing sites i.e. YouTube, blogs, and wikis, that is becoming pervasive and ubiquitous in the educational and social landscape of disabled university students. Specifically, the aim of this research paper is to share the experiences of how a university student with learning difficulties uses 'everyday' technology to cope with the demands of higher education particularly in fulfilling the requirements of her academic courses. A qualitative study approach was taken in this study, utilizing in-depth interviews as the main tool for data collection. Data collected from the interview was analyzed using a thematic approach with three distinct themes emerged: Choice of technology, Ease of use/Compatibility with technology, and Learning strategies. The initial findings and reflection of this study suggests that mobile technology together with Web 2.0 technology particularly social media sites as well as video sharing sites can play a pivotal role in the lives of disabled university students for academic activities. It can also level the playing educational field for disabled students and create opportunities for social inclusion within the university community.

Keywords: technology, higher education, disability, learning disabilities, ADHD, Web 2.0

Introduction

Transition from secondary school to post-secondary education can be a daunting experience for any typical student. The academic and social demands in a higher education setting are significantly more complex compared to a highly structured secondary school environment. Adapting to the college or university environment might be more challenging for [1]disabled students due to their learning difficulties, executive functioning limitations and social stigmatization. Hence disabled students are at high risk of lagging behind their non-disabled peers (DaDeppo, 2009) and dropout rates are also notably higher for this cohort (Newman et al., 2011). Past research identifies various reasons for this disparity, particularly in the area of physical, learning development, and affective challenges. Among others, assistive technology (AT) is often employed to support and assist disabled students in colleges and universities. Individuals with Disabilities Act (IDEA) (1997) defines AT 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". AT which includes devices as well as services, more often than not, are required for disabled students to be successful learners.

Evolving term of Assistive Technology

The term AT, however, has evolved since it was first conceived. More often than not, AT is boxed in as a very specific type of technology related to specific type of disability. The term Universal Design for Learning (UDL) introduced in Individuals with Disabilities Education Improvement Act (2004) shifted the focus to provide more encompassing and inclusive products and services for all students including disabled students. UDL is a "concept or philosophy for designing and delivering products and services that are usable by people with the widest range of functional capabilities and that include products and services that are directly usable (without requiring assistive technology) and products and services that are made usable with assistive technology" (Beard, Carpenter & Johnston, 2011, p. 8). The guiding principles of universal design provide a framework that promotes and accommodates the needs of a diverse group of learners instead of focusing on the individual disabilities of each student. UDL demands a more inclusive, accessible and enabling eco-system within the education environment for all students including disabled students.

One example of such technology that enables UDL is mobile technologies and other emerging mobile media applications.
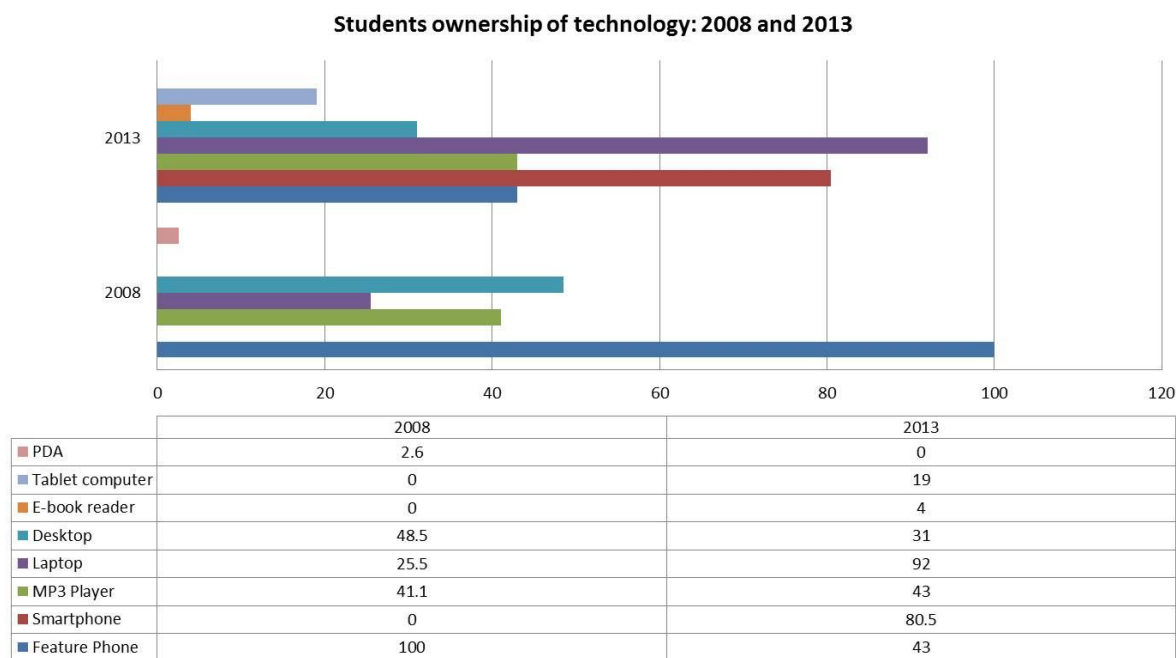
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[1] This article adopts the term 'disabled students' rather than 'students with disabilities' as advocated by Phipps, Sutherland and Seale (2006) in "Access All Areas: Disability, Technology and Learning". The term 'students with disabilities' implies that the students' impairment or condition causes them to be 'disabled' (and consequently that it is their responsibility to overcome it), whereas 'disabled student' implies that the person is disabled not necessarily by their condition or impairment, but by, in this case, the higher education environment and its inability or reluctance to cater effectively for that person (and consequently that higher education institutions must effect change to remove that disability).

General mainstream 'everyday' mobile technologies, such as smartphones, tablet computers, mp3 players, and e-readers, are making inroads into the lives of disabled students. These mobile technologies had been found to be extremely versatile and easy to use with universally designed capabilities. For example, the simplicity of being able to enlarge text on a touch screen mobile device with one swipe of the fingers is extremely helpful for many users particularly students with visual and perceptual challenges. Other examples including the ability and the ease of use (with a click of a button) of such devices to capture images and record audio can be beneficial to students who have issues and challenges in reading text. While smartphones and tablets do not fall under the category of the traditional assistive technology, these technologies can be both empowering and enabling to a wide spectrum of students. Therefore, assistive technologies, in the widest sense of the term should include those that fall into the general and emerging technology domain (Draffan, 2009).

Focus of the study

Smart mobile devices are notably becoming more accessible, affordable and widely used. The rapid growth in the smartphone industry in the last few years is changing the landscape of how people and society as a whole communicate, learn and play. Malaysians were found to be among the most prolific users when it comes to smartphones spending an average of 6.4 hours a week accessing the internet through their devices (NST-Business Times, 2013). A recent survey on 194 first year students from a Malaysian higher education institution reveals that most students owned a mobile phone. 80 per cent of them are smart devices (Song, Murphy & Farley, 2013). While 19 percent of the students owned a tablet computer yet almost half of the students (48 per cent) had access to one for use. These statistics bear out that being mobile and connected is very much part of being university students in this part of the world. A comparison was also made with a survey conducted with a similar cohort from the year 2008 in terms of ownership. The researchers found that although the age and gender profiles were similar to the present cohort, the levels of ownership of mobile technologies and other ICTs had changed drastically over the 5-year period (Song, Murphy and Farley, 2013). For example, PDAs were present in the 2008 survey but had since disappeared; while tablets such as iPad have appeared over the same period (See Figure 1).

Figure 1. Higher education students' ownership of technology over a 5-year period

Students ownership of technology: 2008 and 2013

	2008	2013
PDA	2.6	0
Tablet computer	0	19
E-book reader	0	4
Desktop	48.5	31
Laptop	25.5	92
MP3 Player	41.1	43
Smartphone	0	80.5
Feature Phone	100	43

In a separate survey, it was found that 92 per cent of 452 disabled people owned or used mobile devices of which 53 per cent are smartphones (Rehabilitation Engineering Research Center for Wireless Technologies, 2013). This survey also reveals that the population with disabilities behaves similarly to the general population with regard to mobile wireless access Internet use. Even though this survey cannot be generalized to Malaysia, it does give an indication that mobile devices are very much a part of the lives of disabled people, including disabled university students.

The proliferation and increase access to these highly personalize mobile devices may well lead to increased connectivity, collaboration, communication and having access to readily available digital resources (Walker & Logan, 2009). This inevitably changes the teaching and learning process within higher education. Additionally, it creates a fertile ground for personal learning spaces. Personal online learning spaces have its genesis in Web 2.0 technology and its influence on the educational. The onus is on the learners and how they organize, manage, collaborate, create and share learning resources online. Most importantly, these learning spaces are seen as one of the accessible and enabling learning platforms for disabled students (JISC, 2016).

There is no doubt that assistive technology, in a more traditional definition, has an important role to play in the lives of disabled students in higher education. However, though assistive technology is seen as a special solution to a specific problem encountered by the disabled students, using them may attract unwanted attention as well as exacerbating the stigma of disability among them. Research has shown that there is a reluctance to connect with assistive technology when it singles out the disabled student (Seale, Draffan & Wald, 2008). On the contrary, 'everyday' technologies were found to be widely accepted and digitally mediated social networks are seen as leveling the playing field for these students (Barden, 2014; Lewandowski, Wood & Miller, 2016). These general technologies are becoming more pervasive and ubiquitous in the educational and social landscape of disabled students. Therefore, research that focuses on the affordances brought forth by off-the-shelf emerging general technologies such as mobile devices and its services; and Web 2.0 technology such as social networking sites, video sharing sites, blogs, and wikis is warranted. This research study reports a pilot study of a larger research project that seeks to explore the experiences of disabled students in utilizing their mobile and portable devices and Web 2.0 technology to learn in higher education. Specifically, the aim of this research paper is to share the experiences of how a student with learning difficulties uses 'everyday' technology to cope with the demands of higher education particularly in fulfilling the requirements of her academic courses.

PREVIOUS RESEARCH ON DISABLED STUDENTS AND TECHNOLOGY

Technology for disabled students is often deemed as "the great equalizer" (Wyer, 2001, p.1) and a central tool for fostering inclusion and participation in higher education (Barile, Fichten & Asuncion, 2012). Hence, providing access and training of technical skills became the main emphasis and concern when it comes to technology used by disabled students. Not surprising then that previous research on the use of technology by disabled students in higher education tends to focus on accessibility and technical (hardware and software) issues (Steyaert, 2005; Abbott, 2007; Fichten, Ferraro, Asuncion, Chwojka, Barile, Nguyen, Klomp & Wolforth, 2009; Barile et al., 2012). Though providing access to technology is imperative for promoting wider participation and inclusion, it is not sufficient to ensure meaningful participation and beneficial interactions among the disabled students. Seale (2006) cautioned the common notion that having access to technology equates to having access to accessible online resources and tangible support for learning activities. It might not be necessarily so. One might have access to technology but still gain little from their interactions with technology. Other authors such as Selwyn & Facer (2007) also pointed out the need "to move beyond a conventional understanding of the 'digital divide' as a simple case of 'technology haves' and 'technology have-nots' and begin to address the area of digital inclusion in more nuanced terms" (p. 12). This complexity of conceptualizing digital inclusion is further compounded with the convergence of various new media platforms such as smartphones and other portable devices has given rise to multi-modality technology access and use. There are blurring boundaries between social and learning spaces, formal and informal learning as well as the concepts of disruptive and flipped classroom that permeates in the learning landscape of higher education.

Several groups of researchers have attempted to widen and extend previous research that merely focuses on accessibilities and technical issues. Among the wider issues addressed include exploring the personal experiences of technology used of disabled students focusing on voice and participation (Seale, Wald & Draffan, 2008; Wald, Draffan & Seale, 2009); relooking at digital inclusion in terms of resources and choices (Selwyn, 2006; Selwyn & Facer, 2007; Seale, Draffan & Wald, 2010); and understanding the relationship between disabled students, the technologies that they use and their universities through a digital cultural and social capital lens (Lewthwaite, 2011; Seale, 2013).

In response to lack of research on issues other than technological access, researchers Seale, Wald and Draffan (2008) did a study to explore the e-learning experiences of disabled students in higher education. Using participatory methods, the researchers collected personal narratives and voices of disabled students on their uses of technology particularly on e-learning experiences. Participatory design methods are common in disability studies, which focus on working or doing research with participants, rather than solely researching on participants. However, this method still relatively new to research studies on e-learning, where more traditional methods such as interviews, questionnaire surveys and focus groups are employed. The researchers found several issues unique to disabled students in their e-learning experiences (Wald, Draffan & Seale, 2009). They found that disabled students, compared to typical students, had to learn new assistive technologies at the starting of their university studies. Substantial time is also needed in dealing with issues related to their disability leaving them less time to explore and work online compared to their non-disabled counterparts. Another pertinent issue is disabled students have to be more flexible and agile in their use of technologies. Inherently, Wald and colleagues (2009) found that disabled students have to find ways to personalize their use of technologies for learning without training or guidance. For example, one student describes:

> "I felt that having access to a 'computer' available for me to use all the time would enable me to keep a note of what I need to say or do when it come to my mind as I have short term memory problems....Having a smart phone basically allows me to carry a mobile phone, personal organisers, and laptop and mp3 player all in my pocket! I can access information or do work anytime I please! I've even sat in nightclubs writing essays! – having the ability to sync the phone means all my information is up to date with the records on my computer. If I have something I need to be doing or attending my phone will alert me...Obviously like you do on a normal mobile phone I play with the backgrounds and ring tones. At the moment I have scatman as my ring tone! I have some voice commands set but they're often difficult to use in noisy places. I can change the font size easily and this can often

be useful if I'm tired"

(Wald et al., 2009, p. 359)

Although this study is one of the most comprehensive account of the uses of learning technology by disabled students in higher education produced so far, it will be interesting to see if this relationship has changed or evolved since this study was done in 2008. As was revealed in the previous section, the levels of ownership of mobile technologies and other ICTs had changed drastically over the years. This change coupled with a widespread of faster network speed and connectivity as well as low-priced alternative of mobile devices, compounded with the increase usage of social media technology by university students (Corrin, Lockyer & Bennett, 2010), further studies on how disabled students are utilizing current and emerging technologies for academic purposes is warranted.

Technology and Students with Learning Disabilities (LD) and Attention-deficit Hyperactivity Disorder (ADHD)

Research reveals that technology can play a major role in leveling the playing field for students with Learning disabilities (LD) and Attention-deficit Hyperactivity Disorder (ADHD) in higher education, making it a more equitable experience (Barden, 2014) and enabling more participation and inclusion among these group of students in the university (Fichten, et al., 2009; Kent, 2015). LD and ADHD are high-incidence disorders where it is most likely to occur and students with these disabilities are prevalent in any educational setting (Friend & Bursuck, 2012, Lewandowski et al., 2016). Students with LD generally struggles in academic skills such as reading, math and/or writing which eventually lead to processing difficulties in functions. LD may include dyslexia, dyscalculia (mathematical reasoning disorder), and dysgraphia (writing processing disorder) (Gregg, 2009). Students with ADHD experience challenges in the area of "inattention (e.g., easily distracted) or hyperactivity and impulsivity (e.g., often interrupts or intrudes)" (Lewandowski, et al., 2016, p. 62). Without proper support and accommodations, students with LD and ADHD may be excluded from fully participating and succeeding in their academic career in higher education compared to their non-disabled peers. Having access to both assistive and generic technology, online course resources and accommodations such as audio textbooks, digital recording of lectures, digital recorders, and access to copies of PowerPoint presentations prior to class were found to be beneficial to students with reading disabilities, written-language disabilities or ADHD (Gregg, 2009; Graves, Asunda, Plant & Goad, 2011; Mapou, 2009).

On the other hand, recent studies by Seale and colleagues (2013, 2015) revealed that having sufficient digital capital, culturally or socially, does not necessarily lead to positive and beneficial technology used among disabled students. For example, the unspoken high expectation for students to be independent and self-sufficient, a pervasive culture of higher education has a crucial influence in the digital decisions made by disabled students (Lewthwaite, 2011). Disabled students might reject the use of assistive technology and other technologies for fear of being looked upon as not being 'normal' and self-sufficient. Collectively, these research studies outlined a critical role for more in depth exploration of current technologies that disabled students choose to use or not to use for learning in higher education and the relationship they have with these technologies. This study, therefore, seeks to add empirical knowledge to this growing field of research.

METHODOLOGY

This single pilot case study focuses on exploring and understanding human experiences and the relationship between mobile technologies, Web 2.0 technology and a student with learning disabilities within a higher education environment. A qualitative method is chosen due to the fact that understanding experiences "includes the assumptions persons are inseparable from their contexts and thus cannot be understood without taking into consideration the contexts of their accounts and actions that they interact with others in various contexts" (Gilgun, 2012, p. 81). Denzin and Lincoln (2005) conclude their definition of qualitative research by stating, "qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (p. 3). This is precisely what I aspire to do in the pilot study: to explore a disabled student's understanding, perceptions and personal experiences with mobile technologies and Web 2.0 technology and its impact on her learning experiences in higher education.

The social phenomenon that this study is trying to understand is a contemporary and complex one. First, it deals with an emerging technology that did not exist until several years back, hence, lack of empirical studies were done on it. In addition to this, the complexity of this study is increased because of the nature and characteristics of the subject being studied. A qualitative case study method is warranted because of the complexity of the subject being studied as well as it being a contemporary phenomenon. As Yin (2009) suggested that one of most important application of case study is to "explain the presumed causal links in real-life interventions that are too complex for the survey or experimental strategies." (p. 19).

Data collection, research process and procedure

This research study utilizes in-depth interview as the main source of data collection and information. In-depth interviews allow me "to find out what is in and on someone else's mind" as well as "enter into the other person's perspective (Patton, 2002, p. 341). The main purpose of interviews is also to gain knowledge about peoples' experiences and behaviours as well as their perceptions of the world they live in (Kvale, 1996). In this study specifically, an in depth interview was conducted to gain knowledge on the disabled student's personal experiences with technology as well as her perception and views on her relationship with technology within the higher education institution where she is studying. Simons (2010) suggested that in-depth

interviews allows for active engagement and flexibility to adjust and shift the focus to emerging issues as well as digging deeper into certain issues, response or topic during the interview. In addition to this, in-depth interviews can facilitate the uncovering of feelings and events that cannot be obtained during observations. As Simons (2010) insightfully puts it, "In interview people often reveal more than can be detected or reliably be assumed from observing a situation" (p. 43).

An in depth face-to-face interview was carried out with a third year Degree student diagnosed with dyslexia and ADHD. Convenience sampling was utilized for this pilot study as the university has no formal records of students with disabilities. While acknowledging the question of researcher biases in the selection of participants, the case of the matter here is that are no formal policies or requirement within the university for any students to disclose their disabilities, hence there are no records of such students. In addition, this pilot study is collecting preliminary data in a still emerging field of research in the country. On these grounds, the data collected can still contribute and add new knowledge to the better understanding of how disabled students use technology in higher education. The student's disability and difficulties were made known to the author in that particular semester via an email. This student emailed to all lecturers of the subjects that she was taking that semester about the struggles that she is experiencing due to being dyslexic and having ADHD. At first she was reluctant to disclose her condition but taking the advice of her psychologists, she decided to inform the lecturers involved so that they could understand her situation. Seizing this opportunity, an email was sent to her requesting if she is open to an interview with the author. Her response was immediate and positive. She was also given the assurance repeatedly by the researcher that should she decide not to participant in this study, she will not be penalized in anyway in relation to her studies.

The interview location was suggested by the participant. The rights of being a research participant were explained in great detail to the student. Permission and consent was sought and signed before the interview started. She was also brief that the interview will be recorded and that she could withdraw from the interview at any time. The student was encouraged to converse in the language that she is most comfortable with. The interview was conducted in a conversational manner in a private room. Semi-structured questions were used as a guide throughout the interview. General questions about her background was asked first, then questions relating to her experiences with technology used for learning in her studies were asked. Some examples of the interview questions are: "What technology do you use for academic purposes?", "Give some examples of how you use these technologies in your courses, classes and assignments.", "Why do you use these technologies?"

Data analysis approach

Data collected from the interview was analyzed using a thematic approach. Thematic analysis is a widely used as well as common form of data analysis method in qualitative research. Braun and Clark (2006) define thematic analysis as a qualitative analytic method to ''identifying, analysing and reporting patterns (themes) within data. It minimally organises and describes your data set in (rich) detail. However, frequently it goes further than this, and interprets various aspects of the research topic" (p. 79). Specifically, this study takes on an inductive and semantic approach to thematic analysis by searching across the dataset (interview data) to identify patterns of meaning. The interview data, both verbal and non-verbal including explicit emotions shown during the interview was transcribed verbatim by the author. Some researchers assert that the process of transcription is a fundamental phase within an interpretive qualitative data analysis (Bird, 2005). Therefore, the transcription process was conducted by the author personally. Then, the interview transcripts were repeatedly read, reviewed, compared and analysed to uncover meanings, patterns and themes. After several cycles of moving back and forward between the transcribed interview data and the initial coding and categories, several distinct themes emerged.

IRIS IB'S STORY: A DISABLED STUDENT'S EXPERIENCES OF USING TECHNOLOGY FOR LEARNING

This section presents the preliminary research findings of a larger study that seeks to explore the experiences of disabled students in utilizing their mobile and portable devices and Web 2.0 technology to learn in higher education. In this pilot study, a student with dyslexia and ADHD was interviewed in depth to uncover and explore her experiences of using mobile technology and Web 2.0 in a higher education environment.

Participant profile

Iris Ib (pseudonym chosen by student participant) is 23 years old, studying in her third and final year of Bachelor's Degree in a Creative Multimedia department. Iris Ib was diagnosed first with dyslexia when she was 7 years old by a pediatric doctor, then later with ADHD. She repeatedly expresses that she lacks self-confidence and keeps to herself most of the time, and that she lacks social skills. With an IQ score above average (recent IQ test taken 6 months from the interview), she is struggling with her studies, having to repeat her foundation level twice as well as several Degree subjects with current CGPA of 2.0. She laments about her low grades, yet still harboring dreams of furthering her studies till Master's Degree or even PhD. Only two of her friends know that she is dyslexic and that she struggles with ADHD. Parents and siblings are supportive and encouraging.

Iris Ib seemed keen to share her experiences. She expresses her willingness and openness to share about herself and her experiences in the hope that it would help others similar to her. During the interview, she converses in a mix of both Malay and English throughout the conversation. The atmosphere was rather relaxed and Iris Ib was seen to be calm and relaxed through the whole interview. In this paper, the interview data will be quoted verbatim with English translation for the parts spoken in Malay.

Three distinct themes emerged from the interview dataset. They are: *Choice of technology, Ease of use/Compatibility with technology*, and *Develop technology-enhanced learning strategies.*

Choice of technology

From the interview, it would seem that the Iris Ib's choice of technology gravitates towards and revolves around popular and generic social technology. She owns an iPhone, an iPad, a laptop as well as a desktop computer. Throughout the interview, it was very evident that she was relying on her mobile devices and social media technologies for majority of her academic and social activities. Among the technology mentioned were Facebook, Facebook Messenger, Youtube, Google, Gmail, Whatsapp, Twitter, Tumblr, Pinterest, Instagram as well as various mobile applications. All these technologies were adopted without training and through trial and error. On the contrary, the university's learning management system was not mentioned at all throughout the interview.

Some of the comments related to this theme are:

"Facebook! Yes! Every day! "

"I baca itu tweet, I reply jugak itu tweet, reply, baca semua tu, I active dalam Facebook …Facebook dengan Twitter"
(*I read tweets, I also reply to tweets, I read all those. I am active in Facebook...Facebook and Twitter*.)

"I google…all the time"

"Youtube-lah especially tutorial, I selalu"
(*Youtube especially tutorial, I always use that*)

"I am more comfortable melalui device...I guna untuk discuss dengan kawan, kita buat group kat whatsapp."
(*I am more comfortable through device…I use to discuss with friends, we create groups on Whatsapp*.)

"Mobile phone, usually on my phone, setiap hari sebab I dapat notification dari gmail. Sebab laptop dengan desktop, dia tak ada notification."
(*Mobile phone, usually on my phone, every day because I get notification from gmail. With the laptop and deskstop, I don't get notification*.)

"….dulu I ada pinterest, I suka tengok design-lah…I follow yang ada design."
(*…I use to have Pinterest, I like to look at design...I will follow one that is on design.*)

"Hari tu kan, pasal MH370, I follow everyday tentang news tu" (Astro Awani App on her mobile device)
(*That day, on MH370, I follow everyday about the news*)

"Website yang ada pronunciation kan, I dulu kan ada problem dengan pronunciation, so bila I enter dia punya word, they akan pronounce..."
(*There's a website that provides pronunciation, I use to have problem with pronunciation, so when I enter a word, they will pronounce…*)

"sebab I kan tak bagus English, so I download-lah, macam Johnny Grammar app.."
(*Because I am not good in English, I download apps like Johnny Grammer…*)

"Macam kawan I kan, dia active, dia ada Tumblr, dia photographer kan, I suka tengok dia punya kerja, art work."
(*For example, I have a friend who is a photographer, she is active in Tumblr. I like to see her work, art work.*)

"Untuk belajar ada…macam I follow, kan, I rasa Media Art twitter adakan…I follow-ah"
(*For learning, for example I follow; there is Media Art twitter, right? I follow that*)

Ease of use/Compatibility with technology

In the interview, Iris Ib often expresses her preference for managing academic activities via her mobile device and other internet technology. It is apparent that she is comfortable in using technology as part of her everyday activities including academic activities.

"Kalau saya, I prefer guna mobile. I don't talk much in person in group."
(*For me, I prefer to use mobile. I don't talk much in person in group*.)

"Tak tahu, kalau untuk I, I rasa ni, ia banyak membantu…technology nie banyak membantu....I memang tak boleh survive kalau tak ada."

(*I don't know, for me, I feel that it helps a lot…technology helps a lot…I really cannot survive without it.*)

"Kalau untuk I, memang selesa, I prefer I rasa I better belajar daripada online dengan mobile."
(*As for me, I am comfortable, I prefer, I feel that I can learn better online with mobile*.)

"With the lecturers i prefer through email, SMS not face to face. Same goes to friends.. unless kawan rapat i okay. I tak boleh kawan ramai atau group.. I tak pandai social.. Tak tahu nak communicate...so i choose to use social media for interaction with lecturer or even friends."
(*With the lecturers, I prefer through email, SMS, not face to face. Same goes to friends…unless close friend, I am okay. I cannot make lots of friends or group. I am not good at socialising. Don't know how to communicate...so I choose to use social media for interaction with lecturer or even friends*.)

I semua through internet...I tak-kan face-to-face, second choice
(*I everything through internet…I won't face-to-face, second choice.*)

Develop technology-enhanced learning strategies

One other theme that emerged was how Iris Ib developed some learning strategies to cope with her disability. She acknowledges her condition and recognizes the weaknesses that come with her disability. She leveraged on generic and everyday technology to compensate the issues related to her disability (Dyslexia and ADHD).

Some comments includes:

"I learn mostly from internet especially Youtube tutorial"

"Kalau untuk belajar, macam Internet Application, untuk scripting in Flash…I guna Youtube sebab I tak faham dalam kelas apa mereka cakap…banyak kat MMU nie I belajar guna youtube, guna internet, tak nie sangat tu dari lecturer sebab I tak faham mereka cakap apa"
(*If for learning, such as Internet Application, for scripting in Flash…I use Youtube because I cannot understand what they are talking in class…most of the time in university, I learn through Youtube, through internet. I can't learn much from lecturers because I do not understand what they say*.)

"Tak faham. I tahu my condition-lah, sebab I tak boleh focus, tu bila I balik I kena refer youtube-lah, kan…mana ada yang record masa lecture, saya perlu guna youtube balik-lah. Kan you ada kasi youtube link kat facebook group tu…tu I banyak guna."
(*Don't understand. I know my condition. Because I cannot focus, when I go back, I need to refer to Youtube. There is no recording of the lecture, so I need to use Youtube repeatly. Remember you gave the Youtube link at the Facebook group…that I use a lot.*)

DISCUSSION AND CONCLUSION

The findings from the interview data collected appear to indicate that the relationship between the disabled student and her technologies is a rather intimate one. Social media technologies, though not designed as learning technologies, were appropriated for academic purposes. These personal social media technologies particularly Facebook and YouTube appear to be playing significant roles in the everyday life of this student participant where there is a blurring of academic and social spaces, formal and informal learning. This finding concurs with the several earlier studies that reveal the widespread use of social media for learning (Corrin et al., 2010; Mazwan & Usluel, 2010, Lampe et al., 2011).

Most importantly, a study on dyslexic students and Facebook usage for learning found that dyslexic students were highly motivated to learn through literacy whilst using Facebook (Barden, 2014). This study's finding is interesting in that though dyslexic students were often associated with issues and difficulties pertaining to text and literacy, Facebook, which is still predominantly text-based, didn't seem to hinder these students from being actively participating in it. This particular finding is similar to what this paper's pilot study found. For example, when asked if she uses social networking sites such as Facebook, the response was a resounding yes. She exclaims: "Yes, everyday! Even in class!" One main reason the researcher found was because of Facebook's status as a popular, everyday technology rather than assistive, the students see it as a role in leveling the playing field rather than further alienating them from other typical students and the university community at large (Barden, 2014). This finding also confirms the association between disabled students' adoption and acceptance of technology and their perception of whether the particular technology exacerbates their disabilities (Lewthwaite, 2011). It is important to note that there was no mention of assistive technology being used by the student participant.

Youtube, a video sharing site, is another Web 2.0 social technology that she uses frequently to counter the challenges post by her disabilities. One main reason for using Youtube is because of the ability to replay the video many times. She expresses:

"…because I can replay banyak kali, boleh repeat balik…I tahu my condition-lah, sebab I tak boleh focus, tu bila I balik I kena refer Youtube-lah, kan… Kan you ada kasi Youtube link kat facebook

group tu…tu I banyak guna I tak boleh baca lama sangat, kalau lebih 2 minute, I tengok macam semua letter jumble up, jumping around, so macam mana I nak focus…in class, my mind keep wandering around, macam I tak boleh focus sebenarnya"

(…*because I can replay many times, can repeat back…I know my condition, because I cannot focus, so when I go back, I have to refer to Youtube…Like you gave use the Youtube link at the facebook group…that I use very often. I cannot read too long, if it's more than 2 minutes, I see all the letters jumble up, jumping around, so how do I focus…in class, my mind keep wandering around, I cannot focus, truthfully*).

This finding concurs with that of the findings of Asuncion, Budd, Fichten, Nguyen, Barile, & Amsel (2012) on social media use by disabled students. The researchers found that watching a video on YouTube was the top activity at 91 percent of 723 disabled students being surveyed. The other top social media related activities were instant messaging (79 percent), searched for someone they knew on Facebook (79 percent), added someone they knew using Facebook (76 percent) and updated their status on Facebook (69 percent). Being able to have access to asynchronous online access to course materials such as digital video recordings of lectures are vital, particularly to student with LD and ADHD (Graves et al., 2011) because students can playback and review as many times as needed. This function very much alike to the YouTube videos mentioned above. Most importantly, with these accommodations, students are able to access these online resources outside classroom without being singled out as disabled in class. This allows and protects the anonymity of students with LD and ADHD. In addition, Graves and colleagues (2011, p. 320) expressed that with the digital recordings of lectures, "all students including those with LD and/or ADHD can focus on the lecture/discussion without the burden of taking notes, can access the recordings in locations with minimal distractions, have a complete and accurate record of what was said and demonstrated, and can utilize the recordings to meet their individual ways of learning." This facilitates and provides both auditory and visual learners the flexibility to access and review the content while minimizing specific accommodations required by student with LD and/or ADHD.

Other emerging mobile media technology such as Whatsapp was also found to support academic related activities such as organizing group work and group discussion. For the student participant, this technology has provided an alternative support for her in communicating with other students in her course. It acts as a bridge to negate pertinent issues and problems related to her disabilities. For example, she mentioned that:

"I memang jenis lambat nak respond, I susah nak faham, even in Malay, macam lambat sikit… err…hmm…I difficult to put my thought in words" (*I am one of those that is slow in response, I find it hard to understand, even in Malay, kind of like a bit slow…err…hmm…I find it difficult to put my thought in words*).

She continues saying:

"..untuk discuss dengan kawan, kita buat group kat Whatsapp… I am more comfortable melalui device… I prefer guna mobile. I don't talk much in person in group. Lepas discussion I ask one of the group mate to explain balik. Satu mereka cakap terlalu cepat, satu lagi I tak boleh concentrate. Sebab dalam group, banyak cakap, I tak boleh.."
(*..to discuss with friends, we set up group in Whatsapp…I am more comfortable through device…I prefer using mobile. I don't talk much in person in group. After the discussion, I ask one of the group mates to explain it back to me. For one, they talk too fast, another is that I cannot concentrate. Because in a group, lots of talking, I cannot…*)

Additionally, she adds that she is connected most of the time via her mobile phone. One reason being that she is able to get notifications: She claims that:

"…usually on my phone, setiap hari sebab I dapat notification dari gmail. Sebab laptop dengan desktop, dia tak ada notification"
(*…usually on my phone, every day because I get notification from Gmail. Because laptop and desktop does not have notification*).

Researchers Manago, Taylor and Greenfield (2012) observed the impact of social media technologies on students' university experience as well as their well-being was largely positive. Another group of researchers (Yu et al., 2010) found that online social networking boost self-esteem and greater contentment with university life. Weaving social media technology into academic activities formally might provide some form of antidote to the common psychological stress that disabled students usually face during their university life. Transition into university is a daunting experience. Compounded with the extra burden of having to deal with issues related to their disabilities, disabled students are prone to experiencing mental health issues and tend to be seen as social misfits. This is evident with this student participant. For example, she laments that:

"I pun selalu still buat treatment, pergi jumpa…I pergi dekat hospital, psychiatrist kat situ. I ambil medicine-lah untuk ADHD, sebab I hyperactive, I tak boleh focus less than 2 minutes. I pergi dari Foundation lagi, I stress belajar, I pergi-lah…"
(*I still always go for treatment, I see…I go to the hospital to see the psychiatrist over there. I take the medicine for ADHD because I am hyperactive. I cannot focus for less than 2 minutes. I've been going*

since Foundation year, I am stressed due to my studies, so I go…)

"I ada seorang kawan, I cakap kat dia I ada ADHD, Dyslexia, tu kawan kedua I bagi tahu, …dia senyap-ja, lepas tu dia tahu saya ada ambil Concerta, sebab I letak dalam Instagram I ada ambil Concerta, dia cakap kenapa ambil benda macam nie, I cakap nie life saver, I cakap, kalau I tak ambil memang satu hari tu, I tak boleh focus kat kerja, macam mana nak submit assignment, macam mana nak belajar, I cakap. Dia cakap dah mind set I buat macam tu, dia cakap, sepatutnya tak perlu pun benda macam nie. I bukan yang buat benda macam tu, I cakap, I dapat nie since born, dia cakap macam dyslexia, ADHD, dia cakap macam benda tu tak wujud-lah, dia cakap…entah-lah"

(*I have a friend; I told her that I have ADHD, Dyslexia. That is the second friend that I told…she was quiet. When she knew that I am taking Concerta, because I put it up on Instagram that I am taking Concerta, she ask me why I am taking stuff like this. I told her it's my life saver, if I don't take it, the whole day I won't be able to focus doing work. How to submit assignments, how to study, I said. She said it just a matter of mind set on my side. The fact is I don't need stuff like that. I said I am not making this up, I got it since I was born. She speak as though Dsylexia, ADHD do not exist..I don't know*)

"Sebab I rasa macam, sebelum nie I ada bagi tahu kawan, dia macam tak tahu apa saya cakap…apatu, dia cakap, tak pernah dengar. Apa dyslexia? Tak pernah dengar pun, I senyap-je-lah"
(*Because I feel before this, I told a friend, she does not seem to understand what I said…what is that, she asked, never heard of it. What is Dyslexia? Never heard of it before. I just kept quiet*).

Having said that, evidence from a research that studied the networked experiences of disabled students in higher education reveals that this relationship is not straightforward and laden with complex and diverse experiences (Lewthwaite, 2011). Caution is needed to uncritically assume that positive experiences always entails when using social media technologies. Lewthwaite (2011) found that while social network experiences creates opportunity to "mobilise new ways of being, building social capital and mitigating impairment", others experience the same network as "punitive and disabling" (p. ii). For some disabled students, it supports 'normal' status while some students with invisible impairment encounter social experience of disability for the first time. Therefore, it would be interesting to compare experiences of these disabled students who were predominantly from UK universities with disabled students from the Asian region.

In conclusion, the purpose of this single pilot case study was to explore the relationship and experiences between a student with difficulties and current technology used for learning and other academic activities. The initial findings and reflection of this study suggests that mobile technology together with Web 2.0 technology particularly social media sites as well as video sharing sites can play a pivotal role in the lives of disabled university students for academic activities. It can also level the playing educational field for disabled students and create opportunities for social inclusion within the university community. Despite its exploratory nature as well as a single convenience sampling case study, this study offers initial insights into this complex relationship disabled students have with their technology particularly those used and appropriated for academic activities. These limitations can be addressed in future research to provide more definite evidence to this growing field of research.

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