Powering Up: The Value of Bringing Your Own Devices into Elementary Classrooms

By

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Abstract

Bring Your Own Device (BYOD) is defined as incorporating the use of students’ personal digital devices for classroom learning (Alberta Government, 2012). In 2012, the Peel District School was the first board to adopt a BYOD policy (Peel District School Board, 2013a). Despite not having a BYOD policy in the Toronto District School Board (TDSB), TDSB teachers continue to integrate BYOD into their classrooms. Through semi-structured interviews, this study examined how two TDSB teachers are using a BYOD approach in their classrooms. The findings of this qualitative research study highlighted that both participants had similar understandings of BYOD which centred around classroom learning. Some strategies for incorporating BYOD centered around the use of applications and websites such as Google Classrooms and social media (Twitter). The benefits associated with BYOD allowed students to practice being responsible BYOD users, and led to more collaboration and communication among students. Barriers for implementing BYOD in TDSB classrooms was infrastructure, particularly Wi-Fi access. With limited teacher resources for BYOD, recommendations include a year-long technology course to better assist pre-service teachers in integrating BYOD into their classrooms, and for the TDSB to create a BYOD policy.

Key Words: BYOD, technology integration, teacher experiences, strategies, student engagement
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Chapter 1: Introduction

1.0 Research Context

The current generation of students are considered ‘digital natives’, individuals born into a world of technology (Prensky, 2001). For digital natives, digital devices are an integral part of life (Male & Burden, 2014). The intrinsic nature of students to rely on digital devices has led teachers to advocate for the use of the Bring Your Own Device (BYOD) model in their classrooms (Male & Burden, 2014). According to Alberta Government (2012), the BYOD Model:

refers to technology models where students bring a personally owned device to school for the purpose of learning. A personally owned device is any technology device brought into the school and owned by a student (or the student’s family), staff or guests. (p. 2)

Teachers feel that it is their duty to ensure that students become responsible digital learners and citizens (Male & Burden, 2014). This is particularly evident in Ontario, where school boards have already adopted the BYOD model (People for Education, 2014; Ontario Public School Boards’ Association, 2009).

In 2012, the Peel District School Board was the first to adopt the BYOD model (People for Education, 2014; Ontario Public School Boards’ Association, 2009). With the rising popularity of BYOD among students and teachers, many other school boards quickly followed suit; such as the Ottawa Catholic District School Board, the Hastings and Prince Edward County District School Board, the Upper Grand and Waterloo Region School Board (People for Education, 2014; Ontario Public School Boards’ Association, 2009). Despite not having a BYOD policy in the Toronto District School Board (TDSB), many teachers have adopted the use of BYOD in their classrooms. The use and popularity of the BYOD model on an international
level has resulted in many research articles being published on the topic (Thomas, O’Bannon, & Bolton, 2013; Song, 2014; Wright 2015; Male & Burden, 2014; Kearney, Burden, & Rai, 2015). Presently, multiple international studies have been conducted on the implementation of technology in schools for classroom learning; these studies identify how the use of technology has not only empowered students but has facilitated learning for all students (Wright, 2015). However, due to the recent integration of the BYOD model in Ontario schools, little information exists about the integration of BYOD and teacher perceptions, particularly in the TDSB. Therefore, the purpose of this study was to examine teacher experiences in regards to the use of BYOD in TDSB classrooms.

1.1 Research Problem

The BYOD Model encourages collaboration and communication among peers, allows for differentiated and inquiry-based learning, and promotes thinking and personalized learning (Thomas et al., 2013; Song, 2014; Wright 2015; Male & Burden, 2014; Kearney et al., Burden, 2015). Current studies exploring teacher perceptions of classroom learning have been mainly conducted in the United States, Europe and Australia (People for Education, 2014). There are limited Canadian studies exploring the experiences of Canadian teachers on the use of BYOD. Even though current research provides an informative view of BYOD in international settings, it is important to explore how Canadian teachers, especially Ontario educators, feel about the use of BYOD for classroom learning and whether they believe it fits their teaching approach. This research study reviewed existing literature such as Rinehart (2012) and Thomas et al. (2013) on the potential uses of BYOD in the classroom, teacher perceptions of the usefulness of BYOD, and limitations, gaps and reservations about the use of BYOD in classrooms.
1.2 Purpose of the Study

There is a growing number of Canadian teachers, specifically in Ontario, who are incorporating the BYOD model in their classrooms (People for Education, 2014; Ontario Public School Boards’ Association, 2009). Despite the potential benefits of this model, these benefits cannot be generalized onto a Canadian population (People for Education, 2014). By examining teachers’ experiences with the use of BYOD for teaching and learning, this study serves as a guide for future and current teachers in adopting BYOD into their pedagogy. Therefore, this study examined teacher experiences in the TDSB with the integration of students’ personal digital devices for classroom learning and teacher instruction.

1.3 Research Questions

The key research question which guided this study was: How are teachers in TDSB incorporating students’ own digital devices into teaching and learning? The sub-questions were:

1. What are teachers’ experiences with ‘bring your own devices’ (BYOD) in their classrooms?
2. Why are teachers incorporating BYOD into their classrooms?
3. What are the benefits and challenges teachers face with incorporating BYOD into their classrooms?

1.4 Background/Positionality of the Researcher

In elementary school, I had several opportunities to use technology for learning. I was offered multiple opportunities to enhance my learning by having access to a computer in the classroom. Teachers further promoted the use of technology by allowing students to complete assignments using a computer. The use of technology continued throughout my education as I entered High School and University. Through my volunteer experiences, I have seen the slow
integration of students’ own digital devices for classroom learning. Despite such integration, the use of BYOD centered around students with exceptionalities. As a future teacher, I want to promote the use of BYOD for teaching and learning, and offer the opportunity for all students to learn through the use of technology, particularly through their own digital devices. By examining the use of the BYOD model among current TDSB teachers, this study would serve as a guide for experienced and novice teachers to adopt the use of students own digital devices for classroom learning.

1.5 Overview of the Study

This chapter examined the use of BYOD in classrooms by conducting a qualitative research study to gain insights about teacher experiences with the use of BYOD for classroom learning and teacher instruction. Chapter 2 reviews current literature on the use of students’ own digital devices and its effects on student learning. Chapter 3 examines the research methodology, where information is provided on sampling criteria, sampling procedures and participant biographies. The findings of my research are detailed in Chapter 4. Chapter 5 outlines the implications of my study, my recommendations, and areas of further research.
Chapter 2: Literature Review

2.0 Introduction to the Chapter

The following literature review examines research studies concerning teacher perceptions and the implementation of BYOD in classrooms. This literature review will be structured based on Rinehart’s (2012) and Thomas et al. (2013) organizational model. Additionally, information will be provided on the potential uses of BYOD in the classroom such as using BYOD for collaboration and communication, differentiated learning and games for learning. Further information will be provided on teacher perceptions of the usefulness of BYOD, and limitations, gaps and reservations about the use of BYOD in classrooms (Rinehart, 2012; Thomas et al., 2013).

2.0.1 Bring Your Own Device (BYOD) Model

BYOD Model (BYOD) incorporates the use of students’ personal digital devices for classroom learning. Students are welcome to bring in any personal digital device into schools (Alberta Government, 2012). According to the Alberta guide for schools (Alberta Government, 2012), there are five models of BYOD: the first model states the devices and models permitted for use in classroom learning; the second model defines the devices that can be used based on operating systems and their ability to support internet access. The third model distinguishes devices based on software compatibility, whereas the fourth model accepts all devices with internet access. Lastly, the fifth model encompasses any model that supports the first four BYOD models.
2.1 Potential Uses for BYOD in the Classrooms

There are a variety of uses for BYOD inside classrooms which include collaboration and communication among students (Thomas et al., 2013; Song, 2014), supporting differentiated learning (Steeg, Costley, Engelman, Gonzaley, Knutson, & Maroni, 2013; Milman, Carlson-Bancroft, & Boogart, 2014; Forgrave, 2002), increasing student engagement through games (Wright, 2015; Milman et al., 2014), and including students’ interest through inquiry based learning (Kearney, Burden, and Rai, 2015).

2.1.1 Collaboration and communication

Thomas et al. (2013) conducted a study in order to gain insight about teacher perceptions related to student’s personal cell phone use for classroom instruction. Thomas et al. (2013) discovered that most teachers were in support of cell phone use for classroom learning. Additionally, many teachers were found to have already implemented students’ personal cell phone use within their classrooms. Their findings suggest that cell phones can support student learning in a variety of ways through “content creation, student centered learning, authentic learning, and differentiation of instructions” (p. 296). Moreover, cell phone features such as texting, video recording, and camera were identified as enhancing student and teacher communication and collaboration.

Collaboration was further enhanced between teachers and students through the “mobility, applications, games and collaborative contextual environments” of cell phones (Thomas et al., 2013, p. 297) Likewise, Male & Burden (2014) proposed that the versatility of cell phones and other digital devices allows for easy access and dissemination of information among educators and peers, creating more space for collaboration and communication. In addition, Song’s case study demonstrates an example of student collaboration and communication.
Song’s case study (2014) looked at the anatomy of fish which provides insight into the use of digital devices in a collaborative manner in a classroom setting. The students were asked to take pictures on their cell phones of various fish at a local fish market. The pictures were shared among students via a mobile application called Edmodo to create discussion and improve understanding of the anatomy of fish. The improvement in students’ understanding was shown through a pre- and post-test where students were asked to draw a concept map before and after inquiry (Song, 2014). This case study illustrates the ability of BYOD to enhance collaboration, communication, and easy access and dissemination of information among the students and teacher. It further helps establish that BYOD can lead to unity among students as opposed to the common belief of it creating disconnect among users. Although these studies help us understand how BYOD can enhance collaboration and communication among student bodies, it does not address how BYOD in classrooms allows for differentiated learning to take place.

2.1.2 Differentiated learning

Recent research studies have been conducted to explore the role of digital devices in supporting differentiated learning within classrooms (Steeg et al., 2013; Forgrave, 2002; Milman et al., 2014). The versatility of digital devices allows for differentiated learning to take place, whereby the content can be taught to meet students’ individual needs (Steeg et al., 2013; Forgrave, 2002). Steeg et al. (2013), and Forgrave (2002) demonstrate that devices, such as iPads, can be used to aid struggling readers and students with learning disabilities to improve their reading and comprehension through the text to speech feature. The text to speech feature also enables struggling readers and auditory learners to fully participate in the learning experience and discussions, as they listen to the text in present time rather than reading it on their own (Forgrave, 2002; Steeg et al., 2013). Moreover, the increased availability of applications for
digital devices allows students to explore different methods of learning and to learn at their own pace by personalizing the settings and difficulty levels (Chou, Block, Jesness, 2012). The students are also able to take ownership of their learning and set their own learning standards (Chou et al. 2012). Differentiated learning can also take place through the use of game-based learning.

2.1.3 Games and learning

Cell phones, as part of the BYOD Model, can also be used to access games and incorporate them into student learning (Wright, 2015; Milman et al., 2014). For example, in New Zealand, a student teacher incorporated the game Angry Birds as a precursor to the actual lesson plan of creating their own sculptures (Wright, 2015). The students played the game, made note of the characteristics of the Angry Birds, and applied those characteristics to birds in New Zealand. The student teacher then encouraged the students to explore their creativity by creating bird sculptures using the previously identified characteristics. This example demonstrates the use of digital devices in fostering students’ “imagination and creativity” (Wright, 2015, p. 465-466). The use of cellphone-based games within a classroom setting to encourage creativity can be identified as a new insight into the role BYOD and student learning. As illustrated in the example above, accessing games on digital devices can generate innovative ways to teach students and deliver creative lessons. Nonetheless, there are other methods that teachers can employ to increase student engagement in classrooms; one such method is inquiry-based learning.

2.1.4 Inquiry-based learning

Inquiry-based learning is a “process of posing questions, gathering and analyzing data, and constructing evidence-based explanations and arguments by collaboratively engaging in investigations to advance knowledge and develop high-order thinking skills” (Song, 2014, p. 51).
This process involves teachers introducing a topic of inquiry to the classroom and students seeking out answers by gathering information to support their findings (Song, 2014). Song’s research has recently demonstrated that the process of inquiry-based learning can be implemented through the use of the BYOD model. As seen in Song’s case study (2014), students used BYOD to inquire about the anatomy of four fish. By conducting their research with the use of their devices, students were able to self-direct and take complete control of their learning (Kearney, Burden, and Rai, 2015). Moreover, by using their own devices, there is a sense of *personalization* to their learning since student’s devices are an integral part of their lives (Kearney et al., 2015; Alberta Government, 2012). By implementing inquiry-based learning through BYOD, students have a wealth of information right at their fingertips. Song’s case study (2014) identified that students, through the use of their personal devices, gained increased knowledge of fish anatomy and surpassed the content available in their textbook. This highlights the notion that personal digital devices can offer students more content knowledge in comparison to a traditional textbook (Song, 2014). The students were also identified as exhibiting positive attitudes toward science-based inquiry with the use of their personal digital devices (Song, 2014). Overall, the use of BYOD in inquiry-based learning allows teachers to peek students’ interest and make courses, such as science, exciting and fun. The concept of introducing fun into courses through BYOD can help promote student engagement in classrooms. The studies mentioned above, help us understand the use of inquiry based learning, but they do not address what teachers’ perceptions are in terms of the usefulness of BYOD in classrooms.

**2.2 Teachers’ Perceptions of the Usefulness of BYOD in Classrooms**

Teachers support the use of BYOD in classrooms as it allows educators to teach responsible digital usage to students and share the ‘expert’ role (Male & Burden, 2014; Steeg et
BYOD also enhances student-centred learning where students can explore their learning outside school walls, making learning accessible anywhere and anytime (Gurung & Rutledge, 2014).

2.2.1 Affirmation of BYOD by teachers

Even though many benefits of using digital devices in classrooms have been identified, it is still essential to determine teachers’ perceptions towards the integration of personal technologies. Male & Burden (2014) discovered that a large number of teachers agreed with the use of students’ personal digital devices in the classroom. These teachers viewed prohibiting the use of digital devices for content learning as a “sense of lost opportunity” (p. 430). Additionally, in schools where a limited form of the BYOD model is implemented, teachers expressed frustration towards this “restrictive online environment”, which confined students’ accessibility to content learning (Male & Burden, p.430). To overcome this restrictive environment, teachers often have to struggle with school administration to gain access to certain applications and websites. This is evident when Male & Burden (2014) discuss the struggle of UK primary school teachers to gain access to Twitter and YouTube for content learning in their classrooms. These websites, although banned within schools, are regularly accessed by students at home, in between classes and outside of school. The continuous use of these websites by students reinforces the importance of providing a safe environment to access websites and generate classroom discussion on the online content. In my viewpoint, this leads to the creation of a new role for teachers, where they enable students to become responsible digital citizens.

2.2.2 Moral obligation to students with the use of BYOD

Teachers feel that it is their duty to ensure that students become responsible digital learners and citizens (Male & Burden, 2014). To produce conscious digital citizens, students
must be taught to think critically and question the extensive amounts of content available online and the source of the content (Male & Burden, 2014). This can only be achieved when students are given the opportunity to explore online content without restrictions. For example, YouTube, a widely used video-sharing website, contains content that can be inappropriate for students (Male & Burden, 2014). However, by enabling students to handle age-inappropriate content in a safe environment, such as a classroom, they can learn to be conscious digital citizens (Male & Burden, 2014). In general, there is a sense of moral obligation that drives teachers to ensure that their students do not become “passive learners… [,] passive citizens” or and become “manipulated” by online content (Male & Burden, 2014, p. 434). Besides teacher responsibilities, the use of BYOD can also create co-learning between teachers and students.

2.2.3 Sharing the ‘expert’ role

In order to be successful educators, research shows that more teachers have begun to share the ‘expert’ role with their students (Male & Burden, 2014; Steeg et al., 2013). This sharing of roles is facilitated through the BYOD model, which allows teachers to implement student-directed learning (Milman et al., 2014). Student-directed learning enables students to take ownership of their learning by exploring and attaining all the knowledge necessary about a specific topic; while the teacher acts as a facilitator or guide (Milman et al., 2014). Song’s case study (2014) highlights the methods a teacher can use BYOD to facilitate students’ exploration into the anatomy of fish as students take on the role of the researcher and expert. Once students have acquired knowledge, and have become experts in the field, they share this knowledge with their peers and educate one another (Song, 2014). By sharing the role of expert through BYOD, students reported feeling empowered because they had control over their learning (Steeg et al., 2013; Kearney et al., 2015). Moreover, research demonstrates that BYOD increases students’
self-esteem, motivation to learn and positively impacts students’ learning (Forgrave, 2002; Steeg et al., 2013; Milman et al., 2014). BYOD also leads to the personalization of student learning.

2.2.4 BYOD and personalization of student learning

Research illustrates that teachers believe the use of BYOD brings a sense of personalization to student learning (Kearney et al., 2015; Male & Burden, 2014). The use of personal digital devices enforces the idea of school as “more realistic”; permitting students to “mimic real life toolsets” (Kearney et al., 2015, p. 56). It also bridges the gap between school and home learning by allowing students to understand that learning can take place anywhere and anytime (Gurung & Rutledge, 2014; Male & Burden, 2014). According to teachers, the use of BYOD creates positive student attitude towards learning and engages students proactively in learning (Steeg et al., 2013). Steeg and his colleagues display the increased positivity and proactiveness in learning among students when teachers in their study allow students to use iPads for classroom learning. The personalization of student learning, in my viewpoint, is essential for classroom learning. I believe that by improving student attitudes towards learning, teachers can enable students to grasp classroom content at a deeper level. While these studies help us address what teacher perceptions are in terms of the usefulness of BYOD in classrooms, they don’t address the limitations, gap and reservations with the use of personal digital devices.

2.3 Limitations and Reservations about Using BYOD in Classrooms

Despite having benefits in using BYOD in classrooms, there are limitations associated with its usage (Thomas et al., 2013). These limitations include inequitable learning opportunities for students (Dixon & Tierney, 2012; Alberta Government, 2012; Sager, 2011), health concerns associated with radiofrequency generated by Wi-Fi routers (Peel District School Board, 2013b), and teacher inexperience with digital devices (Steeg et al., 2013).
2.3.1 Reservations: Inequity, distractions & cheating

Even though, BYOD models are considered to increase student engagement and learning, there are still reservations about the integration of this model into classroom learning (Thomas et al., 2013). Some of the reservations identified in research are inequitable educational experiences, limited accessibility to programs and application on digital devices, classroom distraction and cheating (Thomas et al., 2013). A reservation often associated with BYOD is that it promotes inequitable educational experiences (Dixon & Tierney, 2012; Alberta Government, 2012; Sager, 2011). It is believed that by allowing students to bring their own personal devices, schools create a gap between affluent and non-affluent students (Alberta Government, 2012; Peel District School Board, 2013a; Sager, 2011). The gap occurs due to the inability of all students to have access to the same types of digital devices, which leaves some students at a disadvantage (Sager, 2011; Alberta Government, 2012). Despite such misgivings, research has found that students who do not have access to personal digital devices are provided with school-owned devices in classrooms (Alberta Government, 2012; Peel District School Board, 2013a). As for concerns related to accessibility to programs and applications on digital devices, these are overcome by teachers accommodating for all student devices during lesson plans (Dixon & Tierney, 2012).

Novice users of BYOD models fear that the use of digital devices will lead to distraction and cheating within classrooms. However, research shows that students given ownership of their learning are more positively engaged in classroom learning (Male & Burden, 2014). Thomas et al. (2013) identified through teacher surveys that there is still concern about students’ texting in class. Teachers are worried that in-class texting can be used as a means to cheat; whereas ringing cellphones can lead to classroom disruptions. There is also concern that texting is hindering
students “ability to speak and write proper English” (Thomas et al., 2013, p. 299). Despite such worries, research shows that students are able to “code switch between modes of communication” when they are no longer texting (Thomas et al., 2013, p. 299). Code switch refers to students using “text speak/speech to standard English” (Turner, 2009, p. 60). In addition to teachers concerns, parents have also voiced their apprehension about the presence of Wi-Fi routers and radiofrequency.

2.3.2 Health impediments

The increased use of BYOD in schools has led to parental concerns over the role of Wi-Fi routers and radiofrequency towards students’ general health (Peel District School Board, 2013b). Nonetheless, schools in conjunction with Health Canada (2011) have installed Wi-Fi routers because “based on scientific evidence…low-level exposure to radiofrequency energy from Wi-Fi equipment is not dangerous to the public” (Health Canada, 2011; Peel District School Board, 2013b; Alberta Government, 2012). Furthermore, the Alberta Government (2012) has identified health concerns related to the use of digital devices, such as strained eyesight, and implemented a health and wellness program within its schools aimed at lowering the health risks associated with the use of digital devices.

2.3.3 Inexperienced teachers

A major limitation to the use of BYOD within classrooms is the teachers’ inexperience with digital devices (Steeg et al., 2013). Steeg et al. (2013) illustrated that inexperienced teachers felt anxiety about using iPads within classrooms. However, when these teachers struggled with the iPad, there students came to their aid, showing them how to run certain applications. This resulted in a role reversal whereby students took on the role of the teacher and guided teachers with the use of technology (Steeg et al., 2013; People for Education, 2014). Moreover, some
school boards have in place programs to help educators learn how to use technology and incorporate it into their classroom instruction (Peel District School Board, 2013a).

2.4 Conclusion

BYOD has shown to increase student engagement and enhance student learning (Wright, 2015). While BYOD is seen to provide many benefits to classroom learning, there are still some reservations about its use in classrooms. While teacher experiences are key to gaining insight about the use of BYOD, most research conducted focuses primarily on international teachers’ perspective. As seen from studies such as Thomas et al., (2013), Wright (2015), Song (2014), and Male & Burden (2014) teachers do view BYOD as important. They believe BYOD promotes collaboration and communication among peers, provides students with ownership over their learning, fosters co-learning between teachers and students, and promotes creativity (Thomas et al., 2013; Song, 2014; Wright 2015). Despite such benefits to BYOD, there are some limitations to BYOD such as inequity, class disruptions, and cheating (Dixon & Tierney, 2012; Alberta Government, 2012; Sager, 2011). These perspectives are providing key insights into BYOD, however, they offer an international perspective. Therefore, the purpose of this study was to examine teacher experiences in regards to the use of BYOD in TDSB classrooms. The study also looked at whether teachers view BYOD as useful to their classroom instruction and how they incorporated students’ own digital devices into teaching and learning.
Chapter 3: Research Methodology

3.0 Introduction to the Chapter

This chapter provides an overview of the research methodology to explore, “How are teachers in TDSB incorporating students’ own digital devices into teaching and learning?” Data collection, participant sampling and inclusion criteria are also described in this chapter. Procedures concerning data analysis, ethics review, and the strengths and limitations of the methodology are also detailed within the chapter.

3.1 Research Approaches and Procedures

This research study used a qualitative research method, consisting of semi-structured interviews, to collect pertinent data from teachers. By conducting qualitative research, I drew on the characteristics of qualitative research such as participants’ meanings, emergent design, reflexivity and a holistic perspective (Bogdan & Biklen 2007; Creswell, 2013). Qualitative study is fluid and naturalistic in form, as it allows studies to be conducted in their natural environment to gain a deeper understanding and interpret the topic at hand (Creswell, 2013). By studying things in their natural environment, researchers avoid a disconnect between the natural environment and “the meaning people [and participants] bring to them” (Creswell, 2013, p. 43-44). By conducting semi-structured interviews to collect data, the researcher is able to gain insight about the topic at hand while offering the researcher a glimpse into the world of the participant, their lived experiences (Bogdan & Biklen 2007; Creswell, 2013; Turner, 2010). Through this emergent design, researchers are able to provide a holistic account of their study. These characteristics applied to my own qualitative study and offered glimpses into the practices of teachers surrounding the use of BYOD. Through interviews conducted with two teachers in the TDSB, this study provided a holistic viewpoint of BYOD and classroom instruction.
3.2 Instruments of Data Collection

In order to collect data, researchers conduct interviews to gain knowledge about a given topic (Creswell, 2013). These interviews are often conducted face-to-face where there is verbal exchange of words between researcher and participant (Fontana & Frey, 2000). Interviews conducted can be structured, semi-structured or conducted in groups (Fontana & Frey, 2000; Turner, 2010). According to Creswell (2013), interviews allow access to the lived experiences of participants about a given topic. Therefore, I interviewed two teachers to gain insight about their experiences with the use of student’s own digital devices for classroom learning.

Structured interviews consist of researchers asking a predetermined list of questions to all participants (Fontana & Frey, 2000). The predetermined questions are often closed ended and systematic in nature. This allows for a limited set of responses with little variation. Responses obtained through structured interviews are rationale in nature, however they may lack emotion (Fontana & Frey, 2000).

In semi-structured interviews, participants are asked the same set of questions but the questions asked are open-ended. By asking open ended questions, the interviewer is able to gather data which “fully express[es the] viewpoints and experiences” of participants (Turner, 2010, p. 756). To obtain deeper insights into teachers’ experiences with BYOD, I conducted face-to-face semi-structured interviews with each individual teacher.

3.3 Participants

In this section, sampling criteria and sampling procedures for participant recruitment are outlined. I have also provided short biographies for each participant. The biographies highlight the differences in circumstances and attitudes among participants, which may affect their experiences and understanding of the BYOD model (Riley, Sullivan, & Gibson, 2012).
3.3.1 Sampling criteria

To obtain data for my research questions, I interviewed teachers from the TDSB who consistently used BYOD for classroom instruction and student learning. The following criteria was applied to recruit teachers: teachers need to be part of the TDSB; teachers need to have consistently used technology for classroom instruction; and teachers needed to have incorporated the use of BYOD in their classrooms. I now turn to describing participant recruitment.

3.3.2 Participant recruitment

In qualitative research, the three sample approaches to consider for recruiting participants are convenience, judgement/purposeful, and theoretical sampling (Marshall, 1996). Convenience sampling considers participants who are easy to access. Despite saving time for the researcher, this sample method is not representative of the population and might produce bias because of the availability of participants. For purposeful sampling, participants are chosen based on their knowledge about a given topic of study (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015; Creswell, 2013). Theoretical sampling considers participants based on their knowledge of a given field. Data is collected from participants in order to add to theories being developed (Marshall, 1996; Palinkas et al., 2015).

Amongst the three methods of sampling, I adopted the use of both convenience and purposeful sampling for my study. In order to acquire participants for my study, I followed my sampling criteria based on teachers in the TDSB and their adoption and experiences with BYOD in their classrooms. Furthermore, participants were recruited, through my current and past practicum placement experiences in the TDSB as a teacher candidate in the Master of Teaching program at OISE. Participants chosen helped me to recruit other teachers for my study through
convenience sampling (Suri, 2011).

### 3.3.3 Participant biographies

Both participants in the study were educators in the TDSB who had adopted a BYOD approach for more than five years at the time of the study. They both taught in the TDSB, each with eight years of experience in a classroom setting. The participants were given pseudonyms for anonymity and are referred to as such throughout the study.

**Athena**

At the time of the study, Athena was teaching Grade 8 students and had been doing it for eight years. She also had experience teaching Outdoor Education to students from Grades 4 to 12. She had always taught in the TDSB and always had an interest in technology. Her personal interest in technology carried over into her teaching approach as she integrated the use of students’ personal digital devices into her classroom. In her classroom, students were given multiple opportunities to use their personal digital devices daily. Athena believed that by allowing students to practice BYOD in classrooms, they would acquire the necessary skills to become responsible citizens and use their devices properly.

**Apollo**

At the time of the interview, Apollo was working for the Ministry of Education to support the seventy-two school boards in Ontario. He usually taught Grades 9 to 12. For Grade 9 and 10, Apollo taught Science and for Grade 11 and 12, he taught Chemistry. Interested in technology from a young age, Apollo shared his love and knowledge of technology with his students. He believed that by allowing students to use their personal digital devices in classrooms, he was doing his part in teaching students the proper etiquette of using their devices appropriately as well as preparing them for the workforce.
3.4 Data Analysis

Data analysis requires the researcher to collect data and examine it (Creswell, 2013). Often data analysis takes place in the following order: data is organized, examined and re-examined, where “coding and organizing themes, representing the data, and forming an interpretation of them” takes place (Creswell, 2013, p.179). The data is collected and examined in order to gain insight pertaining to the research topic or question (Creswell, 2013). The emergent themes can take the form of words, “phrases, expressions, or ideas […] common among research participants (Turner, 2010, p. 759). This requires organizing data into themes based on participants’ responses. To create themes, I first created codes which were put into categories and subcategories (Saldana, 2009). These categories and subcategories were later transformed into four major themes of my research study (Saldana, 2009).

My codes were organized into three types of codes: In Vivo, Descriptive, and Value (Saldana, 2009). I used Descriptive Codes to describe the “topic of a passage” (Saldana, 2009, p. 70). In Vivo codes were used to provide my participants with a voice by using their exact words (Saldana, 2009). Value codes allowed me to interpret and “reflect [on] a participant’s values, attitudes, and beliefs” (Saldana, 2009, p. 89). After codes were established using the three coding methods, four major themes emerged and were connected back to existing literature.

3.5 Ethical Review Procedures

While conducting a qualitative study, there are many ethical considerations to contemplate such as confidentiality and consent procedures, right to withdraw, researcher and participant relationship, and the risk and benefits within a study (Houghton, Casey, Shaw & Murphy, 2010; Tracy, 2010). Tracy (2010) highlights four ethics in qualitative research, which are procedural, situational, relational and exiting ethics. Procedural ethics involves mandates put in place by
organizations and institutions to protect participants. The mandate includes the following, “do not harm, avoid deception, negotiate informed consent, and ensure privacy and confidentiality” (Tracy, 2010, p. 847). Procedural ethics also emphasizes the importance of being honest and focusing on the accuracy of research. Participants are protected as personal information is stored securely and only accessible to researchers (Tracy, 2010). I followed this mandate when in contact with my participants. I ensured their confidentiality and privacy was protected by assigning them pseudonyms. I excluded any information which might identify them and inform them of any known risks of participating in my study.

Situational ethics does not follow a set of rules since each case is considered unique (Tracy, 2010). Ethics is based on guidelines which depends on the nature of the research and the context in which it is represented. Relational ethics takes into consideration the impact a researcher might have on participants through interactions and over the course of the study (Houghton et al., 2010; Tracy, 2010). Relational ethics involves researcher and participant practicing “mutual respect [and] dignity” with one another, a standard of care which is established between the two parties (Tracy, 2010, p. 847). During my interactions with my participants, I brought this standard of care and respect to our relationship. I also provided participants with a consent form which outlined my study, the right of participants to leave the study at any point, ethical considerations of the study and participant expectation throughout the study process. Exiting ethics refers to the overarching and continuous ethical procedures which are followed long after the study is completed. The researcher is mindful of existing ethics as he/she presents their findings to the public (Tracy, 2010). I took this into consideration and continued to practice ethical standards long after my study was completed and the research findings were presented to the public.
3.6 Methodological Limitations and Strengths

The limitation of this study was the small sample size consisting of two teachers being interviewed for study purposes and data collection. This small sample size limited generalizability of the data to a wider range of teachers. Moreover, the participant pool for the study was limited to teachers only. Despite this restriction, a smaller sample size allowed for a thick versus thin description of teacher experiences (Geertz, 1973; Creswell & Miller, 2000; Ponterotto, 2006; Bogdan & Biklen 2007). This allowed for a deeper understanding of teacher’s lived experiences with the use of BYOD for classroom instruction and teaching (Bogdan & Biklen 2007; Creswell, 2013; Turner, 2010). Furthermore, purposeful sampling allows participants to be chosen based on their knowledge about the topic of study. Their knowledge and expertise about the topic further adds to the study at hand (Palinkas et al., 2015; Creswell, 2013).

Creswell (2013) highlights the importance of studying and observing things in their natural environment. He argues that by delving into the world of participants, the researcher is better able to gain insights about participants and the topic of study (Creswell, 2013). Although researchers have access to participants, we are unable to observe them in their natural environment, their classrooms. This limited my study as I was unable to observe the direct use and effect of BYOD on classroom instruction and student learning. Despite such setback, semi-structured interviews allowed me the chance to ask questions of teachers, hearing directly from the source, about the use of BYOD for classroom learning.

The relationship between researcher and participant can affect the study at hand (Houghton et al., 2010). As interviews take place, a rapport is created between the interviewer and the participant. This rapport can affect the outcome of the study depending how the relationship is
managed and carried through. Another issue which arises is a power imbalance which in turn can blur the lines between the role of the researcher and participant and raise ethical concerns for the purpose of the study (Houghton et al., 2010). If such biases occur in a study, it is important to voice them in your research (Merriam, 2002).

### 3.7 Conclusion

In this chapter, I explained the research methodology for my qualitative study. I began by explaining the significance of qualitative research followed by the research approaches and procedures of my study. I, then, identified the instruments for collecting data through the use of semi-structured interviews. I also explained the difference between structured and semi-structured interviews. Next, I discussed the sampling criteria for recruiting participants for my study and explained the three sampling procedures. I emphasized both the use of convenience and purposeful sampling as the approach for my study. I also discussed analyzing my data by coding and organizing themes and interpreting it. I next highlighted the different ethical procedures to consider in research such as procedural, situational, relational, and exiting ethics. Lastly, I discussed the methodological limitation and strengths of my study such as sample size, lack of classroom observations, as well as research participant relationship. In the next chapter, I report my research findings.
Chapter 4: Research Findings

4.0 Introduction to the Chapter

In this chapter, I report the findings that emerged from the interviews with two elementary school teachers in the Toronto District School Board (TDSB). The two interviews were conducted in the summer of 2016, a month apart. I used the data gathered from the interview process to answer my main question: How teachers in TDSB are incorporating students’ own digital devices in teaching and learning. To answer this question, I organized my research findings into four themes (and several sub-themes): 1) Teacher understandings of BYOD, 2) Benefits of incorporating BYOD in the classroom, 3) Strategies for incorporating BYOD, and 4) Barriers to the implementation of BYOD. The themes were described, interpreted, and examined in relation to the existing literature in Chapter 2. I then concluded the chapter by summarizing my findings and providing a preview of Chapter 5.

4.1 Teacher Understanding of BYOD

A major theme that emerged from the data related to participants’ interpretations of BYOD. This section examines participants understanding of BYOD, and topics that relate to their personal experiences with technology and their reasoning for the integration of students’ personal digital devices into their classrooms.

4.1.1 Varying perspectives to the definition of BYOD

When examining the data gathered, both interviewees showcased similar understandings about BYOD. They both described it as “students bringing in their own devices” for learning. Despite such similarities, Athena, one of the participants in this study, seemed to apply BYOD in a larger context where individuals “can access the internet [using] computer, laptop, [and] cellphone” both inside and outside schools. Apollo, my other participant however, applied
BYOD in “an educational context” and saw the use of personal digital devices as a teaching and learning tool for both teachers and students. He demonstrated a good understanding of BYOD, when he made connections to curriculum as well as cross-curricular links. He stated:

It [BYOD] would be a meaningful use of the technology where the students are bringing in their own device and the teacher is having a lesson or some sort of activity that’s going to be a curriculum and cross curricular link. It’s also looking at assessment and how the students are using that device to complete that task or assignment.

Athena also mentioned a cross curricular link to the use of BYOD when describing her use of digital devices in her lessons. She mentioned how she was able to infuse “science and math” particularly when discussing “Science in the News [and] Math in the News”. The participants’ understanding of BYOD seems to be similar to the findings by Milman, Carlson-Bancroft, & Boogart (2014) and Alberta Education (2012). Both resources highlight the importance of BYOD into teaching and learning and make connections to cross curricular links through BYOD.

4.1.2 Teachers’ personal experiences with technology

Through the interview process, both participants indicated a high level of technology use in their personal and professional (teacher) life. Apollo mentioned how he is “always kind of decked out with technology such as laptops, iPads and cellphone,” regardless of setting. Athena also mentioned her use of technology, specifically the use of her “cellphone and computer” at home and in school. This demonstrates the connection between BYOD in teachers’ personal and professional life and how the two are intertwined much like for students.

Apollo described his personal experiences with technology and how those experiences had influenced his teaching practice. He stated that:
When I was in Kindergarten and we had the old computers and we used to play “Adventures” on it. It’s always been a personal interest and so this is something I continuously go back to. I remember programming games in Grade 3 or 4 on some of the software like hyper studio so that all started very early for me. When I went into teaching, I naturally brought those educational technology things with me. This is an interest of mine and I think it can help with student learning, getting engagement and getting students prepared to utilize this technology. So that is kind of my experience with it.

The above quote shows this teachers’ ease, personal interest and comfort level with technology. Given multiple opportunities to use technology influenced Apollo to see the benefits of technology and integrate it into his pedagogy. Similarly, Athena brought her personal experiences into her teaching practice as she used software and hardware she was comfortable with such as “social media, tweeting and Facebook”. She further demonstrated her comfort level with technology as well as the bridge between BYOD use at home and at school where learning can take place everywhere. She stated:

I use social media to follow a lot of educational, personal, professional organizations. I look up articles to get current pedagogy and instructional practices. I also have a Nexus player in my house. We also watch videos and choose videos as a whole class.

The above quote shows how Athena used social media for both personal and professional purposes. She acquired more knowledge about “current pedagogy” using her personal digital device from anywhere, showcasing that learning can happen anywhere. Athena’s understanding of the use of BYOD is similar to the findings by Gurung and Rutledge (2014) and Male & Burden (2013) as they mention how with the use of BYOD, learning is endless and has no bounds.
Both Apollo and Athena were influenced by their positive experiences with technology which has allowed them to integrate technology into their teaching instruction. They see the use of BYOD as a personal form of learning, an idea that is also present in literature. Kearney, Burden, and Rai, (2014) and Male & Burden (2013) discuss how the use of personal digital devices allows individuals to connect to content learnt and allows students to experience “real life” opportunities.

4.2 Benefits of Incorporating BYOD into Classrooms

Through the interview process, both participants highlighted the benefits of using BYOD in their classrooms and teaching practice. Both participants agreed that one of the benefits associated with incorporating BYOD into your classrooms was teaching students to be responsible BYOD users. The incorporation of BYOD also led to more collaboration and conversation between students, and inquiry based learning to take place.

4.2.1 Teaching about responsible usage of BYOD

One of the reasons teachers in this study wanted to incorporate the use of BYOD in their classrooms was to teach students responsible digital usage in relation to their personal devices. Both participants reported that teaching students proper use of their personal digital devices was an important aspect of being a responsible citizen. When asked why Apollo incorporated BYOD into his classroom, he commented on the lack of etiquette. He stated:

One of the main things is because there is no course on etiquette of using devices. They [students] are at home and on their devices. The new Phys Ed curriculum talks about screen time management and no sexting, but I also think it’s about management of life. So, I will put stuff on a Google Calendar and I will show them how to sync it with their phone.
I will also put the homework up and it will already be there for them. I’m trying to show them the educational value and the device they have and how to use it properly.

The above quote demonstrates how Apollo related the proper usage of personal digital devices to proper “etiquette” and respect since students have unlimited access to their devices. He reported teaching them life skills which they can use in the future, outside school walls. He also saw the Phys Ed curriculum to be more than the physical concerns associated with BYOD. He understood it to mean mental health and being mindful in terms of taking care of yourself and managing your time well. He provided his students with the skill set to achieve mindfulness by showing them life management skills through scheduling life and school events such as homework on Google calendar to access anywhere and at any time.

Athena also reported similar viewpoints to that of Apollo when she mentioned that for students to be “respectful, responsible citizens, they need to know how to use their devices properly”. However, Athena further stated that students “need to know how to access things responsibly”. Apollo also discussed the validity of sources on the internet and “determining [with students whether] it’s a good site” or not. He described that often students believe anything on the internet just because it is online or there is a YouTube video about it. Students need to understand that “anyone can make a YouTube video” or create a website. It is important to teach students skills on accessing valid information as well as determining what constitutes a credible source. This life skill will not only help students in future schooling, but also in the workforce and their personal life. They will be able to think critically and come to question things. The participants reported that their duty is to teach students proper “etiquette” on using their devices and always inquire about a source.
Current literature supports participants’ viewpoints about teaching students’ responsible ways of using their devices. Male and Burden (2013) and Prensky (2001) consider students to be “digital natives” born into a world of technology. They believe that students need to be taught the necessary skills to question online content and think critically when examining online material (Male & Burden, 2013). Much like the participants, research shows that teachers believe it is their duty to teach responsible ways of using their personal digital devices (Male & Burden, 2013).

4.2.2 Student engagement and collaboration with the use of BYOD in classrooms

Participants also reported integrating BYOD in their classroom environment because it led to “more collaboration between students and more engagement with course content”. Apollo mentioned that BYOD allowed students to be more engaged because they could “archive their experiences, much like documenting their learning”. This showcased Apollo having students shifting from just “documenting their lives” to “documenting their learning” and sharing their learning with peers. Song (2004) supports the idea that the use of BYOD allows students to create positive attitudes towards learning, which leads to more engagement with curriculum content. Similar to my findings, Thomas et al. (2013) mention how the use of personal digital devices allows students to document their learning and share it with educators and peers.

Athena had similar views as she stated how BYOD allows students to share and collaborate with one another both through “face to face” and gadget interactions. She attributed this high engagement to both the hardware (gadgets themselves) and software (Snap Chat and Facebook). Song (2014) supports the use of applications for the use of documenting student’s learning and sharing information amongst peers and teachers.
4.2.3 Inquiry-based learning with BYOD

Athena and Apollo both agreed that BYOD allows for more student-centered learning to take place. Athena mentioned that BYOD allows students to inquire about “things that are more meaningful to them while connecting [it] to content”. She further stated that:

Students can get deeper, richer learning because they aren’t limited to what I am spewing at them. I say, “our topic today is this, viruses and bacteria.” Find a virus, what does it do. It allows them to go in a direction that they are interested. It’s easier to do when they have devices in their hands, and you can differentiate a little bit. It has given them an ownership of their learning.

The above quote demonstrates how Athena incorporated an inquiry stance into her Science class as students picked a virus of their choice and allowed students to take ownership of their learning and inquired about it. Similar to Athena, Apollo allowed students to have choices when learning about the types of power. He encouraged students to pick a power of their choice to build further knowledge in Science. Apollo also allowed students more freedom in the submission process where students could submit their work via various mediums such as “promotional videos through YouTube, and act it out and film it”. Both Apollo and Athena believe that giving students choice in their learning allows them to take ownership over their learning while acting as a facilitator when needed.

Literature supports participants’ viewpoints about inquiry-based learning leading to student ownership over their learning. Kearney, Burden, and Rai (2014) highlight how students are able to redirect their learning when using their personal devices and researching topics of interest to them.
4.3 Strategies for Incorporating BYOD in the Classroom

In order for educators to incorporate BYOD into their classroom, both participants suggested “Just do[ing] it”. Participants mentioned having no resources available for incorporating on the how to strategies in incorporating BYOD. The subthemes discussed center around the applications and websites teacher used to support student learning as well as teacher supports in incorporating BYOD into classrooms.

4.3.1 Applications and websites used to support student learning

Throughout the interview process, both participants mentioned incorporating Applications (Apps) and websites to foster student learning. Both incorporated Google Classrooms into their class and reported its easy access in both web and App form. They also reported how Google Classroom was beneficial for both students and teachers. It allowed for convenience as students didn’t “lose their work” and teachers were able to “keep all of the [students] work in one place”. Both also agreed on how Google Classroom allowed students to “share resources”, Apollo described Google Classroom, leading to “more interaction and conversation”. Athena described the “collaboration” it led to as students “love[d] being able to access one document and see each other’s changes”. This led to further learning as students shared ideas with one another and pooled their information together.

In addition to using Google Classrooms, Athena used a classroom website in order to connect to parents. This demonstrated that Athena kept conversation open between herself, parents and their child. Both participants allowed students to access and contact them via social media (Twitter, Facebook, Snapchat and Instagram). This was done using a “school” based social media accounts. In relation to literature, Song (2014) supports the use of applications and website in supporting students’ learning. In his study, he highlights the use of Edmodo (App and
Website) in enhancing students learning as peers and teachers are able share information with one another. In terms of using social media (for classroom learning) through BYOD scarce information exists on the topic.

4.3.2 Teacher supports in using BYOD

Both participants reported using “social media” for BYOD support. Athena and Apollo both suggested following teachers who incorporated BYOD into their instruction on social media (Twitter). In contrast, Apollo also “searched up BYOD chats” as a “great way for teachers to share resources”. He stated that “reaching out to people was important”. Athena however relied on websites such as “EduGains, and MindShift” which she recently discovered. She mentioned how both website provided teachers with some information about the how to when incorporating students’ personal digital devices into learning.

In contrast to Athena, Apollo mentioned attending professional development conferences in relation to the integration of student technology into classrooms. He mentioned “look[ing] outside your own school” and attending “different conferences”, such as “Connect and BIT” which offered “cool sessions on what to do [in relation to BYOD]”. Connect and BIT conferences allows teachers to share their experiences and expertise with technology in a classroom setting (About CONNECT, 2017). Research is scarce in the area of teacher supports and how to set up a BYOD classroom.

4.4 Barriers Affecting the Incorporation of BYOD in Elementary Classrooms

The participants reported a few barriers associated with the integration of BYOD in Toronto District School Board (TDSB) classroom. Both participants attributed this to TDSB classrooms having limited or no access to Wi-Fi and the accessibility to personal digital devices.
4.4.1 Limited or no access to Wi-Fi

Both participants attributed barriers associated with the integration of BYOD to infrastructure. Apollo mentioned that one of the main challenges to BYOD incorporation is Wi-Fi. He stated that:

Some schools have Wi-Fi and some schools don’t. I have had to bring a little router into the school, and you’re not supposed to do this, but this way I could have internet in my classrooms. You kind of have to hack the system a little bit.

Athena also reported having no Wi-Fi at first in her school. She mentioned how this was “year two” of recently having Wi-Fi in her school. This also prompted her to get creative as she incorporated “a little Wi-Fi transmitter that [she] hardwired into the classroom so the kids could access Wi-Fi”. This demonstrated how both participants saw missed opportunities for their students to engage in their learning. This prompted them to take action and get Wi-Fi into their classrooms since students needed to use their devices to enhance their learning. There is scarce research with teacher’s experiences in relation to Wi-Fi access.

4.4.2 Accessibility to personal digital devices

In the interview process, both participants discussed students’ accessibility to devices as a huge factor determining whether a student could participate in BYOD. Athena stated how in her past teaching experiences, she encountered a “low socio-economic school [which] meant they didn’t really have a personal device”. This demonstrated how she viewed socio-economic background to influence whether a child has access to a personal device. In contrast, Apollo did not see socio-economic backgrounds as a hindrance to the inclusion of BYOD. This is because in his experiences with low socio-economic schools, students always had a phone. He stated that:
It’s interesting that even some of the schools where students will report coming from low income, and living in government housing, a lot of them will have a phone anyways. A lot of parents talked about this. They said that they can’t afford a lot of things but their kid needs a phone to stay in contact with them because it’s an important device.

The above quote demonstrates how there can be varying perspectives to the barriers affecting accessibility to personal digital devices. Apollo’s views about accessibility to personal devices as a non-barrier is attributed to the affordability of devices as well as second hand gadgets. Consumers can now buy cheaper devices that perform the same function as an Apple product.

Different from my findings, Thomas et al. (2013) speak to the inequities students might face because of the type of device students own. Sager (2011), stresses that having cost effective devices disallows students to use similar apps which hinder students learning. This further creates a gap between affluent and non-affluent students as the personal digital devices are different (Alberta Government, 2012).

4.5 Conclusion

Through the analysis process, four main themes emerged. The most important factor behind teacher’s understanding of BYOD has a lot to do with their personal experiences with technology. Both participants reported using technology in their personal life which made incorporating BYOD comfortable and easy. It was second nature for Apollo and Athena to allow and encourage students to create a classroom where personal digital devices enhanced students’ learning.

One of the most important benefits in incorporating BYOD which the participants referred to was the opportunity to help students learn about responsible usage of BOYD.
Teachers saw it as their duty to prepare students to use BYOD in a responsible and successful way. This was to ensure that students learnt the life skills they needed to be successful in the future, whether it is in the workforce or in their personal lives. Research also supports responsible usage of devices for future generations (Male & Burden, 2013).

As for strategies in incorporating BYOD, the most significant strategy was the use of Apps and websites, particularly, Google Classroom. This feature allowed teachers access to students as well students to communicate and share resources with one another. Apollo and Athena both reported using social media as another medium to connect with students. As for teacher supports, both participants mentioned reaching out to other teachers via social media and group chats. Apollo also spoke of conferences such as Connect and BIT to offer further support to teachers incorporating BYOD in their classrooms. More research needs to be done in terms of Apps and websites supporting students learning as well as teacher supports to BYOD.

In terms of barriers, both participants attributed this to infrastructure, particularly having limited to no access to Wi-Fi. Both participants found alternative ways to power their classrooms with Wi-Fi, where one incorporated a router and the other used a Wi-Fi transmitter. As for the accessibility to personal digital devices, Athena attributed this to the socio-economic background of students, while Apollo did not see this as a barrier. Literature also sees socio-economic background as a possible hindrance or benefit in the integration of BYOD in classrooms (Alberta Government, 2012).

The next chapter of the MTRP, Chapter 5, will focus on the implications of these research findings in relation to the integration of BYOD in TDSB classrooms. Recommendations for further research will also be provided.
Chapter 5: Implications

5.0 Introduction to the Chapter

In this chapter, I further discuss my findings based on my research question: How teachers in the TDSB are incorporating students’ own digital devices into teaching and learning? This chapter starts with an overview of my key findings, followed by my implications for the educational community and myself as a beginner teacher. Lastly, I suggest recommendations based on the implications of my research, followed by areas of further research to better support teachers with integrating of Bring Your Own Device (BYOD) into their classrooms.

5.1 Overview of Key Findings and Their Significance

The first theme in this study explored teachers’ understandings of BYOD, as well as their personal experiences with technology such as cellphones, computers, laptops and iPads. Both participants showcased a similar understanding of BYOD, which was rooted in students’ bringing their personal digital devices for classroom learning. Their inclusion of BYOD into their teaching practice had to with their positive personal experiences with technology. These positive experiences included playing games such as “Adventures” on old computers, and using software and hardware in their personal lives such as programming, social media and Facebook. This indicates how past experiences with technology can influence whether a teacher decides to incorporate a BYOD approach into their classroom.

The second theme examined the benefits of incorporating BYOD into classrooms. Participants indicated that by incorporating BYOD into their practice, students gained lifelong skills on how to use their devices properly and in a responsible manner in any given setting. They also found BYOD to enhance student engagement as students collaborated more with their peers and connected to course content. The use of BYOD allowed students to “document their
learning” and share their knowledge with peers and educators in a safe and responsible way. This showcases the importance of incorporating BYOD into classrooms as it allows students to practice life skills, and use their devices responsibly (Male & Burden, 2013).

The third theme focused on strategies for incorporating BYOD. Participants shared their knowledge of some of the applications and websites they used over the years to help support students. Both participants used Google Classroom and social media such as Twitter, Facebook, Snapchat and Instagram to support student learning in both App and web form. Although there is support for student learning with BYOD, both participants described how there is scare research for teacher supports. This prompted participants to acquire knowledge through social media and chat groups. Both participants relied on Twitter to communicate with fellow teachers, share resources and insights. This indicates the need for further research in providing teachers with resources to better support their adoption of BYOD.

The fourth theme discussed some of the barriers associated with integrating BYOD in the classroom. Both participants mentioned how there was no Wi-Fi in their schools. Lack of Wi-Fi prompted them to use Wi-Fi transmitters and bring their own Wi-Fi router to gain access to the internet. This indicates that not all schools in Toronto District School Board (TDSB) have access to Wi-Fi, making BYOD almost impossible to adopt.

5.2. Implications

In this section, I discuss the implications of my findings for a wider educational community and how to support teachers in incorporating BYOD into their classroom. I also discuss the implications of my research in relation to being a researcher and a novice teacher.
5.2.1 Broad: The educational research community

The findings of my study showcased how the integration of students’ own digital devices promotes more student engagement with classroom content. Teachers may consider using BYOD to further enhance student engagement with classroom content as it leads to more personalized learning. Both of my participants saw the value of integrating BYOD into their classrooms as it provided for more meaningful learning to take place and for students to “connect to content”.

Research further supports this as students’ personal digital devices cater to students needs which allows for more personal learning to take place, especially when inquiring about a topic of interest (Kearney, Burden, & Rai, 2014). To promote student engagement with BYOD, the ministries of education might benefit from creating a BYOD policy in the TDSB.

This study also revealed how infrastructure, access to Wi-Fi, played a major role in teachers incorporating BYOD into their teaching practice. Some schools in the TDSB have little to no Wi-Fi. For students to benefit from BYOD in classrooms, schools may consider incorporating school wide Wi-Fi. Prior to having Wi-Fi in their schools, my participants reported using alternative methods in gaining access to Wi-Fi for their classrooms. One mentioned rigging the system by bringing a router of his own into school while the other used a Wi-Fi transmitter for students to access applications and the web on their phones. By considering school wide Wi-Fi, students may have the opportunity to engage in BYOD should their teacher choose to. This allows for equal opportunity for all students to have access to a wealth of knowledge. Schools may consider proposing school wide Wi-Fi to the Board in order to gain the necessary support for the incorporation of BYOD.

The last implication revealed how there is a lack of teacher resources on how to incorporate BYOD in classrooms. Teachers might benefit from having a Ministry document
outlining how to integrate BYOD in classrooms. This may lead to more student-centered learning as teachers are provided with multiple resources in one document to better support all students. Both my participants used social media to connect and share knowledge. My participants also reported attending professional development conferences to better support their students and to gain more knowledge about BYOD in classrooms. There is scarce research in the area of teacher supports. By considering a Ministry document featuring BYOD information, this might leave educators with more time on implementing a BYOD approach in their classrooms as opposed to searching multiple websites, chats and social media sites for BYOD strategies and implications.

5.2.2 Narrow: My professional identity and practice

As a novice teacher, the findings of my study provided me with key insights on how to integrate BYOD into my teaching practice, especially as a supporter of student centered learning. My participants have been generous on sharing their experiences, knowledge and their resources on how to integrate BYOD into my classroom. I admire their dedication in attending professional development conferences to seek out more information and better support their students. With scarce resources available on the how to of BYOD, I have come to realize that I too will need to build further knowledge of BYOD by attending professional conferences. This is to ensure that I am well informed about multiple strategies associated with BYOD, as well as learn ways to better support myself and my students as a novice teacher. Moreover, I need to practice responsible digital usage to ensure that my students become responsible digital citizens when using their personal devices (Male & Burden, 2013). I am to ensure that my students possess proper etiquettes on using their digital devices at all times.
5.3 Recommendations

The recommendations generated by the present study focuses on providing teachers with further supports in incorporating BYOD into their classrooms. The two recommendations which emerged from this research is having a full year technology course in pre-service teacher programs and creating a BYOD policy in the TDSB to gain access to funds in better supporting teachers. I will further discuss recommendations for a variety of stakeholders such as administrators, ministries of educations, school boards and teachers.

Based on the findings of this study, I recommend that pre-service teacher programs include a year-long technology course to better support novice teachers on how to integrate technology, specifically BYOD into their practice. Pre-service teachers should be given further opportunities to explore various technologies, software and hardware, programs, applications and educational programs, to support and develop on their digital literacy skills. Last practicum, I tried integrating BYOD into my practice. As a novice teacher, I would have benefitted from understanding which applications worked best on which device. By giving teacher candidates opportunities to explore, discuss and share our knowledge, we can better support our students and foster their digital literacy skills.

The findings also suggest that to further support teachers and students with BYOD, TDSB and ministries of education could create a BYOD policy. By having a school board policy emphasizing the importance of BYOD, funding can be allotted to Wi-Fi access for all TDSB schools. Funding can also be allotted to various teacher supports/resources by providing educators with professional development conferences on BYOD, and the creation of a professional document by The Ontario Ministry of Education (OME). The conferences could have teachers discussing their experiences with incorporating BYOD in their classrooms. The
professional document by OME could provide educators with guidelines on how to implement BYOD in classrooms, outline teacher resources and educational websites, and discuss various applications, software and devices. Without a BYOD policy, teachers and students have little support since there is no board wide acknowledgement and support for the use of BYOD in classrooms. By creating a BYOD policy in the TDSB, more opportunities can be created to support both teachers and students in their digital literacy skills. I also propose that teachers practicing BYOD in their classrooms, work alongside the ministries of education to create a BYOD policy and a teacher resource guide. Their insight would provide valuable information in the implementation of BYOD and various challenges they faced.

5.4 Areas for Further Research

Based on my research findings, I suggest three areas for further research: 1) incorporating BYOD across curriculum, 2) providing teachers with supports on integrating BYOD, and 3) a qualitative study based on student experiences with BYOD.

My research suggests that BYOD enhances student learning and engagement and creates for more meaningful learning opportunities. Both my participants used BYOD in subject areas such as math and science. This suggests that further research is needed in determining how teachers can use BYOD across curriculum and subject areas. Moreover, further research is needed on whether the use of BYOD and high student engagement is only reserved for subject areas such as Math and Science. It would be beneficial to know whether teachers can utilize BYOD within multiple subjects and gain insight on the significance of this. This would ensure that teachers are more prepared to teach students while utilizing a BYOD approach to fit student’s needs.
To support teachers in incorporating BYOD into their teaching practice, more teacher resources are needed. By conducting further research on teaching strategies for integrating BYOD into teaching practices, teachers can benefit from such knowledge. This allows teachers to be better prepared with integrating BYOD into their teaching instruction. This knowledge can be used to support students’ needs in more depth while allowing teachers to feel more confident in integrating BYOD.

In order to better support my research, there needs to be a qualitative study dedicated to student experiences with the use of BYOD for classroom learning. This will provide key insights on how students’ personal digital devices affect their learning as well as areas for improvement. This will also provide insights into why students are more engaged with the use of BYOD and whether this engagement has to do with the device itself or the content being explored.

5.5 Concluding Comments

The aim of this research study was to understand how TDSB teachers are incorporating students’ own digital devices into teaching and learning. My research findings indicate that both my participants were comfortable with using technology which influenced their adoption of BYOD into their teaching practice. My participants saw the benefits of incorporating BYOD into their classrooms as it led to more student engagement and collaboration, provided students to practice responsible digital usage of their personal devices, and allowed for inquiry based learning to take place. Despite limited resources on BYOD, both my participants used social media and chat groups to acquire more knowledge about instructional strategies. These findings are significant as they showcase a need for teacher resources on supporting educators with integrating a BYOD approach in their classrooms. The recommendations suggested in the study included a year-long technology course for pre-service teachers, as well as creating a BYOD
policy which could allot funding towards teacher resources and supports. These recommendations would allow teachers to feel more confident in incorporating BYOD in their classrooms.
References


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Understanding the role of student feedback in motivating teachers to persist with
Appendix A: Letter of Consent

Date: __________________

Dear __________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. As a teacher candidate, I am interested in learning how teachers in the TDSB have incorporated the use of Bring Your Own Device (BYOD) model in classrooms. Your insights and experiences will provide novice teachers pertinent information on how and why to adopt the model in their classrooms.

I am writing a report on this study as a requirement of the Master of Teaching Program. My course instructor who is providing support for the process this year is Angela Macdonald. The purpose of this study is to allow teacher candidates to design an educational research study. In order to collect data, I will conduct 45-60-minute interview that will be audio-recorded. I would be extremely grateful if you would allow me to interview you at a place and time convenient to you.

The contents of this interview will be used to complete my research study which involves not only writing a final paper, but disclosing my findings as informal presentations to my peers and at a conference or publication. Your confidentiality will be protected at all times and a pseudonym will be assigned to you in order to maintain your confidentiality. The individuals who will have access to my work is my research coordinator, Angela MacDonald. You may change your mind at any point in the study to no longer be part of the study should you choose to. You may also decline to answer any questions that you see fit. Please note the audio recording will be destroyed after my paper is finished and my findings are presented, this may take up to five years. There are no known risks to you for taking part in the study, and I will share a copy of my notes to ensure accuracy.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you for your help.

Sincerely,

Mahwash (Mahi) Kureishy
Phone number: __________________
E-mail: mahwash.kureishy@utoronto.ca

Research Coordinator’s Name: Angela Macdonald
Phone number: __________________
E-mail: angela.macdonald@utoronto.ca
Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty.

I have read the letter provided to me by ___________________ (name of researcher) and agree to participate in an interview for the purposes described. I agree to have the interview audio-recorded.

Signature: ____________________________________

Name: (printed) ____________________________________

Date: __________________________________________
Appendix B: Interview Protocol/Questions

Thank you for taking the time to participate in my research study. The aim of this study is to gain insight about teacher experiences with the use of students own digital devices for classroom learning. The interview should take approximately 45-60 minutes, and is based on 17 questions. The interview protocol has been divided into 2 sections, beginning with background information about participants, followed by questions about teacher experiences with the use of students’ personal digital devices for student learning and teacher instruction. Lastly, I will end the interview by asking questions pertaining to some of the challenges you have faced with adopting a BYOD model as well as any recommendations you may have for novice teachers integrating BYOD into their classrooms. You may choose to not answer my questions at any point in the study and have the right to remove yourself from my study should you feel the need to. Before we begin, do you have any questions or concerns?

Section A—Background Information (order according to interview)

1. What grades are you currently teaching?
2. How long have you been teaching Grade?
3. What grades have you taught in the past?
4. Have you always worked at the TDSB?
5. What are some of your personal experiences with technology?

Section B—Experiences with BYOD

6. What does BYOD mean to you?
7. What are your experiences with ‘bring your own devices’ in the classroom?
8. What BYOD Model are you using in your classroom?
9. What personal digital devices are students using in class?
10. What are some devices that were incorporated but you had to remove/take out? Why?
11. What procedures/rules do you have in place with students using BYOD in the classroom?
12. How are you incorporating students’ own digital devices into teaching and learning in your classroom?
13. Why are you incorporating the use of ‘bring your own devices’ into your classrooms?
   a. What are the some of the benefits you faced with incorporating ‘bring your own devices’ into their classrooms?
   b. What are some of the challenges you encountered with incorporating BYOD?
14. What have you noticed about the classroom environment with BYOD?
15. Have you seen changes to student’s development/learning with the use of BYOD? What developmental changes have you noticed in your students with the use of BYOD?
16. Have you seen changes to your teaching philosophy with the use of BYOD? Why?
17. What recommendation do you have for new teachers incorporating BYOD in the classroom?

Thank you for your participation in this research study.