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Perceptions of Teachers' Regarding Barriers to Using Instructional Technology in Egyptian Schools

Radwa El Shafei
Walden University

Walden University

College of Education

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Radwa Assem El Shafei

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Dr. Timothy Rodriguez, Committee Chairperson, Education Faculty
Dr. Amy White, Committee Member, Education Faculty
Dr. Karen Hunt, University Reviewer, Education Faculty

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Walden University
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Abstract

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MA, American International College, 2008

Doctoral Study Submitted in Partial Fulfillment

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Abstract

The local K-12 school problem addressed in this study was teachers' underutilization of instructional technology (IT) to improve teaching and student learning. The purpose of this study was to explore teachers' current use of IT, as well as their perceptions of barriers to using IT in classrooms. The technology acceptance model guided the study by emphasizing the importance of perceived ease of use, usefulness, and attitudes in understanding teachers' perceptions about integrating IT. The research questions focused on teachers' perceptions of their knowledge of how to use IT, barriers to using IT and how it is currently implemented. Using a qualitative case study design, data were collected through interviews and classroom observations of 10 teacher participants. The data were coded using open, axial, and descriptive coding strategies and analyzed for common themes. The findings showed that, in spite of teachers' positive attitudes towards technology, they encountered various obstacles, such as a lack of knowledge and training that hindered them from properly integrating technology. Based on the findings, a 3-day teacher training session was designed to enhance their knowledge of IT and to support students' learning. The study may contribute to positive social change by expanding the literature on factors that hinder teachers' use of IT and by using professional development training to increase teachers' knowledge and skills so that they can implement IT strategies, engage in collaborative planning, and apply the flipped classroom strategy to overcome some of the barriers they encounter.

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Dedication

This project study is dedicated to my beloved husband, Ahmed Salem, for being a source of support and encouragement during my doctoral journey and in my life. His continuous support and understanding has made it possible for me to complete my doctorate degree successfully. Secondly, I dedicate this study to the essence of my life- my son, Omar Salem, for being my source of happiness that pushed me forward to complete my doctorate. Thirdly, I dedicate this project to my gorgeous mother, Fatma Foda, for all the care, love, and support she gave me during this journey and throughout my entire life. Next, I dedicate this doctorate to my mentor, Dr. Maged Zaki, whom his belief in me has always been a sense of inspiration and encouragement to complete my degree. I love you all from the bottom of my heart and very grateful to have you in my life. May God bless and reward you all.

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Table of Contents

Section 1: The Problem

The rapid advances in the field of technology in education have paved the way for the increase of interactive learning and teaching experiences unconstrained by time and space (Keengwe, Onchwari, & Agamba, 2013). Although Egypt is a developing country, technology has been rapidly increasing, with more than $6 billion in investments since 1998 (Morgan & Lee, 2017). Public schools have been equipped with computer labs, projectors, video sets, and interactive CD-ROMs to allow teachers to use computers as teaching aids to improve instruction and students' learning. However, one of the problems with technology use in Egypt is the resistance shown by teachers to utilizing instructional technology (IT; Morgan & Lee, 2017). Factors that contribute to teachers' resistance include a lack of knowledge about how to effectively implement IT, lack of time, lack of support, and teachers' attitudes toward technology (Campbell, & MacDonald, 2014; Morgan & Lee, 2017; Preston, Wiebe, Gabriel, & McAuley, 2015).

The Local Problem

The problem at the local K-12 school in Cairo, Egypt, was the underutilization of IT. Teachers experienced barriers to using IT in classrooms. Although the school made investments to offer technology resources, such as computers in classrooms, interactive boards, and online learning systems, and they provided teachers with professional development programs to enhance their knowledge and skills in utilizing technology, teachers continued to use conventional methods of instruction (Math teacher, personal communication, August 15, 2017). The school implemented different professional development opportunities and expected to improve the use of IT in classrooms (School

Training Program ([STP], 2016-2017). But classroom observations made by the school principal and head of departments continued to indicate the limited use of IT. Most teachers continued to receive professional development opportunities and technical assistance in class during the 2015-2016 and 2016-2017 school years, yet their technology instructional practices remained limited (STP, 2015, 2016, 2017).

Despite the availability of well-established technology facilities in Egyptian schools, teachers continue to utilize conventional teaching strategies that promote rote learning over interactive e-learning (Abdelmageid, 2014). According to the Organization for Economic Co-operation and Development report (2015), while the potential of information and communication technology (ICT) investments in schools is substantial, the integration of technology in the Egyptian education system is not fully realized. Research by Perrota (2013) indicated that the use of ICT is more targeted to logistical benefits to school administration than to student learning. Although the Egyptian Ministry of Education (MOE) has made investments toward integrating technology hardware, software, tools, and applications into Egyptian schools, teachers have struggled with incorporating digital tools and applications into their teaching practices (Murr, 2015). While many technology facilities and tools (e.g., interactive boards, tablets, online learning systems, and applications) are introduced to schools with the intent of improving student learning, there is a disconnect between how teachers leverage technology in the classroom and how students are learning outside the classroom (Dornisch, 2013). According to Beachman and Mclntosh (2014), many teachers are not availing themselves of technology in their classroom practices. Many factors can contribute to teachers'

underutilization of technology in schools, including a lack of proper professional development, low self-efficacy, and the availability of instructional and leadership support (Gilakjani, 2013).

Not much research has been conducted in Cairo, Egypt on the reasons behind teachers' underutilization of technology as an instructional tool (Elsaadani, 2013). In fact, research is more focused on students' use of ICT rather than teachers' integration of technology (Safitry, Mantoro, Ayu, Mayumi, Dewanti, & Azmeela, 2015). Therefore, more studies are needed.

Rationale

Evidence of the Problem at the Local Level

Although Egypt is a developing country, technology use has been rapidly increasing, and ICT has been its fastest-growing sector, with more than $6 billion in investments since 1998 (Morgan & Lee, 2017). Even though 69.7% of its schools have computer access with internet availability, and 6,956 preschools and 8,707 primary schools have technology tools and connectivity, teachers still resist integrating technology in its classrooms (Morgan & Lee, 2017).

As a result of the technology investments made by Egyptian MOE to increase the use of IT, the school owners at one of the private K-12 schools in Cairo and offering the national curriculum has made investments to increase the availability of technology devices to improve the teaching and learning process (school principal, personal communication, August 1, 2016). The school focuses on the integration and use of technological resources to advance the quality of education and prepare students for

success in higher education and jobs in a technology-driven global economy. The school was equipped with many technological facilities and resources to accommodate teacher and student needs to improve teaching and learning. While the school has offered technology resources, such as computers in classrooms, interactive boards, and online learning systems and has provided the teachers with professional development programs to enhance their knowledge and skills in utilizing technology, teachers continue to use the conventional teaching methods of instruction (school principal, personal communication, August 15, 2017).

For this study, Egyptian teachers at the selected school were experiencing barriers to technology integration. For example, a math teacher claimed that many teachers were lacking proper knowledge and skills on how to effectively integrate technology into their teaching practices (personal communication, August 7, 2016). A school administrator noted that the school leadership was not very literate on how technology can improve student learning (personal communication, July 11, 2016). In addition, a technology trainer stated that, "there is a lack of IT support and planning to ensure having effective technology-integrated teaching practices" (personal communication, May 31, 2017). Another teacher reported that the technical problems and connectivity issues hindered teachers from regular use of IT (English teacher, personal communication, May 31, 2017). A study conducted by Bakr, a member of the Egyptian MOE that measured Egyptian teachers' attitudes toward computer use in the public school classroom, found that despite positive attitudes towards technology integration, teachers are reluctant to use technology. The study attributed it to lack of appropriate training and a lack of

encouragement from administrators (Dini, Markey & Mohamad, 2015). According to Mohammed (2015), teachers were not well oriented to the benefits of digital tools to utilize them effectively in classrooms. In addition, evidence provided via personal communication indicated that the use of technology as an instructional tool was a problem at the study location. Therefore, it was important to address the lack of IT integration at this school.

Evidence of the Problem from the Professional Literature

Technology has tremendous impact on students' learning (Sen & Ay, 2017). Students are connected via a variety of digital devices that impact all aspect of their lives as well as their learning process. The effect of technology use in the classrooms has been widely researched, and results indicated that proper utilization of technology in pedagogical practices improves students learning (Hur, Shannon, & Wolf, 2016). As a result, in 1998, the Egyptian MOE has made a substantial investment to increase the accessibility of technology devices at schools. Despite various efforts made to promote IT at schools, many studies reported that technology in classrooms has not been used to its utmost potential (Hur, Shannon, & Wolf, 2016). Many factors contribute to this underutilization. Ertmer (1999) identified two barriers, including first- and second-order barriers. First-order barrier included access to technology and training, while second-order barriers included teacher self-efficacy for using technology in the classroom and the value of using technology on students' learning. Hur, Shanon, and Wolf (2016) indicated that many factors contributed to teachers' underutilization of technology in classrooms,

including principals' support, technology's perceived benefit, professional development, proper budget, and teacher self-efficacy,.

The purpose of this qualitative study was to explore teachers' current uses of IT, as well as their perceptions of the ease of use of technology, the usefulness of technology, and the obstacles that hinder them from effectively integrating technology in classroom. The study sought to better understand the gap in practice found in the lack of using IT in Egyptian classrooms.

Definition of Terms

Technology integration: Technology integration is broadly defined as the use of hardware such as laptops, scanners, smart boards, document cameras, digital cameras, digital camcorders, and handheld computers, as well as related software and the Internet, in classrooms for enhancing learning (Hsu, 2016, p. 31).

Technology acceptance model (TAM): TAM is a theory that proposed that users' motivation to accept and use technology could be affected by three main factors: perceived usefulness, perceived ease of use, and attitude toward using (Almasri, 2014, p. 5)

Attitudes: Attitudes are individual's evaluative effect of positive or negative feeling in performing a particular behavior (Gyamfi, 2017, p. 55).

Teachers' beliefs: Beliefs refer to internal constructs that help teachers interpret experiences and that guide specific teaching practices (Hsu, 2016, p. 31)

Perceived ease of use: Perceived ease of use refers to the degree to which a person believes that the use of the given tool will be free of effort (Fokides, 2017, p. 57).

Perceived usefulness: Perceived usefulness refers to the extent to which a person believes that using this particular tool would enhance his/her job productivity and performance (Fokides, 2017, p. 57).

Significance of the Study

This study was unique because it addressed a gap in practice exhibited in the lack of appropriate use of IT in Egypt. The study is significant because it provide information to schools, teachers, and other stakeholders about technology instructional practices. Understanding teachers' perspectives may alert school officials to issues related to IT and provide teachers with the knowledge and skills needed to create an efficient IT lesson that will meet the needs of students. The study can improve understanding of teachers' uses of technology and their perceptions about barriers to integrating technology in the classroom.

The study was conducted in one of the Egyptian schools that offers the national program: that is, the governmental educational system mandated by the MOE. Thus, the results may be used to guide efforts to improve technology integration in learning within similar schools in Egypt. The study helped to provide the school with the information it needed to develop a plan for integrating technology as a medium of instruction. School administrators and teachers may come to realize the importance and benefits of embedding technology in teaching practices and how technology can have positive impact on students' learning. The study also helped to provide a system to ensure

consistency in the implementation of IT. Proper integration may lead to improvement in students learning and achievement. The results could inform other educational institutions on how to properly integrate IT in classrooms, which, in turn, may improve student learning. This study may contribute to positive social change by creating awareness to school administrators about factors that hinders teachers use of technology and thus lead to improved training for teachers on the benefits of IT to help them in their work as well as to help students' achieve academic success.

Research Questions

Teachers' attitudes, perceptions and beliefs about technology play a very important role in how technology is used in classrooms (George & Ogunniyi, 2016; Mustafina, 2016; Pittman & Gains, 2015).

Considering the technological infrastructure and facilities for teacher and student use, teachers underutilize technology as an instructional tool. The following research questions were designed to explain why.

RQ 1. How are teachers currently using technology in their classroom instruction?

RQ 2. What are teachers' perceptions about the ease of use of technology, the usefulness of technology, and the barriers to effectively integrating IT?

Review of the Literature

This literature review consists of five sections on technology integration in schools:

- A summary of the conceptual framework guiding this study
- A history of IT
- The benefits of integrating IT in schools
- The barriers to integrating IT in schools
- How teacher perceptions influence the use of technology as an integral part of teaching strategies

The literature for this review was retrieved through ERIC, Education Research Complete, and Google Scholar. The following keywords were used: *technology acceptance model*, *technology integration*, *teachers' perceptions of technology*, *technology barriers*, *IT, history of IT, teachers' attitudes toward IT, benefits of IT,* and *barriers to IT*. I limited the search to the years 2013-2020. In addition, I have reviewed reference lists of the researched articles to identify authors and studies relevant to my study. This helped to explore seminal work related to the conceptual framework and the topic of the study. Saturation was achieved when the literature no longer yielded any additional insights on the topic.

Conceptual Framework

The conceptual framework for this study was Davis' (1989) technology acceptance model (TAM). TAM is an extension of Ajzen and Fishbein's (1975) theory of reasoned action (TRA). Ajzen and Fishbein (1975) proposed that a person's actual

behavior could be determined by considering his or her intention and beliefs toward the behavior. The proponents of TRA also argued that an individual's intention to perform a behavior could be measured by his/her attitude toward the behavior and subjective norms (Fathema, Shannon, & Ross, 2015). An individual's attitude predicts the intention, which, in turn, shapes the actual behavior. Attitudes are defined as individual's positive or negative feelings toward performing a particular behavior. Subjective norms are associated with an individual's perception that the people who are most important to him/her think he/she should or should not perform the behavior.

Ten years later, Davis has made two changes to the original TRA model (Gyamfi, 2017). First, he did not take subjective norms into account, as it was the least understood element of TRA. Davis focused on how attitudes determine people's behavior. Second, instead of relying on several salient beliefs to determine the attitudes of individuals, Davis (1989) relied on only two distinguishable beliefs. According to TAM, the two fundamental determinants of beliefs related to a technology acceptance are perceived ease of use (PEOU) and perceived usefulness (PU) (Fathema, Shannon, & Ross, 2015). People tend to use or not use a system based upon perceived ease and usefulness. The model suggested that a system's design and features determine PEOU, while PU is determined by minimizing effort to achieve desired outcomes. Moreover, PEOU is defined by how much users can save time by using technology device, where PU refers to the level of how much individuals can improve and enhance their job performance using technology systems (Adwan, Adwan, & Smedley, 2013). The model also posits that

PEOU has a direct influence on PU, where the increase in the perceived ease of use can lead to better performance.

The theory of TAM also explains that people's attitudes are a major determinant in accepting or rejecting technology systems. TAM postulates that high levels of PEOU and PU can lead to favorable attitudes and affect behavioral intentions toward using technology (Gyamfi, 2016). The theory helps to explain and predict users' behavior of information technology and how external variables influence belief, attitude, and intention to use technology.

The main concept of TAM as it relates to this study is that I will examine three constructs of teachers' perceived ease of use, perceived usefulness, and actual use of technology which are the major determents of technology acceptance model. This, in turn, will aid in the understanding of teachers' attitudes toward using IT and perceptions about barriers to integrating technology in the classroom. Using technology in the schools, with TAM as a ground for effective technology integration, will bring better understanding to teachers' perceptions and attitudes towards technology and offer the support they need.

For this study, TAM key main constructs of perceived ease of use, perceived usefulness, and actual uses of technology will be used to address research questions. The results of 380 teachers' questionnaire conducted in Ghana on factors that influence technology acceptance indicated that the TAM's constructs of perceived ease of use, perceived usefulness, and attitudes were significant predictors of teachers' actual use of technology as a tool for teaching and learning (Gyamfi, 2016). Another study conducted

by Mugo, Njagi, Chemwei, and Motanya (2017) on how the TAM has been used in predicting the acceptance and utilization of various technologies in teaching and learning revealed that both constructs of perceived ease of use and perceived usefulness can be adopted in the development and utilization of technological innovation for teaching and learning.

Using technology in schools with the basis of TAM was to help to assess teachers' acceptance of diverse technological tools for instructional practices (Fokides, 2017; Rauniar, Rawski, Yang, & Johnson, 2014; Teo, 2014; Wallace & Sheetz, 2014). The study conducted by Fokides (2017) indicated that TAM can help school administrators and educators to determine how the perceived ease of use greatly affects perceived usefulness and attitude toward use. Therefore, in order to positively promote IT in schools, it is important to recognize teachers' beliefs and attitudes to provide the proper support mechanism. This would create a successful environment where IT would be devised and implemented. In addition, TAM can assist school administrators to determine venues on how to devise constant technical support where the use of computers is easy and effortless. When teachers feel supported and have the proper technical support they need to have successful experience with technology, they will develop positive attitude towards IT, which in turn will encourage them to use over time. In addition, the study suggests that teachers' perceptions regarding the usefulness of technology can be influenced when they see how it can help them be more productive and effective in their work fields. Accordingly, this suggests that schools need to provide

professional development opportunities to help teachers understand and learn how to effectively integrate technology in their specific curriculum.

The research conducted by Mena, Perrano and Manzano (2017) to study the effect of age on using educational video games as an IT tool to improve students learning indicated that perceived usefulness has a direct influence on teachers' behaviors and attitudes to using educational video gaming. In addition, the study revealed that perceived ease of use has indirectly influenced intensions through perceived usefulness. Although the study findings revealed that age is a moderate factor to perceived ease of use which indirectly influence perceived usefulness, the study suggested considering teachers age when designing training programs. This is because younger and older teachers will have different perspective regarding the perceived ease of use, which in turn will influence the perceived usefulness. This indicates that using TAM as frame to implement and improve teachers' IT is important to understanding teachers' perceived usefulness and perceived ease of use. It is then that schools can determine teachers' training programs focusing on perceived usefulness to encourage proper and effective adoption of IT.

Recent studies indicated that TAM is the most common and effective frame used to determine individuals' acceptance of technology in terms of perceived ease of use, perceived usefulness, beliefs, and attitudes (Curkurbasi, Isbulan, & Kiyici, 2016; Mena, Perrano, & Manzano, 2017). A study conducted to assess intentions and attitudes of 2,023 high school student in Turkey on the use of tablet computer revealed that students' beliefs affected the behavior of the students positively as a result of thinking that using the tablet computers is easy and beneficial. Using a scale based on TAM variables

(PEOU, PU, attitudes, intention), the study highlighted the importance of adopting TAM as a framework for measuring student acceptance of technology level and accordingly design instructional practices tailored to their needs.

TAM is central to study teachers' perceptions and barriers toward IT. It is reasonable to assume that teachers in the study do not realize the perceived usefulness of technology and how it can assist in performing more efficiently in their classrooms. Therefore, investigating teachers' perceptions and attitudes regarding the benefits and value of technology could be a positive outcome for the study.

History of IT

Since the mid-20th century, instructional technologies have undergone significant development with the intent of improving teaching and learning (Shorkey & Uebel, 2014). Many advances in hardware and software have been introduced to schools to enhance the educational context for teachers and students (Shorkey, et al., 2014). In the educational and training setting, technology means two things: technology as a tool for learning and technology as process of improving learning. As for IT, it is associated with designing, developing, managing, implementing and evaluating learning resources (Galbraith, 1967). The term "IT" has changed over time according to the emerging theories and philosophies of education. Moreover, the changes have been also influenced by the development of new tools for teaching and learning (Rogers, 2002).

In 1920, instruction was more directed toward the use of static media including pictures, flashcards, models, and slides to deliver instruction. Then, in the 1950s, a more developed form of audio technologies such as sound recorders had influenced

instructional technologies. The IT has shifted from visual to audiovisual. Instructional television has been introduced in the late 1950s to be considered as the medium for instruction. Education television led a movement to improve teaching methods in the classroom (Cuban, 1986).

In 1960s and 1970s, the direction of IT had become more interactive through the introduction of computers in high schools (Shorkey et al., 2014). According to Tickton (1970), IT involves designing, implementing, and evaluating the total process of learning; it combines the interaction of human and non- human resources to bring effective instruction. In 1963, Kemeny and Kurtz developed a new computer language, called Beginners All-Purpose Symbolic Instruction Code (BASIC). It spread widely and was used for the creation of computer-based instructional materials for a variety of subjects and for all levels of education (Molnar, 1997). In addition, a new computer-assisted instruction language was developed in mathematics and reading. The program allowed students to correct their responses through rapid feedback. The self-paced programs allowed a student to take an active role in the learning process. The use of computers has influenced instruction from being teacher-centered into being student-centered.

In the late seventies, the low cost of microcomputers and the personal computers began to spread everywhere (Molnar, 1997). Classrooms, laboratories, homes, and libraries are now equipped with computers. Many universities requested freshmen to bring their own personal computers. Kulik at the University of Michigan made a Meta-analysis to study the effect of computer based education on the primary, secondary, and adult education on students' performance. The results indicated an increase in students'

scores from 10 to 20 percentile points (Molnar, 1997). This demonstrates that the use of IT has made a revolutionary shift in the educational environment.

Technological advancements (computer and internet) have a significant role in the educational system and have promoted the introduction of online learning programs (Nguten, 2015). The 80s and 90s marked the development of internet and online education. The World Wide Web has been formally launched in 1991(Bates, 2014). At the University of Guelph in Canada, a software system called CoSy was developed in the 1980s. The new software has allowed for the implementation of online group discussion forums, which is equivalent nowadays to the learning management system (LMS) developed in 1995 (Bates, 2014). The online learning has provided students who are living in rural areas opportunities to benefit from education and complete their courses while at home. With the expansion of internet tools such as voice video cams and voice chat rooms in the 2000s, new opportunities are given to students and teachers that involves long distance education, online collaboration and international cooperation (Shorkey, et al., 2014).

The advancements in the field of technology resources have transformed the way in which pedagogical and assessment techniques are delivered (Adhikari, Scogings, Mathrani, & Sofat, 2017). Digital resources include mobiles, interactive boards, iPads and many others. Teachers can use these devices to improve their teaching practices and design activities to enhance students' 21st century skills. In addition, teachers can integrate rich digital technologies into their existing teaching deliveries, thereby enabling

innovative pedagogical practices in their schools (Adhikari, Scogings, Mathrani, & Sofat, 2017; Ortega & Fuentes, 2015).

Benefits of IT

It is believed that teachers' integration of technology led to better opportunities for increasing student learning (Hsu, 2016). Higher levels of technology use in classrooms can enhance teaching practices, which, in turn, can improve student learning. Research indicated that technology integration could increase students' motivation, self-confidence, engagement, attitudes and academic performance (Carver, 2016).

The development of new technologies has made significant changes to the role of the teacher, as well as the type of instruction and pedagogical practices. According to McKnight, O'Malley, Ruzic, Franey, and Bassett (2016) one of the advantages of new technologies in comparison to the traditional learning setting is that technology has allowed interaction without limitation of space and time. Students can have access to a variety of materials and resources from home where they can complete their course assignments and develop accountability of learning. Accessibility of materials upon students' convenient time and place allowed students to keep up for example with missed classes. This has also helped teachers not to spend much time with students to make up for what has been discussed in class for the absent students. Another study conducted by Watulak, Kritskaya, and Elmendorf (2013) showed that students have benefited from access to a variety of online resources. The study employed a mixed method approach of both quantitative and qualitative data. Using a survey, which included a Likert scale and open-ended questions to answer the research questions on students' perceptions on

benefits and comfort use of technologies, 111 students enrolled in the College of Education at Mid-Atlantic University reported that technology helped them to keep track and complete their assignments at a convenient time and in a convenient place. The study also showed that students appreciated the availability of a diverse range of resources to study from. One student summed up the prevailing attitude: “the internet provides a window of access to data that I could possibly need for studying/projects etc.” (p. 23). In that sense, the face-to-face interaction between students, teachers and learning resources has been replaced with new ways of gaining information beyond classroom.

As reported by Marcovic and Petrovic (2017) in their analysis review of articles on changes that technology brings into schools, technology has paved the way for individualization of the learning, which is one of the key goals of modern learning. Students benefit from accessing the same activity while working on it at their own pace. Students could have access to a variety of learning resources that fit their own interest, skill and ability (Vogel, 2013). For example, teachers can share a variety of learning materials including texts, media resources, videos, and pictures. All these help students to grasp the material according to their own preference. McKnight, O'Malley, Ruzic, Franey, and Bassett (2016) reported that technology allowed for more differentiation in learning to happen; for example, 40 out of 44 (91%) teachers shared the following benefits: (a) introvert students could record and present their work on a device instead of live; (b) autistic students could remain focused on a task for long time with the help of visual scheduled applications; (c) special education students can improve their reading fluency by recording their voices while reading books. The previous examples suggest

that technology has expanded the availability of resources to cater for wider range of students including special needs.

Another benefit of implementing IT in schools is to enhance communication and promote collaboration (Levin & Schrum, 2013). Technology provides students with a mean to collaborate with their peers to complete assignments and projects. The collaboration could take place via discussion boards, blogs, chat rooms, and WhatsApp. This online platform allows students to become more engaged in learning, share ideas with peers, and get support when needed. According to Vanve, Gaikward, and Shalar (2016), IT provide opportunities to students to become more engaged and motivated where they can attain their educational potential. In addition, technology offer a virtual learning environment that support collaboration of students' with other educational providers and promote active and real world learning environment.

Many research studies indicate that technology promote regular ongoing communication and feedback among students and teachers (Levin & Schrum 2013; Vanve, Gaikward, & Shalar, 2016; Vogel, 2013) Students can receive instant feedback from their peers and teachers to complete their assignments (Vanve, Gaikward, & Shalar, 2016). Using Google Docs for example can enable teachers and students to review, edit and improve work simultaneously (McKnight, O'Malley, Ruzic, Franey & Bassett, 2016). 40 out of 44 teachers from multisite case study on seven exemplary schools across the United States reported that using technology software for regular communication and feedback were important for teachers to continuously adjust their instruction according to

students' needs. This indicates that immediate feedback to students about their learning status can improve teaching and learning.

McKnight et al. (2016) found that technology has changed the role of teachers and students. The study indicated that students' use of online materials and resources has enabled them to find answers to their inquiries and not completely rely on teachers as the sole dispenser of content and information. Levin & Schrum (2013) indicated that technology has changed the learning context from teacher-centered into a student-centered learning model. In addition, Vanve, Gaikward, and Shalar (2016) reported that technology changed students' role into active inquirers of information. Due the availability of a variety of online digital resources, students are more responsible for searching for answers to their questions; which promotes their accountability of their learning and improving their inquiry skills

Another study conducted by Yang and Kwok (2017) on student attitudes toward technology integration revealed that students enjoyed using ICT as it keeps them engaged. The availability of diverse learning resources on the Internet resulted in an increase of efficiency of gathering information and learning on their own. The cross sectional survey was conducted on 737 students in Singapore. One of the students stated that "I am able to find information easily using Google, and I do not have to waste time looking through books physically to find the resources I need" (p. 56). Results of other research studies have also confirmed that implementing IT promotes a collaborative learning, support students' knowledge construction and critical thinking as well as help

students to scaffold ideas at their own pace and develop concepts (Hack, 2013; Ioannou, Brown, & Artino, 2015).

In their study on benefits and challenges of technology integration, Preston, Wiebe, Gabriel, McAuley, Campbell, and MacDonald (2015) indicated that technology activated reverse mentorship among teachers and students, and increased students' motivation. In the study, 11 participants including educational officials, school principal and teachers were interviewed; eight teachers reported that students have very rich information on the use of technology where they can guide teachers on the use of technology devices in the classroom. For example, one of the teachers stated, "When something might go wrong, they [the students] don't even give me a chance to correct it myself. They'll tell me how to correct it." (p. 176). This indicated that technology led students to get involved in a reverse mentorship process, which promoted students' leadership role.

In terms of students' learning, research showed that the use of IT such as IWB enhances the quality of students' learning in mathematics (De Vita, Verschaffel, & Elen, 2014; Lopez & Krockover, 2014). Yang and Teng's (2014) study of six public school English teachers and 614 fifth and sixth-grade students in Taiwan have reported that IWB has supported teachers in providing opportunities where students can effectively practice speaking, listening, writing, and reading through an interactive learning environment that engages wider range of students. In a similar study investigating the benefits of interactive white board in mathematics class, it was found that the use of IWB in instruction enhanced the quality of math content interaction among teachers and students,

which led to an improved problem solving skills (Lopez & Krockover, 2014). The study consisted of 134 elementary school teachers in grades K-5 using interactive whiteboards (IWB) with their math lessons. Results of the questionnaire indicated concurrent high use of the IWB among teacher and students in classroom maximizes students' engagement and learning (Lopez & Krockover, 2014).

A report by the Irish Department of Education and Skills (DES), based on a review of case studies of over 50 schools, the inspection of 180 schools and a survey of 1400 teachers, and 900 principals and students, found that "ICT impacts predominantly on the development of students' research and investigation skills, as well as their writing and presentation skills" (Coyne, Devitt, Lyons, & McCoy, 2015, p. 360). Another report from the Alliance for Excellent Education and the Stanford Center for Opportunity Policy in Education (SCOPE) based on the review of 70 studies related to high school students; found that properly integrated technology led to significant gains in student achievement and boosted engagement in particular with students at risk (Hammond, Zielezinski, & Goldman 2014).

Several research studies also indicated that the adoption of instructional technologies led to significant advantages and benefits to the educational context (Eid, & Jabri, 2016; Hutchison, & Colwell, 2014; Lancor, & Barrett, 2014). The studies showed that benefits of IT include the following:

1. Learning with no limitation to space and time (Vanve, Gaikward, & Shalar, 2016).

2. A diverse medium of learning resources for constructing knowledge (Preston, Moffatt, Wiebe, McAuley, Campbell, & Gabriel, 2015).
3. Knowledge quality improvement, a change in the nature of learning and knowledge transformation (Eid, & Jabri, 2016).
4. Opportunities to apply individualized and collaborative forms of learning (Vanve, Gaikward, & Shalar, 2016)
5. Increased interaction in the learning process (Hutchison, & Colwell, 2014)
6. Development of independence in learning (Lancor, & Barrett 2014)
7. Increased motivation and commitment during learning (Eid, & Jabri, 2016)

A study conducted by Lento (2017) on the benefits of using whiteboard voice over video technologies (WBVO) indicated that new WBVO technologies promote active learning in class which leads to the development of students' higher-order thinking. In addition, the study revealed that the adoption of new technologies reinforces a more centered student-learning environment. Data analysis from open-ended students survey shows that WBVO videos support individualism in learning (Lento, 2017). Students are allowed to access learning resources beyond classroom anytime to learn at their pace. Besides, students' multiple intelligences are addressed through a variety of techniques. Another study exploring the effect of utilizing interactive whiteboards on students' achievement indicated that the use of WBVO is correlated with positive grade point average (Erbas, Ince, & Kaya, 2015). The study was conducted on 65 high school students in Turkey using Graphing Achievement Test to measure students' achievement

level in graphing. Results of the study revealed students' reasoning and interpretation skills were better in the experimental group as compared to those in the control group.

Research conducted by Yang and Teng (2014) on six elementary English teachers and 614 students in Northern Taiwan indicated that the use of an interactive white board (IWB) promoted classroom dialogue and increased the interaction between teachers and students as well as students and their peers in English classes. Another study by Onal (2017) exploring students' perceptions in using IWB in mathematics class showed that IWB foster collaborative learning environment where students can share their ideas and thoughts. Based on the results of the study, it appeared that students have positive perceptions on using IWB as it enabled students to be engaged in a meaningful collaborative learning opportunities, and increased students' concentration. Both studies indicated that IWB promoted students collaboration and increased engagement.

A qualitative study conducted by Cetinkaya (2017) on the educational technology tool (WhatsApp) discussed the benefits of the interactive social network tool in improving the learning environment. The study employed surveys for 145 students aged between 15 to 17, and the results were supplemented by interviews of 6 students. Data analysis demonstrated that the use of WhatsApp application had several benefits on the educational and academic context. The application contributed to promote high level of student-student communication, peer support, naturality, ownership of expression and create a sense of responsibility. In addition, other studies indicated that using technology tool (WhatsApp) support the idea of student learning beyond classroom without consideration to space and time. Students can share materials and learning resources,

which encourage cooperation and teamwork. Moreover, the application provides instant academic support for students to address their needs where they can post questions and inquiries and receive feedback from their instructors or colleagues (Bouhnik & Deshen, 2014; Church & de Oliveira, 2013; Nguyen & Fussell, 2016)

Despite the fact that previous research showed that integration of technology has positively influenced teaching practices and students learning, many factors contribute to teachers' limited use of technology. Barriers to using IT are presented in the following sub section.

Barriers to IT

Factors influencing teachers' integration of technology could be human resources and technological resources (Coklar & Yurdakul, 2017). A variety of issues may hinder teachers' use of technology for instruction; which include teachers' limited access to the Internet, time constraints, teachers' lack of basic technological skills, teacher attitudes towards technology integration, school culture, and teachers' lack of professional development. (Carver, 2016; Claro, Nussbaum, Lopez, & Contardo, 2014; Coklar & Yurdakul, 2017; Hsu, 2016; Hur, Shannon, & Wolf, 2016; Kurt, 2014; Ruggiero, & Mong, 2015;). On the other hand, other problems could stem from teachers' attitudes, beliefs, lack of knowledge and skills as well as teachers self-efficacy, lack of skills or efficacies (Adwan, Adwan, & Smedley, 2013; Fathema, Shannon, Goh, &Rahmat, 2013; Fokides, 2017; Gyamfi, 2017).

According to Hur, Shannon, and Wolf (2016), barriers could be classified into first- and second-order barriers. First-order barriers are associated with external factors

such as the lack of technology tools, resources, and technical support, whereas second-order barriers are associated with the teachers' attitudes and beliefs (Carver, 2016). A study conducted by Martirosyan, Kennon, Saxon, Edmonson, and Skidmore (2017) asserted that the lack of technology resources, the lack of time to use the technology, the lack of technical support, the lack of leadership support, and the lack of technology skills each contribute to the inadequate use of technology. Moreover, Hechter and Vermette (2013) conducted an online quantitative survey for 430 in-service teachers and reported on the barriers of integrating technology. The findings indicated that inadequate access, time, training, and support as reasons that hinder teachers' use of technology.

One of the main reasons behind teacher underutilization of technology as instructional tool is the lack of technology tools and unavailability of adequate resources such as computers, laptops, interactive boards; yet, this is not currently the case in many countries (Liu & Pange, 2014; Nikolopoulou & Gialamas, 2013). This could no longer be considered as a significant barrier to integrating technology in classroom (Kurt, 2014). A global survey from 26 countries found that the two main factors influencing teachers' limited use of technology are deficiencies in teacher knowledge and skills, as well as the lack of proper professional training for teachers to acquire the needed expertise (Kurt, 2014). Reid (2014) stated that barriers to IT are grouped into five major categories that include: technology resources, process, faculty, environment, and administration.

Technology resources. Technology resources as a barrier to implementing IT include access to technology devices, reliability and complexity of use. A variety of research reported that teachers are not satisfied with the current investments in

technology to serve their work purpose (Fenty & McKendry Anderson, 2014; Liu & Pange, 2014; Nikolopoulou & Gialamas, 2013). One U.S. study found that educators working with middle-income students have less technology access in their schools compared to teachers serving lower income students (Hammond, Zielezinski, &Goldman, 2014). The authors explain this may be due to technology funding initiatives targeting the lower-income children (Blackwell, Lauricella, Wartella, Robb, & Schomburg, 2013) In the current literature, 80% of teachers reported that technology was available to them, but about one-quarter of the respondents expressed frustration about the barriers that hinder effective technology integration in their classrooms (Hsu, 2016). Access as a barrier seems to mean developing IT lessons, which requires preparation and time (Delgado, Wardlow, Mcknight, & O',Malley, 2015). In addition, scheduling time periods to access computer labs or bringing and setting technology devices in class appeared to take time, leaving instructors with the feeling that technology integration requires extra work (Reid, 2014).

The element of complexity also plays a role for teachers' use of IT. Many of the IT devices undergo rapid development and upgrade leaving teachers with a sense of confusion and complexity towards determining effective strategies for implementation. According to Fenty and McKendry Anderson (2014), many teachers do not feel adequately prepared to effectively integrate technology into their lessons.

Process. The process of adopting IT requires both professional development and technical support. Teachers could not utilize technology as a tool for instruction without being equipped with proper knowledge and skills (Fenty & McKendry Anderson, 2014).

Research conducted by Delgado, Wardlow, Mcknight, and O'Malley (2015) reported that teachers witness lack of support in many forms which include lack of peer support, technical support, administrative support, troubleshooting support, as well as support that is not focused on teachers' needs. In addition, another major barrier for the adoption of IT is the improper professional development program. Reid (2014) indicated that professional development should be tied to teachers' pedagogical use and not the technology device use. Teachers need to learn how technology would help to improve their specific teaching practices (Plumb & Kautz, 2015). According to Coklar and Urdakul (2017), teachers felt that they are unable to successfully integrate technology because they are not able to transfer the knowledge from training into the classroom.

Administration. According to Claro, Nussbaum, Lopez, and Contardo (2017), school principals with a clear vision on the purpose of integrating technology in learning are able to support and lead teachers to effectively utilize IT. A convergence in the views between school leadership and teachers can be a significant problem when it comes to integrating technology (Clarol et al., 2017). For example, purchases of technological devices are often made without teachers' input to consider their instructional needs (Reid, 2014). The study conducted by Claro, Nussbaum, Lopez, and Contardo (2017) revealed contradicting views regarding the adoption of new technologies. Teachers' views indicated that they did not receive adequate technical support and proper time for planning. On the other hand, principals have reported that teachers are provided with enough technical support and time for planning. Not having enough time for preparation of lessons was reported in a mixed method study of 19 teachers in early childhood setting

to be a significant barrier to implementing IT (Fenty & McKendry Anderson 2014). Plumb and Kautz (2015) echoed these findings in their review of literature on barriers of integration of technology early childhood setting that in adequate support from administrators was considered as a major barrier to IT.

Environment. The rapid development of technology has caused changes in the educational environment in terms of technological resources and pedagogical practices (Plumb & Kautz, 2015). In the traditional sense, the educational system is about teaching and learning where the teacher is the key player and main source of knowledge (Blackwell, 2013). The introduction of digital tools required teachers to adopt different pedagogical practices that encourage students to become independent learners who are able to construct their own knowledge (Claro, Nussbaum, Lopez, & Contardo, 2017). Results of a survey conducted by Sullivan and Turnbull (2013) on 49 teachers in New Zealand indicated that providing teachers with updated and enhanced technology resources required teachers to adopt different instructional practices to support teaching and students learning. The study also indicated that quality technological devices linked to teachers' curriculum could enhance teachers' pedagogical practices. The evidence presented by Sullivan and Turnbull (2013) also indicated that teachers who regularly engaged with technology made significant gains in their conceptual beliefs and pedagogical understanding of the value of technology education. Every organizational change deals with a diverse of interests, beliefs and perspectives that influence the process of change (Claro, Nussbaum, Lopez, & Contardo, 2017). For example, when integrating technology into instructional practices, teachers' beliefs, efficacy, and

attitudes will have direct impact on the process of integration (Belbase, 2015). Different studies on teachers' perceptions towards technology integration reported that teachers are concerned with how these technologies will help them to improve their work (Blackwell, 2013; Parette, Blum, & Quesenberry, 2013). Teachers' beliefs on teaching and learning practices have direct impact on the process of change (DeMeester, 2013). Therefore, the use of ICT as part of schools' instructional practices should consider addressing teachers' beliefs and attitudes in order for a school to undergo reform and create successful environment (Claro, Nussbaum, Lopez, & Contardo, 2017; Plumb & Kautz, 2015).

The Influence of Teachers' Beliefs and Attitudes

Insufficient training opportunities are viewed as a factor that hinders teachers' use of technology, but these external barriers do not offer a complete picture (Plumb & Kautz, 2015). Results of studies regarding teachers' barriers to IT showed that a significant hurdle to teachers' use of technology is related to internal barriers, which include beliefs and attitudes towards the value of technology (Kurt 2014; Hsu 2016; Carver 2016). Hsu (2016) in his mixed method study on 152 teachers in the United States reported that teachers' beliefs about technology consists of three components: pedagogical beliefs, self-efficacy beliefs, and beliefs on the value of technology. Results of the study indicated that teachers with constructivist pedagogical beliefs about technology had high self-efficacy beliefs about technology use and held positive value on the use of technology.

From a constructivist view, learners create knowledge by being engaged in interactive learning environments. Teachers who have a constructivist approach believe

that they are facilitators of the learning process to support students' construction of knowledge through engaging and collaborative activities (Parette, Blum, and Quesenberry (2013). A study conducted by Pittman and Gaines (2015) on third, fourth, and fifth grade teachers in Florida District indicated that teachers with constructivist views tend to integrate technology in their teaching practices more than teachers with teacher-centered approach (Pittman & Gaines, 2015). The survey conducted with 75 participants also indicated that teachers' attitudes and beliefs had significant positive correlations with high-level technology usage. In addition, teachers' self-efficacy and belief about what they are capable of doing as opposed to the knowledge they possess, is another indicator of teachers' integration of technology in classroom (Hsu, 2016). Teachers' personal beliefs of their ability to perform a specific action and reach desired outcomes can highly affect their motivational level and perspective to integrating technology in learning (Hart & Laher, 2015).

Another predictor to teachers' use of technology is the value that teachers perceive on how technology can improve student learning. Teachers who hold positive values on technology tend to use more technology in their instruction (Buquoi, McClure, Kotrlik, Machtmes, & Bunch, 2013). Teachers' personal values on how technology could benefit and increase students' learning affect the integration level of technology in classroom instruction. The survey conducted by Royce and Cassidy (2016) to explore teachers' perceptions and values to technology integration showed that teachers value technology devices that proof to help them improve their instruction. The survey was conducted with 153 teachers from K-12 setting. Results from the survey showed that

teachers' beliefs and values are also driven by how technology will ease and improve their work.

Results of a survey conducted on Chinese teachers' perceptions and attitudes towards technology integration to instructional practices revealed that age and gender have influence on teachers' attitude. The mixed method study on 47 teachers reported that age influenced teachers' confidence in their use of ICT for the preparation of subject material and for teaching, whereas gender influenced their willingness to spend time working on ICT (Lin, Huang, Chen, 2014). Similar results were found from a survey study in Kazakhstan using mixed-method exploring the role of teachers' attitudes toward technology integration in school through examining the factors of self-confidence, knowledge, gender and age that influence teachers' ICT attitudes. Findings showed that all four factors–confidence, knowledge, gender and age – have the potential to influence and change teachers' attitudes toward technology (Mustafina, 2016).

A study conducted in South Africa to investigate teachers' attitudes towards the use of educational technology (ET) indicated positive attitudes towards IT (Hart & Laher, 2015). The strongest predictor of teachers' attitudes was perceived usefulness followed by perceived cultural relevance. The study confirmed that when integrating ET into schools, attention must be paid to teachers' perceptions of the utility and usefulness of ET in order for integration to be successful. Offering accessibility to ET and having potential to use ET are not enough for the successful integration of ET in schools, but rather it is teachers' attitudes and perceptions, which play a key role towards effective integration into practice (Hart & Laher, 2015). Another qualitative study on Iranian teachers'

perceptions and attitudes towards technology integration revealed that teachers' attitude played an important role towards integrating IT (Rezaei, & Meshkatian, 2017). The study used Technology Acceptance Model to research how the variables of 'perceived ease of use' and 'perceived usefulness' could influence teachers' attitudes about adopting technology in classrooms. Teachers in the study reported that technology helped them improve their instructional practices. The study also reported that both perceived ease of use and perceived usefulness are influenced by external variables such as accessibility of technology, teachers training, and opinions of colleagues (Rezaei, & Meshkatian, 2017).

A multiple case study on 35 different schools in Spain confirmed on the importance of teachers' attitudes as a significant factor to using IT as it influences their willingness to use technology tools (Sanmamed, Sangra, & Carril, 2017). The study has been conducted to investigate teachers' attitudes towards IT at four different school models. A questionnaire was conducted with 1222 participants to measure how the levels of available technology devices at schools influence teachers' attitudes. Results of the study showed that the more schools are well equipped with ICT, the more favorable teachers' attitudes are. Another study conducted by the International Association for the Evaluation of Educational Achievement on three different countries including the Czech Republic, Germany and Norway showed that teachers' beliefs and attitudes play a major role to effectively using IT in class (Eickelmann, & Vennemann, 2017).

Another analytical survey study involving 260 teachers from 24 government primary schools in South Central Botswana, South Africa was carried out using purposive random sampling and questionnaire (Ogwu & Ogwu, 2013). Results indicated

that the majority (77%) of the teachers did not use IT due to different barriers. One of such barriers is the inadequate and insufficient technology hardware. Other barriers to not using IT included poor teacher preparation, poor technical support, a lack of specialist teachers, large class size, poor interpretation of the curriculum, and overloaded curriculum. Results of the two studies indicated that the more schools are equipped with sufficient and effective technology resources, the more teachers are encouraged to use technology (Ogwu & Ogwu, 2013).

Attitudes such as second-order barrier (Hur, Shannon, & Wolf, 2016; Plumb, & Kautz, 2015) and technology integration still call for research to suggest new perspectives, suggestions, and answers to the characteristics of teachers and schools in this digital era. Therefore, it is important to update variables and tools to explore and understand teacher's attitudes towards IT in order to improve students' learning (Blackwell, 2014).

Implications

By understanding the current uses of IT and factors that hinder teachers' use of technology, the school's stakeholders may address the learning needs of all teachers and provide them with the support they need. The results of this study may indicate to school officials a need for professional development based on teachers' specific professional needs to assure effective implementation. The school may decide to make some improvement or changes to the technical support model to meet diverse teachers need. Based on the findings of this study, I may develop a professional development training plan for teachers focused on the benefits of IT according to their specific area. The

findings of the study may also provide the school with a technology plan to guide them with implementing effective IT where they can utilize to provide proper teachers support with the intent to improving students learning.

In this study, I used the TAM to investigate current technology use and teachers' perceptions and attitudes regarding barriers to using IT in the local school. I strongly encouraged the integration of technology in schools' curricula in an effort to improve students learning. Therefore, this study resulted in the development of a project addressing the school need to encourage and train teachers to implement technology as an instructional tool.

Increasing the number of teachers using technology, as an instructional tool is an aim for this study. Therefore, investigating teachers' perceptions on using technology is needed to understand the lack of technology integration and how to increase its use in the classroom.

Summary

Any problem that affects student performance becomes a concern to the school community. This study explored teachers' perceptions regarding barriers to using instructional technology in the classroom. The findings of the study may be useful to school administration in decisions about the implementation of the professional development models and strategies for using instructional technology in classrooms effectively to improve teaching and students learning.

I searched literature relating to the topic of the study. I used the Walden library and Google scholar to search for peer-reviewed articles that fall within the last five years.

I selected articles that were current and relevant to my topic. Section 1 started with the existing problem and evidence of its existence, both at the local level and through professional literature. It also contained the rationale for the study. Section 2 described the methodology for collecting and analyzing data, the research design, research site, and how the participants were chosen. The section also included the analysis method, and ethical considerations. Section 3 contained a description of the project and how the project addresses the problem as in Section 1. Lastly, section 3 listed the evaluation method for the project and the implication of the project. Section 4 contained reflections and conclusions based on data collected and discussed the strengths and limitations of the project.

Section 2: The Methodology

Research Design and Approach

The purpose of the study was to explore teachers' current use of IT and their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. In this section, I discuss the qualitative study design used for this project study. This involved collecting data about teachers' perspectives, ideas, experiences, and knowledge about uses of instructional technology in terms of ease of use and usefulness. Talking to the teachers who teach using technology as assistive tool provided insights regarding barriers that hinder teachers use of instructional technology as well as their attitudes towards teaching and planning their lessons using technology.

The design for this research was qualitative in nature. A qualitative design made possible the collecting of narrative data about a social phenomenon in a natural setting. It also allowed the participants to express their views and feelings about the phenomenon. Qualitative research studies examine life experiences of people in real-world conditions (Yin, 2015). The qualitative case study design was appropriate because it allowed the researcher to develop an in-depth understanding of a particular phenomenon (Creswell, 2012). Case study is an empirical inquiry into a phenomenon in its natural context (Yin, 2014). In this study, I explored teachers' current uses of IT, and their perceptions of the ease of use of technology, the usefulness of technology, and the obstacles hindering them from effectively integrating technology. Therefore, an exploratory case study was appropriate because it allowed me to explore what and how teachers used technology.

According to Yin (2014), exploratory case studies examine data within the context of its use and helps the researcher address “how” and “why” questions of the phenomena of interest. An exploratory case study approach helped in exploring and understanding teachers’ views on IT as well as the barriers to integrating technology in classrooms.

I interviewed teachers from one school in their natural setting. The results of 10 individual face-to-face interviews and field notes from class visits and lesson plan checking provided thick descriptive data on current uses of IT and barriers to using technology. Moreover, the descriptive format of a qualitative approach allowed me to develop thorough thick descriptive data on teachers’ experiences, attitudes, skills, and current strategies of implementation. According to Njie and Asimiran (2014), qualitative research involves understanding the daily routines in individual lives. I used the case study design because it was considered the best for understanding the meanings participants created to make sense of the events and experiences in their natural setting (Taylor, Blount, & Bloom, 2017). However, I did consider three other research designs for this study.

One design was the narrative case study, which narrates experiences and stories as expressed by individuals in chronological form (Creswell, 2007). It was not selected because it focuses on narrating individuals’ lives in a story form. Another design was phenomenological research. Creswell (2003) wrote that phenomenology explores the essence of human experiences concerning a concept of phenomenon through a strong philosophical component. The focus of phenomenology is to capture the essence or structure of the experience from the participant's perspective. Phenomenology was not

suitable for this study because I intended to seek an explanation rather than the interpretation of teachers' experiences.

Grounded theory was the third design considered. Whereas a phenomenological design focuses on discovering the meaning of individual experiences through a philosophical glance; grounded theory move beyond description into generating theory (Creswell, 2007). Since grounded theory requires large number of participants, and extended data collection and time in the field, it was not considered for this study. The fourth design was ethnography. According to Creswell (2007), an ethnographic design is used to describe a cultural group, typically a large number of people sharing the same values, beliefs and patterns over a long period of time, by collecting primarily observational data. This design was not appropriate, as it required large number of participants, extended data collection and time in the field.

Although the above designs are qualitative designs, only the case study design fit the purpose of this study because the purpose of the study was to explore teachers' current uses of instructional technology and their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in their classrooms. A case study allows the researcher to gain a deeper understanding and bring to light the issue under study. In addition, the case study enabled me to gain from teachers' perspectives in a natural setting, obtain data that are meaningful and realistic, and analyze emerging themes (Creswell, 2013).

Participants

The selected group of participants consisted of ten teachers who were using technology in the classroom. I consulted the principal to provide a list of teachers who have been using technology for at least 1 year. The research site for this study was a private K-12 School which houses approximately 77 teachers of different subjects and grade levels. I intended to use purposeful sampling to select 10 participants for the study. Purposeful sampling was selected based on the participants' ability to provide comprehensive information on the phenomena of the study (Creswell, 2012; Merriam, 2009). Participants consisted of 10 teachers who were able to offer in depth understanding of the case for this research.

Selection Criteria

According to Merriam (2009), the most common sampling strategy for qualitative research is the purposeful sampling. The power of purposeful sampling lays in selecting information rich participants who can offer great deal of information to the investigator in order to gain an insight of the central phenomenon (Merriam, 2009; Creswell, 2012). To begin purposeful sampling, a selection criteria was determined in choosing the people for the study (Merriam, 2009). The criteria for choosing participants for the study was that teachers had attended training on technology integration and have been using technology for at least 1 year. I consulted the school principal for the names of teachers who were using IT in their lesson preparation and classroom. The school principal provided a list of teachers who were eligible to the criteria. I selected participants based on their experiences with using IT. The participants were teachers of different grade levels who used IT in their instruction. The participants included teachers

across kindergarten, elementary, middle and high school where three teachers from kindergarten, four teachers from the elementary and one teacher from middle and two high school teachers were selected for the study. Teachers who have been using IT in the classroom were selected to participate in this study to provide the needed information toward understanding the phenomenon because they were involved in teaching using IT. For purposeful sampling, participants should have background knowledge of the central phenomenon (Creswell, 2012). Their knowledge was based on their experience in using technology in classroom for at least 1 year. I asked the school principal to provide a list of teachers who have been using IT for at least a year to assure having background knowledge. I have chosen 10 participants from the list provided by the principal, who was not directly involved with the recruitment of participants. Having background knowledge helped to provide an in-depth study of information-rich cases (Lodico, Spaulding, & Voegtle, 2010).

Justification for the Number of Participants

The goal in selecting participants was to obtain rich and valuable information that will contribute to the understanding of the phenomenon, so participants were chosen based on their experiences with the topic (Creswell, 2012). Teachers selected for the study were anticipated to provide information on their experience with IT in their classrooms from different grade level views. To explore personal perspectives and identify themes, Creswell (2012) suggested selecting a small and manageable number of participants for the study.

For this study, there were ten teachers willing to participate. The participants consisted of three teachers from kindergarten stage, four teachers from elementary school as well as one teacher from middle school and two teachers from high school. The teachers were from different grade levels to gain a wider perception on teachers' views on technology integration. According to Lodico, Spaulding, and Voegtle (2010), purposeful sampling was used to obtain a variety of perspectives. This number of participants provided sufficient saturation of data and addressed the purpose of the study and research questions. Yin (2014) pointed out that once the data collected enabled the researcher to reach redundancy, then appropriate sample size has been reached. The number of participants was a good representation of the school campus teachers and appropriate to provide with the data needed for the study.

Procedures for Gaining Access to Participants

Gaining access to participants requires obtaining permission at different levels. This is an important step in the research process, especially a qualitative study. Merriam (2009) pointed out that obtaining permission is the first problem faced in fieldwork. To gain access to school sites sometimes require going through some bureaucratic procedures (Merriam, 2009). Besides obtaining permission, it is necessary to identify the *gatekeepers* within the research site (Lodico et al., 2010). Gatekeepers are the official leaders in the organization; for example, a principal of a school. The gatekeeper may help to suggest persons for the interview.

In preparation to access school site, I first completed IRB application and waited to obtain approval from the Walden IRB. Since this is a private school, there were no

formal approvals needed from the MOE. I obtained approval from the school owner. I have first contacted the office of the school owner, scheduled an appointment to explain the purpose of the study and obtained approval prior to accessing school. Secondly, I have taken permission from the campus administrator (principal) who was considered to be the only gatekeeper in the school campus. After obtaining permission from Walden IRB (Approval No. 10-16-18-0472452) and from the school owner and campus principal in writing I obtained consent from teachers on individual basis in order to participate in the study by using the written consent form. I explained to participants about the purpose of the study as well as the potential benefits, participants' rights and voluntarily role. Moreover, I obtained their consent to audio record the interview. I sent the consent forms to participants via email and provided 1 week for participants to think and review the purpose of the study before providing any consent. The signed consents were then collected from participants' via email in 1 week. Participation in the study was completely voluntary, and I made sure to review the purpose of the study with each participant prior to receiving any consent and prior to conducting interviews.

Researcher–Participant Relationship

For this study, data was primarily sourced from participants' interviews, which required building positive cooperative relationship with interviewee. Lodico, Spaulding, and Voegtle (2010) pointed out the importance of developing a positive relationship based on mutual trust and respect. The company I work for and the school for the study belongs to the same owner but with complete separate management. Because I used to provide some training sessions to teachers at this school 2 years ago, I can say that I have

already established positive, professional and collaborative relationship with school members including teachers and administrators. In my role as a trainer, I was able to interact with teachers and discuss pedagogical practices with no supervisory role over them.

My previous relationship with school members allowed me to easily relate with the study participants and paved the way for professional and cooperative environment. I treated participants with respect and tried to make them feel comfortable for the research process. I have met some of the participants before and after school time to explain the purpose of the study, ethical considerations like confidentially and privacy to encourage them to be open during the interview. As a previous trainer to the school, I had a good sense of the school context and culture which enabled me to easily associate with school community.

Ethical Considerations

The trustworthiness of qualitative research depends on the credibility of the researcher (Merriam, 2009). According to Lodico, Spaulding, and Voegtle (2010), the three main traditions which must dominate when conducting research are obtaining informed consent, protecting participants from harm, and ensuring confidentiality.

The principle of protection from harm was highly considered prior to conducting the research. After obtaining permission from Walden IRB and receiving the list of eligible teachers from the principal, I contacted the participants on an individual basis via email to seek consent. I made sure to explain the purpose of the study, the potential benefits and their right to withdraw at any time during the study. I also assured

participants that all data gathered during interviews, notes from classroom observations and lesson plan will be treated as highly confidential. I emailed the consent form to participants and gave them a week time to return via email or in hand if they decided to participate. Ten teachers have accepted to participate in the study. I made sure to remain neutral during the data collection process and used the interview questions, observation protocol, and document check protocol for all the 10 participants. Confidentially is a cornerstone in conducting qualitative research. Participant identities and data collected were treated as highly confidential to protect human rights. All data collection forms were stored off site to ensure that participants' data are well secured and confidential.

To address the element of confidentiality, I kept participants responses confidential by using pseudonyms throughout the study. There was no personal identification throughout the study as well in the final report. Interview protocol (See Appendix B) was used to ensure that the interview process was the same for each participant. Data collected were kept safe and secured in my personal file cabinet at home. The data collected will remain secured for 5 years after completing the project study to satisfy Walden University policy and then will be destroyed.

To address the component of informed consent, I contacted the ten participants to provide full description of the project study prior to their participation. I made sure that participants fully understand the purpose of the study and their voluntary nature of participation. I also discussed the interview procedures and withdrawal consent prior or during participation in the study. Since this study was not involving children or individuals under eighteen; therefore, no parental consent was obtained. I emailed the

teachers a copy of the written consent form and give them a week (Sunday-Thursday) to decide and sign the form if they will participate. I asked them to hand the consent forms on Thursday by the end of school hour in person, or return it via email. The participants have returned the consent form via email. To protect the participants, I made sure that the school principal was not involved in recruiting participants but rather in preparing list of eligible teachers based on the criteria for selection.

Data Collection

The purpose of this study was to identify and understand teachers' current use of IT as well as explore teachers' perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. Data were collected to answer the research questions.

According to Yin (2014), six sources of data (documentation, archival data, direct observations, interviews, participant observation, and physical artifacts) are common when collecting data for case studies. For this study, I collected three sources of data. I collected data through one to one teacher interview, two classroom observations for each teacher, and two lesson plans for each teacher. These sources of data were considered appropriate for a qualitative case study (Merriam, 2009). I gained permission to use the interview protocol, observation protocol, and lesson plan inventory from Thompson (2015). The author conducted a related research to examine teaching practices and teachers' perceptions of technology integration in their daily lessons and therefore, the instruments were relevant to the topic (see Appendices B, C, and D).

First, I conducted individual interviews. The interviews were conducted at my office as it is located next to the school building. The time for interview was set according to the participants' convenience. Each of the ten participants was interviewed for 60 minutes or less. Each participant brought a sample of two lesson plans as requested from the consent form. Both the interviews and classroom observations were completed in a period of 2 weeks.

Second, I have conducted two classroom observations for each of the interviewed participants. I arranged with each teacher the time of the classes which I need to attend and made sure to observe different grade levels. I went into the classes and observed how teachers are currently using IT in their natural setting. I have used the observation guide (see Appendix C) and observed each teacher twice for 45 minutes. Yin (2014) suggested if the case study is about technology, observation of technology in classroom is important as it allows the researcher to observe the use in real world setting. I used the data from the observation guide to understand how the IT was implemented at different grade levels. To increase the reliability of observational evidence, two observations were conducted for each teacher. Data gathered from observation validated data collected from interviews. The data gathered from observations and lesson plans helped in developing more thick and descriptive information. I reviewed two lesson plans for each teacher to develop an understanding on strategies used for employing IT. Both data gathered from observations and documents checking helped in establishing the reliability of the study by triangulating interview data with observation and document checking data.

All sources of data were reviewed and analyzed together to address triangulation of data and corroborate the findings. The three sources of data provided a deep understanding of teacher perspectives and actual uses of IT. As Yin (2014) reported that the most significant advantage of gathering multiple sources of data is reaching convergence about inquiry. Therefore, the multiple sources of data were used to validate data through triangulation and develop more detailed and comprehensive information to the study.

Data Tracking

I collected and stored all data safely and securely. Written transcripts or hard copies of lesson plans were locked and secured in my personal file cabinet at home. Interview audio records were downloaded in a password protected folder on my personal laptop to ensure security of data. I have also deleted all the original recordings as I completed the transcription process but I kept a backup of the recordings on my personal laptop which is password protected. I made sure to keep all participants identities confidential, therefore, I used pseudonyms to replace participant personal identities and assure confidentiality of data. When at school, I have locked all research data in my personal cabinet at work. After school and working hours, I also made sure each time not to leave any data collected before I left campus. All data collected were not accessed by anyone but myself. All data will remain locked for five years commencing the time I complete my project study in accordance to Walden University policy.

Role of the Researcher

I am an educator who works in a company that offers educational services to different schools. The owner of the company is the same for the school. In my work, I train teachers on different educational topics. I have trained teachers of the school under study two years ago and did not then, and do not now have any supervisory role over them. However, I have not trained any of the teachers who have participated in the project study. According to the fact that I do not have a supervisory role and do not have a professional relationship with the participants, data collection from these participants did not present an issue.

I assumed the school administrators and teachers may have limited knowledge about the value of IT and how it can help teachers improve their teaching practices and improve students learning, and therefore they are not implementing it properly. To limit any personal bias, I made sure to employ strategies like triangulation, member checking and peer review. This is to make sure that personal biases are not part of the outcomes of the study. I ensured not to influence the participants responses in any way and therefore I assured using subjective questions and listened carefully to participants' responses without making any facial expressions or changing voice tones. I respected participants' perspectives and allowed them to speak freely about their personal views. Creswell (2012) suggested establishing strategies for controlling researcher self-bias. I used member checks to assure that data collected reflected participants' views away from researcher perspectives. According to Merriam (2009), member checking or respondent validation helps researcher to avoid the possibility of misinterpreting the meaning of what the respondent intended. For the study, participants participated in member checking

once I had analyzed and interpreted all of the collected data. In addition, I also developed an audit trail of the methods, procedures, and decision points in carrying out the study. I described in detail how data were collected, how categories were derived and how decisions were taken. I developed a journal in order to write and record all reflections, questions, problems and ideas that emerged during data collection as well as decisions made in regard to data. I also used peer review where I discussed the initial findings of the study with a colleague who was not part of the study for proper development of themes. My intention was to conduct a study that is meaningful and credible.

Data Analysis

Lodico, Spaulding, and Voegtle (2010) indicated that data collection and analysis are continuous throughout qualitative studies. Data analysis is the process in which the researcher interprets and makes sense of collected data to answer research questions (Creswell, 2012). For this study, the primary source of data came from teachers' interviews. In addition, field notes from direct observations and documentation were analyzed for the purpose of triangulation of data. Following the data collection, data were analyzed to understand teachers' perceptions of the ease of using technology, usefulness of technology as well as identifying barriers to using technology in classrooms.

Analysis from Interviews

Merriam (2009) stated that "the much preferred way to analyze data in a qualitative study is to do it simultaneously with data collection" (p.171). For this study, I began the data analysis phase as early as first interview was completed. I made sure to review the purpose of the study and research questions and began to relate between

comments, ideas, hunches that resulted from first interview to prepare and refine for second interview. The purpose of the on-going analysis was to organize and refine data. With data management comes coding of data, which involve more specific organization into schemes that are relevant to the study. In addition, this continuous process of analysis helps in comparing between data and making sense of what is being collected. According to Merriam (2009), "all qualitative data analysis is primarily inductive and comparative" (p.175).

Qualitative data analysis can be done manually or by Computer Assisted Qualitative Data Analysis Software (CAQDAS; Bogdan & Biklen, 2007). For this study, I did not use data analysis software but rather did it manually by hand using thematic method. Merriam (2009) indicated that assigning codes to different bits and pieces of data is a way to begin constructing categories. I first used open coding strategy to identify ideas or themes using key words from participants. I searched for repeated words, phrases, and experiences related to ease of using technology, usefulness of technology and obstacles hindering teachers from effectively using technology, all of which were essential constructs from the conceptual framework. First, I analyzed the interview data and then the observation data and lesson plans. Open coding is labeling the data with some words, numbers or schemes that makes sense to the researcher and can be used to retrieved data easily (Merriam, 2009). I used an open coding strategy to code my data followed by axial coding. Based on the data gathered from interviews, observations, and lesson plans, the codes that emerged at the beginning were as follows:

1. Smart Board use every day

2. Teacher training
3. Role of the teacher
4. Teachers knowledge and understanding
5. Teacher planning
6. Instructional activities
7. Clear instruction
8. Benefits of technology
9. Easiness of technology
10. Challenges of teachers
11. Students' motivation
12. PowerPoint lessons
13. Instructional videos
14. Subject-related technology training
15. Technology policy
16. Teachers' attitudes
17. Troubleshooting and internet connection

Next, I used axial data to combine and group ideas together to form categories. Refinements were made to come up with final categories and subcategories (Merriam, 2009). I used colored highlighters to label the data codes and identify categories in terms of similarity. Coding involves the continual refinement and abstraction from data (Lodico, et al., 2010). Accordingly, open and axial coding was used in the initial stage to determine emerging codes and identify categories. Some of the emerging categories

included physical barriers of technology, ease of use of technology, instructional activities, and regularity of use (see Appendix F). This was followed by using descriptive method to assign themes for the emerging categories (see Appendix E). This resulted in five core themes:

1. Accessibility of technology and internet connection
2. Instructional videos enhance teaching and learning
3. PowerPoint-guided lessons
4. Teacher professional development
5. The challenges and needs of IT

The above process was done through searching for repeated words, phrases and experiences that are similar among participants. I examined each participant's responses chronologically. After I read the interview transcriptions for each of the participants, I coded the data from each response of the teachers' concerns to the interview questions. I developed open codes by reviewing the transcripts one question at a time for each participant and wrote repetitive words, thoughts, and responses. The ten transcripts were printed and aligned on a table so I could have access to all the data. To generate codes, I looked for words that were similar among participants' responses. I also repeated the same process of reading transcripts from observation and documents checks and developed open codes (see Appendix F). I conducted axial coding by searching for similar words and phrases among the three forms of data and developed categories (see appendix E). Categories were created from combining open and axial codes. Afterwards,

I re-read the emerging categories and developed themes by combining categories that yielded to similar meanings and results (see Appendix E).

Analysis from Direct Observations

To address the element of data triangulation, analysis from classroom observation was conducted. As stated earlier, analysis of data was concurrently collected with interview data collection. I conducted two observations for each of the participants. I began the analysis of the first class observation guide as soon as it was completed. The purpose of direct observation was to triangulate data collected from interviews. Notations were taken to begin the open coding phase for each observation guide. I started to write open codes like Smart Board use, PowerPoint in class, Mobile use and WhatsApp, Technical problems (see Appendix F) on each of the observation I completed. Then, I reviewed all the open codes and searched for repeated words. I combined similar codes and ideas together to create categories like physical barriers of technology, challenges of technology (see Appendix E). Initial categories are related to instructional activities, ease of use, usefulness in the classroom and challenges observed. The observation process allowed me to develop an insight on how technology is being implemented within the different classrooms, as well as what tools are being used. Emerging codes from classroom observations including Smart Board use, PowerPoint in class, mobile use and WhatsApp, technical problems, and videos were compared with codes constructed from interview transcripts like Smart Board every day, internet connection, technical problems, videos, PowerPoint, and songs to begin the next phase of axial coding (see Appendix E & F). I looked for similar and repeated words that emerged from the open codes of different

interview transcripts and observations then developed axial codes such as easiness of technology, instructional activities and regularity of use (see Appendix E)

Analysis from Documentation

I began the analysis of the first two lesson plans as soon as I received from each teacher during the interview. The purpose of documentation was to triangulate data collected from interviews and classroom observation. I transcribed my notes from the lesson plans into the document checking protocol (Appendix D). Field notes from documentations allowed me to acquire information on instructional planning activities employed by teachers as well as technology resources being used in the classroom. When the field notes were reviewed, I identified codes that emerged within the twenty different lesson plans for the 10 participants. These codes and categories included instructional activities, and the types of technology being used (see Appendix G).

Then I began the axial coding by combining repeated words, codes and experiences related to the conceptual framework, to determine teacher perceptions on the ease of using technology, usefulness of technology and barriers hindering from using technology and come up with list of major themes.

The set of category lists derived from interview transcripts, documentation and direct observations were merged to come up with one master list of major categories and sub categories derived from different set of data to describe teachers current use of IT as well as discuss teachers perceptions on barriers to technology in terms of perceived ease of use and perceived usefulness. Glaser and Strauss (1967) stated, “These categories have a life of their own apart from the data from which they came” (p.181).

After identifying the core themes, I reread the transcripts to reduce the similar groups of data so as to produce fewer themes. There were no discrepant data found.

Trustworthiness and Credibility of Findings

Regardless of the type of research, credibility and accuracy of findings are two major concerns, which could be addressed by how the data was collected, analyzed and interpreted (Merriam, 2009). Merriam (2009) stated, "Though qualitative researchers can never capture an objective "truth" or "reality" (p. 215). Creswell (2012) indicated that credibility seeks to make sure that findings are real and trustworthy. For this study, I used three strategies of triangulation, member checks, and peer review to ensure the accuracy and reliability of data analyzed and interpreted.

The first strategy I used for this study was triangulation of data. Triangulation is the act of comparing multiple sources of data to confirm findings (Merriam 2009; Yin 2014). I compared findings derived from interview transcripts with the other two data sources of direct observations and documentations. Moreover, teachers' interview findings were also compared to observations analysis to assure internal validity of data. The second strategy I used was the member checks. Following the analysis of interview transcripts, I shared two page summaries of my findings to all participants to verify the accuracy of interpretation. According to Merriam (2009), one of the strategies to control researcher's bias is to take back analysis findings to the interviewee in order to control any misunderstanding or misinterpretations. Therefore, I returned my findings to each participant to check the accuracy of the account by asking questions about the interpretation and the representation of the report to establish credibility and validity

(Creswell, 2012). They were given a week to complete member checking. I sent, via email, a brief description of my analysis of their interview, observations and lesson plan data. Each participant was asked to respond with any corrections or questions within seven days. I have also met with all participants to discuss the initial findings, or any concerns they have. This procedure was to avoid the possibility of my misinterpretation of participants' perspectives or what they meant (Merriam, 2009) and to ensure the accuracy of information, my interpretation needs to be derived from participants' experiences and must not be misrepresented. I provided short summary around two pages to each participant and provided a week time to collect their responses via email. I asked all participants to write any notes on their own summary and gave each of them the option to discuss their feedback with me outside school hours or online. They provided feedback to me by sending emails with their comments. I have resent an email to confirm the interpreted data. I paraphrased how I understand each thought to be and let them confirm before I go ahead with my analysis.

Data Analysis Results

I conducted interviews, classroom observations and took notes from the lesson plans inventory checklist to gain an insight and develop understanding on teachers' current uses of technology and also develop a perspective on teachers' ease of use of technology, usefulness of technology and barriers hindering them for effectively integrating technology. I documented meanings, thoughts and perspectives of teachers using a narrative approach to gain a perception about how teachers are integrating technology into the classroom instruction and the barriers they face. Narrative data allows

the participants to express their views and feelings about the phenomenon (Lodico et al., 2010, p. 142). The data gathered from interviews, classroom observations and lesson plans provided a description on types of technology resources that teachers used in class as well as the instructional activities they employ. Data also described teachers' views on the usefulness and easiness of using technology. The reported data also answered questions on factors that hinder teachers from effectively using technology and the challenges they face. Furthermore, the data showed teachers' recommendations on promoting IT at school as well as their attitudes and beliefs towards technology use in classroom. The narrative description provided views and insights about the participant's feelings and thoughts because the first-person accounts of experience form the narrative text of the qualitative case study approach (Merriam, 2009).

Findings

The purpose of the qualitative study was to explore teachers' current uses of IT as well as their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. The data were collected and analyzed to answer the following research questions:

RQ 1. How are teachers currently using technology in their classroom instruction?

RQ 2. What are teachers' perceptions about the ease of use of technology, the usefulness of technology, and the barriers to effectively integrating IT?

There were 10 participants in the study. The teacher participant consisted of three teachers from the K stage, four teachers from the elementary stage, one teacher from the middle school and another two teachers from the secondary school. I had scheduled an

individual meeting for each of the participant according to their convenient time. All teachers' interviews were conducted at my office as it was a quiet place and is located next to the school building. Each of the interviews lasted about 60 minutes or less and was audio recorded. I have met teachers either before school hours, during the break time or after school hours. Two lesson plans were collected during the interview with each of the teachers. Two classroom observations were also conducted for each of the teachers to observe how teachers are employing IT in the natural settings. Based on the data analysis from interviews, classroom observations and lesson plans, codes and themes emerged. I started building over-arching themes by combining or grouping related categories into core themes (Merriam, 2009). This resulted in the production of the following five core themes:

1. Accessibility of technology and internet connection
2. Instructional videos enhance teaching and learning
3. PowerPoint-guided lessons
4. Teacher professional development
5. The challenges and needs of IT

These themes emerged after combining and grouping codes and categories together from interviews, observations and lesson plans. I first highlighted the key words and phrases from each interview transcript, observation and lesson plan notes and collected them together in one sheet. I created categories and listed similar words and phrases under the relevant category. Then, I wrote ideas to myself in a journal, listed ideas and tried to find relationships. I have also made sure to search for the special vocabulary as it indicated

something important and common among participants. Next I used coding to eliminate, combine, or subdivide coding categories and looked for repeated ideas and larger themes that connected codes to develop the five themes. The themes were inductively derived from the data collected through the data analysis.

Theme 1: Accessibility of Technology and Internet Connection

The theme was about the lack of technology resources such as computers, classmate PCs and internet connection. This theme was mentioned throughout the data sources, indicating the limited technology resources such as computers in staff rooms and the lack of internet connection in the school. Teachers were unable to prepare lessons at school due to the lack of computers to use. Participant C1 mentioned how difficult it is to access computers in the school. It is very difficult to access computers in school. The staffroom does not have computers for teachers, and the only computers available are in the computer lab, which most of the time is occupied by students for computer classes. This means that teachers either need to bring their personal laptops or have to do the work at home, which discourages teachers from integrating technology into their lessons.

The barrier of accessible technology also included the limited number of Classmate PCs available for students. In addition, the logistical problems encountered when using the classmate pc is another problem. There are no personnel responsible for bringing, collecting, and charging the cart to be used. Participant M1 mentioned that if I will be doing the logistical part, then I am wasting half the time of my lesson, so there is no need to be using it from the start; also, the technical problems which happen in the

class with no immediate technical support also discourage teachers from using it in their lessons.

Another common barrier expressed by all the teachers was the lack of Internet connection. The lack of Internet connection hindered teachers from accessing online sources in the classrooms, and downloads online resources from the internet to prepare their lesson (Delgado, Wardlow, McKnight, & O'Malley, 2015). This also discouraged the use of classmate pc and the ongoing communication among teachers, students and parents using the LMS. Participant M1 mentioned "the lack of connectivity prevents teachers from using the classmate PC as teachers will not be able to connect their laptops with the classmates and work with students on a personalized level." Teachers showed disappointment for not having internet at school. Most of the teachers expressed their need to have online access in the classroom so they can use smart board more effectively. Participant O1 mentioned "the reason for having Smart board in each class is to have accessibility to a variety of online resources to serve the lesson. The board is more used as a projector to display what I have already prepared at home."

The school also has a LMS which has all prepared lessons, materials and resources available for each subject and grade level. The LMS is not used at school due to the lack of internet connection and lack of students' accounts. Teachers have expressed their willingness in using LMS to communicate with students by sending materials, resources and assignments instead of working in the traditional paper and pencil technique. Participant M 1 stated, "I tend to use What'sApp for sending materials and communicating with students. I don't like the idea of using what'sApp as I feel it's used

for personal communication, and I would rather have the LMS as a way for official communication with the students". Classrooms I observed showed that teachers use what's app as a mean for sending materials such as instructional videos for students to watch on their personal mobiles during class time as a mean to overcome the connection problem.

Several of the participants interviewed expressed that the lack of technical support prevents teachers from successfully integrating technology into their lessons. Participant K1 stated, "I worry so much about the technical problems which happens during the lesson because it wastes my time, and also I get embarrassed as a teacher for not being able to solve the problem." The teacher explained that the school has only one support staff which supposed to serve all the three buildings. This situation created a unique problem at that school as teachers feel discouraged from using technology due to the technical problems they might encounter and lack of immediate troubleshooting.

Theme 2: Teacher Professional Development

Participants have received general training in the use of technology at the first year they were hired at school. Some of the participants mentioned that they have received additional trainings afterwards, and others said that the only training they received was part of their induction. The training was mainly focused on using the smart board as a mean for instruction. Trainings or workshops on employing other technology tools or resources in learning such as Microsoft 365 were not offered. Participants also indicated that the trainings are not very effective, as it does not give them the chance to practice and demonstrate what they learn. Participant A1 stated, "In order for me to

properly use technology in class, I have first to self-practice at home and teach myself how to do it;" I already have technology background and interested in the use of technology, but I know others who have no skill or even the will to do it. Therefore, trainings should provide hands- on application for participants. The interviews showed that trainings offered are not very effective. Participant A1 stated that, "training is boring; I don't need to be learning how to use online dictionaries when I am already teaching Math." All participants indicated the need to have a subject related PD where they can properly learn how to employ IT in their own academic standards and how to use specific technology devices and tools such as classmate PC and Microsoft 365. Participants S1 and SH mentioned that they felt that technology is not serving their subject in an effective way. They also thought that this could be due to the lack of training on how to use technology in their specific subject and grade level, as well. Teachers need to see the usefulness of technology in the specific curricula in order to effectively use it. According to Vaughan and Beers (2016) in their study on exploring professional development initiative to introduce ipads in early childhood education, teachers' perceived usefulness of technology is a main construct to technology integration.

Participants in the study also agreed on the need to have monitoring and supervision after the training where they can receive feedback and learn new strategies for application. Participant N1 stated that, "I try to apply what I learn in the training because I believe in the importance of technology, but some other do not have positive attitude towards technology; therefore, there must be supervision."

The majority of the participants in the study agreed that they needed continuous training in the area of integrating IT, along with time and opportunity to practice. Vaughan and Beers (2016) reflect on the importance of creating time and space to allow teachers to make changes in their practice and experiment with new pedagogies.

Theme 3: Instructional Videos Enhance Teaching and Learning

Each classroom in the school where the research was conducted has a Smart board. Teachers' interviews and classroom observations indicated that teachers rely on using instructional videos as part of their teaching strategies in the class. All teachers agreed that videos are a very beneficial source they use to grab the attention of students and keep them interested. Participant A explained:

> I love using videos in my lesson as a warm up and wrap-up activity. I think that it's very important for me to start the lesson in an engaging way to encourage students get motivated about the lesson. Also, I use it as a mean to end up my lesson with a summarizing activity.

All participants from different grade and subject matters confirmed that videos encourage class discussion. (Zainuddin & Perera, 2018). Participant K stated that I start my lesson with a video and then ask the students to describe what they see and invite for different point of views. This makes the startup activity of my class more vibrant and encourages students' discussions and invite inquiry based learning to happen.

Participant O also explained that videos provide clear instruction for the introduction of the lesson and encourage students' discussion. Participant O stated that I download part of movies from you tube and also grammar lessons and ask students to work in groups to

discuss what they saw and then start a class discussion. Watching videos also encourages students to think (compare, critical think, problem solve). It makes students more interested. It also saves my effort in class and in my preparation. It also encourages collaboration among students.

All of the teachers confirmed that instructional videos make students more engaged with the content of the lesson (Aznar-Díaz, Hinojo-Lucena, Cáceres-Reche, & Romero-Rodríguez, 2020). Participant N1 told me that instructional videos were huge within daily lesson: "I start my lesson by playing video on counting numbers allowing students to dance on the song while exercising fitness, jogging, clapping and learning to count up to hundred in a fun and engaging way." Participant N2 also shared that videos are very engaging to students especially at the KG stage as a warm up for the lesson. Participant N2 stated: "I download and play videos from website Jolly phonics on letter pronunciation, asking students to sing while pronouncing in the correct form. Students learn while playing." Participants shared that there were so many sites to find educational videos relevant to their content online such as You Tube, Jolly Phonics, Star Fall. They also agree that videos are an essential tool used which make their teaching easier. Participant N1 stated " I don't have to be spending the whole time talking but rather technology does the work."

One of the participants also mentioned a very interesting tool that he uses to make the lesson more engaging and interesting to students. The teacher shares that he asks the students to use their mobile phones and scan the QR codes available in the booklet. The QR codes when scanned are linked to online instructional videos that explain to students'

audio visually about the specific part of the chapter. He also mentioned that he asks students to use the QR at home before coming to school the next day as a preparation. This encourages the teacher and student to get in engaged in class discussion the next day and also promotes students' independent learning.

All of the classes observed showed that students are engaged in learning via instructional videos. Also, observations indicated that when teachers are utilizing the instructional videos in their teaching, the classes are more disciplined and managed than other parts of the lesson where teachers are lecturing.

Participants indicated that instructional videos are a great resource for educators to help engage students in learning and improve teaching. Although most of the participants mentioned their willingness and love for using the videos, several participants along with classroom observations showed that there is a risk of technical problems, and they should have alternative method for instruction.

Theme 4: PowerPoint-Guided Lessons

Most of the interviewed teachers use PowerPoint presentations as a means of IT. PowerPoints are used by teachers to guide their lesson during instruction. Teachers shared that they prepare PowerPoint ahead of time and use it constantly on daily basis. They mentioned that employing PowerPoint in their daily instruction make the lesson more organized and illustrative. Furthermore, students are more engaged in lessons because of the animated pictures and audio visuals. Interactive PowerPoint presentations are not only used by teachers to guide their lessons, but rather to encourage students' participation. Participant K1, A1, and O1 agreed that PowerPoint helps them start the

lesson in a more engaging and fun way to students. They can include pictures, video links, and songs to make it interactive and motivating for students.

All participants agreed that using PowerPoint's makes the lesson fresher and updated. The findings align with other research in this area (Liu, Xu, &Pange, 2016; Ledbetter & Finn, 2018). During interviews, participants explained that when started using technology, it took a long time for them to search for content and prepare PowerPoint presentations that are relevant to their content, interactive and engaging for students. However, now it's very easy as they only make updates for their work by including videos, pictures or games. Participant M mentioned that "having my ready-made PowerPoints save my time in lesson preparation as I only need to make updates and also save my time during the lesson as I don't have to be doing all the talking but rather PowerPoint's guides my instruction.

Participants in the study use PowerPoint in many ways. Participant N said, "I like using PowerPoint because if I haven't finished my lesson or a student have been absent, I can send it for them on what's' app. The teacher said, "By sending my lesson on what's app via PowerPoint, students are more responsible for their leaning as they have online access to the PowerPoint. Teacher M also stated that, " PowerPoint make it easy for use as teachers to share lessons and have like a wide pool of digital content available to modify and use". Participant S shared that the wide range of accessibility of PowerPoint online makes it easy for teachers to prepare the lessons.

PowerPoint is frequently used in content delivery by most of the participants.

Participant C stated, “I like using PowerPoint as it help me deliver the lesson with different strategies like videos, songs, pictures, and also I can include wide variety of games. This makes my lesson much more fun and makes the students happier to learn and retain information". Classroom observations also confirmed that when teachers use PowerPoint, the lesson is more organized and disciplined (Santos, Afonso, &González, 2020). One of the classes I observed indicated that students were motivated when the teacher started the lesson by a video. Another class showed that the teacher was able to have a disciplined class because of explaining the lesson using a game included in the PowerPoint. Also, all the teachers I observed in the study expressed that preparing a presentation ahead of time, using PowerPoint saves valuable instructional time. This is because the content is already made, and the teacher does not have to keep writing on the board and give the chance for students to get distracted but rather the teacher stays focus with students and students remain engaged. The findings also align with another study in this area (Chou, Chang, & Lu, 2015; Ledbetter et al., 2018).

Theme 5: The Challenges and Needs of IT

Participants expressed their needs and challenges of effectively implementing IT in the school. Participant S stated that, "technology integration should be treated as a major school goal" the teacher mentioned that the school needs leadership support which value technology in order to be effectively reinforced. Participant S also stated, I would say that one of the key factors that hinder the use of technology is parents' resistance. Not all parents are convinced with the importance of technology on students learning. They prefer the old tradition teaching method where the teacher explains everything for the

students and provide homework to be solved using school textbook. Parents still like the idea of children using textbook or other exercise books as their only mean of information. They sometimes feel that if there kids are using computer at home for watching videos, etc. then they are playing and wasting their time. Also, Participant M mentioned, “the lack of school system regarding technology integration is another factor”. The teacher mentioned that school leaders need to set a school policy on technology integration in order to be followed by teachers, parents and students. For example, the LMS system is not used in school as it's not part of the school system. Technology should not optional in should but rather mandatory. Participant M stated that, in order to promote the use of technology, both the administration and teachers should value technology, but first the administration should be a great believer in the importance and usefulness of technology and make it part of the system and then teachers and parents will follow. This indicated that the school needs to raise awareness for parents on how technology will benefit students learning (Stanley, Vaterlaus, Tulane, and Beckert, 2017). The other challenges teachers stated were:

- The lack of effective maintenance and troubleshooting; teachers agreed that technical problems hinder the technology integration and waste the time of the lesson. Participant N2 stated that “the week lens of the projector make it very difficult to use the smart board in an interesting way to students. Also, the lighting in the class impedes teachers from showing visuals on the board as the board become so hazy.” Participant H1 stated, "if the school is willing to properly use technology then maintenance issues should be highly considered

because at this point it is not the teachers fault but rather it's a school or administrative problem."

- The lack of internet connection made teachers feel limited with what they can do with students in the classroom. Teachers shared their willingness to integrate more online resources if they have accessibility to internet in the classroom and staff room.
- The lack of proper professional development. All teachers agreed that training should be tailored according to the teacher's needs. Subject related training was considered as major need for all teachers. Teachers felt the need to have training relevant to the content they teach in order to gain knowledge and understanding on how they can properly integrate technology in their subject matters. Participant A1 mentioned that, "training also need to be offered in a language understandable by teachers". Other teachers also shared the fact the training should be offered according to computer skills of the teachers.
- Monitoring and supervision on technology integration is another factor that teachers felt as a great need (Vogel, 2018). Teachers claimed that technology integration in school highly relies on teachers' personal attitude and will and is not monitored by school supervisors. Teachers felt the need to have regular monitoring on the use of IT and provide feedback on how they can improve their strategies. Also, the lack of school policy on technology integrations and the lack of supervision resulted in the fact that not all school teachers are using technology.

Conclusion

The findings of the study showed that teachers have positive attitude towards technology integration but they encounter challenges that hinder them from properly employing IT. The findings align with a study conducted by Canals and Al-Rawashdeh (2019) who investigated the attitudes of teachers regarding the use of IT. The study found that teachers have positive attitudes towards IT when given the appropriate PD based on their own individual needs. In this project study, teachers' perceptions of the process of integrating technology in their daily instruction varied, but overall perceptions were positive toward its use. Even though technology is not used with full potential in classroom and is mostly limited to guided PowerPoint and instructional videos due to the lack of knowledge, yet teachers believe that teaching methods and students' learning is more engaging with technology. All participants in the study reported that they integrate technology to the degree of their knowledge and the degree of availability in their classroom. However, teachers also shared that technology can be obstructive due to various reasons such as lack of knowledge and training, lack of technology skills, technical problems and accessibility as well as leadership support. The findings are aligned with other research (Ried, 2017). In their study examining the current state of technology integration in developmental education in Texas higher education, Martirosyan, Kennon, Saxon, Edmonson, and Skidmore (2017) cited that "most frequently technology barrier was associated with the lack of technology and support, and the lack of training on how to use technology. Another study conducted by Raulston and Alexiou-Ray (2018) found that the lack of knowledge on instructional methods is a major

barrier to successfully integrating technology. The findings are similar to the study conducted by Lynn and Michael (2019) who reported that the lack of IT knowledge and skills of teachers may create barriers to their ability to understand and design instructional content involving technology.

Section 3 discusses the project developed for this study to addresses teachers needs and concerns regarding barriers to using instructional technology. The project selected for this study is a professional development program to help support teachers in effectively using instructional technology in classroom to improve teaching and students learning. The following section also discuss project description, outcomes, and how the project will be evaluated.

Section 3: The Project

Introduction

The purpose of the study was to explore teachers' current use of IT and their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. In this section, I discuss the goals and outcomes of the project. The 5 emerging themes are also discussed in the literature review. In addition, this section addresses the project implementation plan, potential barriers, limitations, and the evaluation plan.

I developed a 3-day PD training to address the needs of teachers and help teachers overcome technology barriers' based on the analyzed data. The training focused on three areas: (a) instructional planning and keys to successful collaboration, (b) effective instructional strategies for implementing IT, and (c) the flipped classroom. The aim behind the PD was to help teachers learn about a variety of instructional strategies on integrating technology in their classroom, which, in turn, impacts their perception about the ease and usefulness of technology.

Most in-service training is in the form of short, decontextualized workshops that typically focus on the introduction and use of a specific digital tool (Blocher, Armfield, Sujo-Montes, Tucker, & Willis, 2011; Lawless & Pellegrino, 2007)—not on how to use that tool to meet specific classroom instructional goals. Therefore, this training was designed to help teachers demonstrate the skill of integrating IT in their subject. The desired outcome of the PD was to help teachers develop an understanding of keys to effective instructional planning as well as providing opportunities for teachers to

demonstrate the skill of integrating digital devices in their instruction. The PD also offers solutions, such as the flipped classroom technique, to deal with potential obstacles, such as accessibility and a lack of internet connection.

The project of this study was a PD for all teachers at the school who were using technology in their instruction. For this PD to be successful, it had to be designed to provide opportunities for teachers to *learn by doing* rather than being in a learning passively. This PD approach focused on building teachers' knowledge about the pedagogy associated with using technology and supporting teachers as they sought to overcome barriers to integrating technology (see Hutchison & Woodward, 2018).

Goals for the Project

The goals of this project were to increase and enhance teachers' instructional knowledge and skills when using technology, which, in turn, would improve their perception about the usefulness and ease of technology. Teachers practiced ways to plan their lessons effectively using technology. Teachers also developed an understanding of the importance of collaborative planning by forming a professional development community (PLC) structure.

A collaborative professional development model is the foundation for teachers' engagement in an effective training (Vaughan & Beers, 2016). It focuses on providing time for teachers to practice new skills and to create learning communities focused on technology integration (Vaughan & Beers, 2016). The model allows teachers to be actively involved in learning by doing. The PD covered three modules:

- Instructional planning and keys to successful collaboration: This module will provide teachers with opportunities to develop instructional goals in their subject matter instruction. Also, the module guide the teachers on how to collaborate and plan together to create an effective learning situations in the classroom
- Effective instructional strategies for implementing IT: This module will help provide teachers with wide variety of strategies to use during instruction to enhance their teaching and learning context
- Flipped classroom: This module will educate teachers on how to plan and implement a flipped classroom strategy to overcome the lack of internet connection and maximize the use of technology.

The three modules were separate but related in terms of the goal. The goal of the PD is to educate teachers how to develop instructional goals and infuse technology as an aid to achieve the goal. Also, the modules will provide opportunities for teachers to gain knowledge on multiple instructional strategies to use in their own specific curricula. In addition, the PD will provide opportunities for teachers to form collaborative learning communities and develop an understanding on how collaboration with peers can enhance teaching using technology. Teacher learning by collaborative design is more prone to developing understanding (Svendsen, 2017). Also, developing professional learning communities provide teachers with not just skills and knowledge to improve their teaching practices but also an ongoing community that values each teacher's experiences and uses those experiences to guide teaching practices and improve student learning

(Svendsen, 2017). The PD modules were created to encourage teachers' participation in learning through practice, interaction and collaboration. Therefore, the role of the instructor is to facilitate learning rather than demonstrate and exhibit learning. The instructor is to provide opportunities for teachers to search for knowledge and practice problem solving through a collaborative environment (Giannoukos, Besas, Galiropoulos, & Hioctour, 2015). The PD is designed over a 3-day training to develop teachers' knowledge and practical experience to enhance their IT application which in turn will increase students learning.

Each day of the PD was designed to cover topics needed to address teachers needs based on the results of analyzed data. The PD is designed in way to encourage hands on activities and practical experience. It is also designed to offer collaboration opportunities to guide learning experiences. Although the project is mainly geared toward addressing teachers' needs, there will be opportunities for administrators and supervisors to participate in some of the training sessions. Some of the teachers indicated the need to have continuous feedback through monitoring and supervision in order to enhance the integration of IT. One session of the workshop will focus on venues of collaboration among leadership, supervisors and teachers.

Learning Outcomes

The targeted group for this PD is the teachers of different stages including KG, elementary, middle, and high school. School administrators and subject supervisors are encouraged to attend in order to build an effective collaborative learning community. The intended learning outcomes of this training are to develop and enhance teachers'

knowledge and skills to effectively use digital tools in their instruction. This PD is designed to widen teacher's knowledge on strategies to be used to integrate technology in their specific content. The PD may also enhance the channel of communication between teachers, supervisors and leadership and help in building a collaborative relationship through teamwork and professional learning community planning.

The Rationale for the Project

The purpose of the study was to explore teachers' current uses of IT, as well as their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. The findings of the study indicated that teachers are not knowledgeable about various types of instructional strategies to effectively integrate technology. Also, teachers shared their need to have continuous training and feedback relevant to their subject. Therefore, this project is aimed to address the needs of teachers based on the analyzed data and outcomes. The teachers indicated that a PD that focuses on integrating technology in their specific subject area would be helpful. Day 1 of the PD will focus on instructional planning using technology and building a professional learning community. Day 2 will focus on multiple teaching strategies and activities to integrate technology in specific curriculum. Day 3 will be about how to implement a flipped classroom strategy to overcome accessibility and internet problems. The PD genre is considered appropriate for this project as teachers will gain knowledge on how to plan their lessons using technology and it will allow teachers to become involved in professional learning communities which encourage regular communication and feedback. In addition, the teachers in this study indicated their need

to have PD directed to using technology in their specific subject matter. Although data analysis of teachers' perceived barriers to technology integration revealed several areas that impeded teachers' use of technology, I decided to focus on the professional development component, as a literature review revealed that teachers are the most critical factor in successful technology integration.

Review of the Literature

The research relevant for this project is presented in this section. The review of literature was obtained by searching for scholarly and peer review articles from Walden Library database and Google Scholar. Key words for searching included *technology professional development, barriers of IT, technology instructional planning, professional development models on technology, collaborative models on technology, teaching strategies on IT* and *flipped classroom.*

Professional Development and Technology Integration

PD is a means to help teachers increase practical knowledge and skills in their field. Mouza and Barrett-Greenly (2015) argued that an investment in teacher professional development is more important than investments in the technology itself. Teachers need to have the basic skills and confidence when using technology, and they need to be provided with assistance when integrating technology in their curriculum. Research found that sending teachers to workshops is ineffective on its own; teachers need to be provided with opportunities to implement teaching techniques in their classroom while supported with ongoing feedback and assistance to properly integrate technology in their lessons (Morrison, Novak, & Vanderwerff, 2016). Accordingly,

meaningful professional development trainings should incorporate opportunities for teachers to engage in learning that leads to transformation of instructional practices with an emphasis on improving student achievement (Ciampa, 2017). Professional development needs to be tailored according to teachers technology needs and skills in order to enhance teachers integration of IT.

Traditional professional development frameworks, which typically embodied a one-size-fits-all approach, often fail to take into consideration teachers' specific needs, pedagogical knowledge, and past experiences with technology (Ciampa, 2017). Additionally, teachers' perceptions, beliefs, and ideas about the benefits of technology integration are frequently overlooked with traditional PD (Ciampa, 2017). According to Abdul Razak, Kaur, Halili, and Ramlan (2016), many traditional (face-to-face) professional development programs initiated to equip teachers with knowledge and skills have been futile. The authors found that only 12-27% of teachers have seen an improvement in their teaching after attending such professional development activities (Abdul Razak et al., 2016). Teachers need to be given a PD opportunity relevant to their personalized needs, problems encountered, and specific to their subject matter and the technology resources available in their own classroom**.** Effective PD needs to help teachers acquire a greater knowledge base, engage in actively applying that new knowledge, and include opportunities to integrate new understandings into existing classroom structures (Canaran & Mirici, 2020).

Teachers should be provided with an on-going, high-quality PD training opportunity that addresses their personalized needs and practical work experiences

(Wabule, 2016). In their study to investigate teacher learning and beliefs in a 2-year technology professional development and its impact on student achievement in science, Leea, Longhursta, and Campbell (2017) found that teachers' technological skills and ICT capabilities increased over time with significant gains each year. The authors also found that ongoing teacher training positively influenced teacher learning and beliefs about technology, which in turn had positive influence on student' achievement in science (Leea et al., 2017). A similar study was conducted by Dilshad, Hussain, and Batool (2019) to investigate university teachers' engagement in CPD activities and barriers in professional development of teachers. The study showed that CPD was important for teachers in order to overcomes barriers they encounter using technology. Dilshad et al. administered a self-developed questionnaire to 700 teachers from four different faculties in Southern Punjab. From their results, they suggested that professional development of university teachers might be taken as ongoing process (Dilshad et al., 2017). For helping teachers improve their academic and research skills, workshops and seminars must be frequently planned and organized by the universities. Therefore, the study suggests that planning on going training for teachers will develop their technology knowledge and skills overtime.

Follow-up training and continued professional teacher development (CPTD) can help teachers to maintain positive attitudes, improve their knowledge and skills, and consistent with effective implementation of technology (Engelbrecht & Ankiewicz, 2016). The ongoing PD is beneficial for newly hired who needs to develop knowledge and skills and also for the further development of qualified teachers with specific content area. An ongoing and meaningful PD is important to support teachers' professional needs

(Nicholas & Fletcher, 2017). According to Englebrecht and Ankiewicz' (2015) study to determine effective criteria for CPTD, the following eight criteria which should be present to ensure providing successful CPTD program:

C1 CPTD should develop a teacher's school knowledge.

C2 CPTD should develop a teacher's discipline knowledge.

C3 CPTD should develop a teacher's pedagogic knowledge.

C4 CPTD should develop a teacher's skills, attitudes and values.

C5 CPTD should develop and enhance a teacher's personal subject construct.

C6 CPTD should include theoretical experiences.

C7 CPTD should include practical experiences and take a teacher's prior experiences of technology into account.

C8 CPTD should include a teacher's reflective experiences.

Accordingly, CPD will improve teachers' attitudes and pedagogical strategies using technology, which will improve teaching-learning experience in the classroom.

Teachers who attend PD are more likely to change their instructional practices (Koellner & Jacobs, 2015). Teachers should be provided with an on-going high-quality PD training opportunity that addresses the technology instructional methodologies and practical work experiences. A study conducted to examine the effect of PD program in two districts revealed teachers implemented what they have learned in the PD in their classrooms (Howell, Hunt-Barron, Kaminski, & Sanders, 2018). The authors gathered data through teachers' interview, observations, and surveys (Howell et al. 2018). The results showed that when teachers implement instructional skills learned at the PD, they

improve their teaching practice in class which in turn contributes to increasing students' performance (Howell et al. 2018). Van As (2017) conducted a study to determine the impact of PD on teachers' professional knowledge in South Africa. The qualitative data were gathered through observations, an open-ended questionnaire, and field notes (Van As, 2017). The findings of the study revealed that teachers gained discipline knowledge and acquired instructional pedagogy from which students will benefit from in classroom (Van As, 2017). A similar study conducted by Hu and Garimella (2017). Hu and Garimella investigated the impact of PD program on teachers' instructional practices in science. Data was gathered from pre- and post-attitudinal survey. Qualitative data also included copies of lesson plans, presentations, journals, and class observation notes. Hu and Garimella's study showed that PD has positively influenced teachers' integration of technology in science, which in turn has impacted students learning.

Many professional development models, which aim to support teachers to integrate technology, are often short and decontextualized. In reference to the Technology Integration Planning Cycle Model of Professional Development (TIPC) Model of PD, effective teachers training should include the following elements: whole-group professional development sessions, long-range planning, and access to instructional coaches, professional learning communities, digital tool resources, observations with reflections, and a comprehensive project website. Designing professional development activities that include the above-mentioned elements of the TIPC model may contribute to the success of teachers' experiences in training. Also helping teachers reflect and solve problems and share their experiences during PD

sessions helps them improve their professional practices, which may lead to improved student performance. The above research studies are related and resulted to improving student performance. TIPC model could also be used as an avenue for collaboration and planning technology instructional lessons that will benefit students' experiences in the classroom. .

According to the study conducted by Hutchison and Woodward (2018) teachers' instructional planning and delivery, as well as their perceptions of their proficiency with technology integration, changed when they participated in a TIPC model. Data in the mixed method study were collected through pre - posttests, interviews, observations and field notes. The study findings indicated that selective exposure to digital tools, professional learning communities, and opportunities for reflection were the most transformative elements of this model for teachers. The findings also revealed that performance of students with teachers engaged in TIPC model has increased. Providing teachers with the opportunity to collaborate and reflect on what they learn during the PD sessions is a key element to enhancing teachers' skills to using IT. Another study conducted to investigate successful elements of teachers PD revealed that collaboration and reflection stages are significant practices for succesfull PD experiences. Data from this study were obtained from three teachers semi structured interviews and archival data. The findings of the study suggested that collaborative working atmosphere and time for reflections on what they did in PD sessions resulted in a gradual shift from negative to positive views on integrating technology (Özlem & Hakki, 2020).

Teachers need PD experiences that challenge them and translate into the classroom in meaningful ways (Epp, 2017). A study conducted to understand factors that impact teacher implementation of learning from professional development revealed that providing PD, which offers opportunities for personal adaptation, is essential for teachers learning. Data were gathered through interviews and observation to develop an understanding of factors that influence the appropriation of PD. Data in the study showed that teachers adapt what they learn in the PD according to their personal context and experience. This indicates that PD needs to be tailored according to teachers' personal needs and skills in using technology. Data also indicated that teachers benefit when engaged in a continuous professional learning communities. The study also revealed that building professional learning communities where teachers can have an ongoing discussion and communication is another factor, which contributes to teachers' professional growth (Longhursta, Jonesa and Campbell, 2017). Another study conducted by Jones and Dexter (2018) to examine the efficiency of technology integration learning activities offered to teachers throughout a school year revealed that engaging teachers in informal collaborative learning activities is reported by teachers to be very effective. Jones et al. (2018) indicated that teachers in the study shared their thoughts via surveys and interviews about engaging teachers in professional learning activities where they get to work with their colleagues of the same subject and grade level highly benefited their IT practice. Also, being engaged in regular informal discussion and communication with one another provide just in timely and on-going support for teachers' growth (Jones et al. 2018)

Continuous professional development has an effect on teacher attitudes towards technology integration overtime. Gurevich, Stein, and Gorev (2017) conducted a study to trace changes in choices of technological tools and attitudes toward technology use among novice teachers at three stages of their professional development. Data for the study were collected and compared through questionnaire for successive five years. The study showed that teachers' attitude towards the value of technology integration has changed overtime due to practical experience and ongoing training and feedback received over long period of time. Results of the study revealed that only as practical teachers were the participants able to see the benefits of technology (Gurevich, Stein, & Gorev, 2017). PD should remain sustained to impact teachers' practices. Another study by Liao, Leftwich, Karlin, Glazewski, and Brush (2017) examined teacher perception on how much useful the technology PD with regard to content and format provided. The data were collected through questionnaire and semi structured interview. The study revealed that more personalized, and sustained PD is needed to effectively support K-12 teacher technology integration (Liao et al. 2017).

PLC is another means where teachers meet to collaborate, plan, and share ideas for their students. Kafyulilo, Fisser, and Voogt (2016) conducted a study to examine the impact of teacher design teams as a professional development arrangement to enhance teachers' knowledge and skills in integrating technology. The study was conducted in a secondary school in Tanzania and involved 12 participants. To determine the change in teachers' knowledge and skills in using technology, data were collected before and after the PD through interviews, questionnaire and observations. The aim was to assess

teachers' experience working in teams. The study indicated that collaborative professional communities allowed teachers to share, knowledge, experiences and skills which in turn had positive impact on their teaching. Another study conducted to examine the impact on three fifth-grade teachers participating in a PLC over 1 year. Teachers in the study experienced barriers when integrating technology in their literacy course. The barriers included a lack of time for preparation and opportunities for effective professional development. Accordingly, one potential approach to overcoming these barriers is through collaborative work, or professional learning communities. The study revealed that working within a PLC has helped teachers with ample time to learn together, and created a regular channel of communication where teachers, share, discuss and work together to effectively integrate technology into literacy instruction (Thoma, Hutchison, Johnson, Johnson, Stromer (2017). Therefore, it is essential to consider teachers to work within PLC framework to overcome barriers where educators could collaborate around a shared mission, vision, and set of goals for continuous improvements (Bates, Huber, McClure, 2017; Thoma, Hutchison, Johnson, Johnson, Stromer, 2017; Zhong, 2017).

Pang, Wang, and Leung (2016) examined the practices in three schools in Hong Kong identified as good PLC campuses and found that there are six different areas to assure implementing PLC practice well. This includes leadership for teacher learning, collaborative learning capacity, student-focused orientation, a culture of sharing, mutual understanding and support, and continuous professional development. The research findings show that within the schools, which were identified with a strong professional

development practice, both the school leaders and teachers had strong emphases on the six elements of the PLC practices. This study shows the importance of PLC practice to promote a continuous professional development. The PLC help teachers collaborate to plan together, share thoughts and ideas for improvements and also discuss and find solutions for challenges they face when integrating technology.

Teachers' attitude is a factor to consider when designing PD on technology integration. Hao and Lee (2015) examined the patterns of 200 Taiwan middle school teachers' concern about Web 2.0 technology integration in instruction. The study showed that most of the teachers had little knowledge of Web 2.0 integration which in turn had impact on their attitudes towards integrating technology in their classroom. The study also indicated that professional development programs should be customized according to teachers individualized needs and provides individualized resources and support so that all teachers can evolve in their practice. The authors, therefore, suggested providing PD that is designed to enhance teachers' knowledge on how to integrate technology in their own pace. This in turn, will influence teachers' attitude towards technology integration. Age and years of experience are factors that impact teacher attitude towards technology use. Kotcherlakota, Kupzyk, and Rejda (2017) conducted a study to examine the relationships between teachers' attitudes and years of experience in using technology. One hundred eighteen faculty members from a Midwestern U.S. nursing college participated in national studies o faculty technology use across two years. The study showed that newer faculty was more likely than experienced faculty to have positive attitudes for increased technology use and adoption. Therefore, the study

suggests providing faculty with PD opportunities to increase their knowledge, skills, and abilities for integrating and implementing technologies in teaching.

Although teachers receive professional development opportunities on the use of technology and digital tools, they still continue struggle to effectively integrate digital technology into their instruction (Murthy, Iyer & Warriem, 2015; Tondeur, Forkosh-Baruch, Prestridge, Albion, & Edirisinghe, 2016). PD can be presented in various formats (Koellner & Jacobs, 2015). For PD to be effective, it is necessary to provide hands on opportunities for teachers where they can learn by doing and demonstrate the skill of using technology in their own pedagogical instruction. Also, teachers need to have collaborative opportunities to discuss, share and plan together through different activities of small groups and discussions. Teachers also need to have mentors and technology experts for ongoing support. The ongoing PD needs to be part of the school culture and practice. The purpose of PD is to provide sustainable professional support for the teachers so that they can integrate technology effectively and successfully (Blanchard, LePrevost, Tolin, & Gutierrez, 2016; Hutchison & Woodward, 2018; Kim, Xie, & Cheng, 2017; Murthy, Iyer & Warriem, 2015).

Woodward and Hutchison (2018) explored the influence of the support, time, access, and knowledge model (STAK) on the technology integration practices of elementary teachers. The study involved three teachers who are different in the level of engagement and success in using technology. Through implementing the STAK model, the study indicated that providing ongoing support, time to work, access to an expert during and after the professional development session, and knowledge specific to the

topic, can influence teachers' planning and integration of a specific digital tool. Accordingly, this study showed the significance of providing professional development opportunities based upon teacher's needs. Designed professional development programs should consider teachers' individual needs a priority with regard to existing knowledge, concerns, and practices. It is also essential to provide PD opportunities where teachers learn by doing and become involved in collaborative activities to encourage the development of sustainable professional learning communities. Baran (2016) conducted a study to examine the impact of a faculty technology-mentoring (FTM) program as a university-wide professional development model. The model compromised of six elements which include determining faculty needs; exploring technologies' affordances; scaffolding; sharing feedback; connecting technology with content, and content; and evaluating the PD. Twenty-four faculty members were part of the study. The author collected data through weekly blog post, case reports and interviews. The results of the study indicated that it is essential to design PD programs based on teacher's needs. Also, providing ongoing and regular technical support through various channels of communication help faculty achieves their goals and overcome problems. In addition, the study indicated that technology integration should be connected to faculty's' pedagogical goals. Therefore, PD programs needs to be tailored according to individual needs and concerns, eliciting their existing knowledge, and maximizing their learning (Ng, 2015).

Instructional Planning, Collaboration, and Effective Communication

Teachers' inability to integrate technology in their classroom instructions has become the major reasons for the limited use of technology in the teaching learning

process (Dewi, Lengkanawati, & Purnawarman, 2019). It is important not only to equip teachers with technology tools in the class, but also provide them with the knowledge on how to plan their content-based subject using these specific tools (Christ, Arya, & Liu, 2019). Therefore, an essential part of this PD is to equip teachers with the ability to use certain technology tools to deliver subject content knowledge using appropriate instructional strategies. Accordingly, it is important to educate teachers to not only have their technology skills but also have the knowledge and skills to integrate technology tools into their teaching strategies and subject content knowledge (Tsai, 2015).

Teachers' instructional planning to effectively integrate technology in learning is very essential (Shaffer, Nash, & Ruis, 2015). Research on technology integration in instruction emphasized the importance of teachers to use pedagogically relevant digital tools rather than digitizing the available content (Hutchison & Woodward, 2014; Leu et al., 2015). The study conducted by Hutchison and Woodward (2018) to examine how teachers instructional planning has changed due to participation in the technology integration planning cycle (TIPC) model of professional development, emphasized the importance of identifying instructional goal before selecting the digital tool. The purpose of developing instructional goal is to ensure that teachers' uses of technology are aligned with their curricular goals. The authors also reported on the importance of forming PLCs. This provides opportunities for teachers for focused dialogues about technology integration and enforces channels of communications. Teachers in the study noted that their continuous and consistent dialogue with their grade level peers was essential for the successful integration of technology. Teachers also noted that during their PLCs

meetings, they can bring goals and obstacles they encounter for discussion and finding solutions.

The successful experience in technology integration is determined by teachers' pedagogical knowledge, content knowledge, and technological knowledge (Dewi, et al. 2019). A study conducted to explore teachers' consideration in choosing certain technology tools in the context of technology-integrated lesson design activities reported on the significance of considering the following phases when planning for IT. The phases include identifying goals, analyzing learners, planning instructional activities, and choosing digital resources. Data were collected through focus group discussion during the lesson design activity as well as semi structured interview. To effectively integrate technology, the study indicated that teachers first need to develop instructional goal by identifying content, knowledge and skills to be learned. Then, teachers need to put in consideration the learners' weaknesses, interests and needs (Dew et al., 2019). In this way, teachers will be able to select the instructional activities that could be enhanced by technology and others which do not require technology. Also, teachers tend to consider the affordances of technology to solve certain problems, and the identification of the potential utilization of the technology tools to be integrated in the lessons.

Collegial collaboration is an essential aspect for teachers' successful integration of technology (Hatlevik & Hatlevik, 2018). Teachers prefer informal methods of training when learning how to use ICT and developing their digital competence; this is because teachers can discuss and share their ICT knowledge within their own natural setting. A study conducted by Mathews and Johnsons (2018) to explore teachers' perceptions of

collaboration and use of online technology revealed that working through collaborative assignments increased teachers' self-confidence and helped them recognize the value of communication in terms of curriculum and instructional planning. This highlights the importance that teachers need to work collaboratively and develop on going channels of communication to enhance their instructional planning when using technology. Individual teachers cannot solve the technical and instructional problems they encounter on their own; they need to work and support each other through effective communication to overcome the technology challenges they perceive (Donnelly & Hume, 2015).

Mitchell, Friedrich, and Appleget's (2019) study about teachers' collaborative blogging in the United States responds to the call for more collaborative efforts in schools, along with expanded use of technology. The study used collaborative blogging as a mean to expand teachers' knowledge and skills to integrate technology in classrooms. The study which involved 83 teachers enrolled in elementary teacher education course indicated that digital collaborative experience has shifted teachers' attitudes and development of technology integration pedagogy because teachers were allowed to share their work and progress, success they achieve and also discuss all the challenges and problems they face. The ongoing communication through blogging provided teachers with a platform to collaborate learn and expand their knowledge in integrating technology via online setting.

PD is one of venues for creating collaborative working atmosphere where teachers could discuss, share and learn from each other's expertise. Ongoing collaboration is one of the key elements for teachers' development in their teaching practices to

integrate technology because teachers can debate about their strengths and weaknesses and build a professional learning community to support each other in a meaningful way (Bates, Huber, & McClure, 2016).

Flipped Classroom Teaching Strategy

An important strategy that can help teachers overcome some of the problems such as lack of internet connection in classroom is the flipped classroom. A technology base Flipped classroom mandates a shift in the teaching practices. Flipped classroom is a pedagogical method that requires students to obtain the base knowledge at home through videos and online resources and allow classroom time for active group work and application of knowledge (Andreychik, & Martinez, 2019). Abdullah and Ismail (2019) used pre and post oral proficiency tests, observation, and focus group interviews to examine the effectiveness of using flipped classroom model (FCM) on English speaking performance indicated FCM as an effective strategy in teaching English as foreign language. Data were collected from 27 undergraduate students. The results of the t-tests revealed a significant difference between pre and post English proficiency test following the FCM. The study also reported that student' involvement and willingness to participate in the English conversational tasks has increased.

Flipped classroom pedagogy is one of the strategies that engages, facilitates, and supports students' personalized learning in contact, or online. The pedagogy also requires teachers to plan intended, meaningful, higher-order thinking activities for in-class sessions to stimulate active engagement, but also to create learning opportunities for students to prepare before class sessions (Wyk, 2019). A study conducted by Rahmelina,

Firdian, Maulana, and Aisyah (2019) to examine the effectiveness of flipped classroom model on technology introduction course revealed that flipped classroom has positively influenced students learning which in turn led to the increase in students achievement. The authors collected data from 22 students using pre and posttests. The study also reported that using flipped classroom model has also improved the teaching pedagogy of teachers and paved the way for more active learning opportunities in class.

Flipped classroom can influence teachers' attitude towards technology integration. Unruh, Peters, and Willis (2016) conducted a study to compare the beliefs and attitudes of teachers using the flipped versus the traditional class model. Data were collected from surveys and interviews from a large suburban southeastern Texas school district. The study has measured teachers' attitudes and beliefs with regard to the following scales: Attitudes towards Technology Scale, the Frequency of Involvement in Technology Scale, the Technology Comfort Scale, and the Technology and Teaching Efficacy Scale. Following the analysis of one to one interview and data analysis, the findings reported that flipped classroom teachers have higher technology and teaching efficacy, greater comfort levels using technology, higher frequency of involvement in technology, more positive attitudes toward technology, and greater levels of student engagement. To enhance teacher IT practices and enrich student-learning experience, it is essential for teachers develop an understanding of flipped classroom models.

Flipped classrooms encourage students to become more responsible of their learning and increase academic achievement. Abar and Moraes (2019) examined the impact of flipped classroom model on teaching and learning in mathematics found that

FCM had a positive impact on student learning. Watching instructional videos has greatly helped students to pause and replay whenever needed. Moreover, solving exercises at home before classroom time helped to reveal students' most common doubts, changing the face-to-face lesson strategy from problem solving to focus on doubts. The study reported that flipped classroom promoted personalization of learning. Flipped classroom approaches foster teacher use of IT and support students' personalized and self-directed learning (Zamzami & Jacqueline, 2018). Students in the study reported that flipped classrooms promoted active learning through video-enabled instructional practices. Results of interviews and observations indicated that students benefited from the wide range of online resources available and were able to work at their own pave and interest. This indicated that flipped classroom model has promoted students self-directed learning and changed the instructional paradigm (Zamzami et al., 2018).

Flipped classroom pedagogy promotes interaction between teachers and students and engages students to learn through application and practice (Wyk, 2017). The flipped classroom approach encourages a student-centered approach of teaching and learning. Flipped classroom places students in the center of learning process and help them become self-directed learners. Furthermore, flipped classroom strategy changes the role of the teacher from being the sole dispenser of information into a mentor and facilitator (Lo & Hew, 2017). A study to explore student teacher reflections on the usefulness of a flipped class design in a teaching methodology course has reported several positive gains of the flipped classroom strategy (Wyk, 2018). The flipped classroom has formed an interactive collaborative space between teachers and lecturers during both the online and offline

activities. The strategy also encouraged students to become responsible of their learning and achieve the learning goals. Similarly, Shyr and Chen (2018) and Van Wyk, (2018a) reported that a flipped classroom promotes students' self-regulation and make informed decisions as responsible learners.

To ensure successful implementation of a flipped classroom model, it is essential to equip teachers with the knowledge and skills needed to implement the strategy. Wyk (2018b) stated that in order to develop a successful flipped classroom experience, the teacher should give clear instructions about what needs to be done for specific activities as per the learning goals. This means that teachers need to thoroughly prepare for the activities to be done online and in class. Teachers plays a vital role in planning, designing, and modeling quality learning materials to ensure a successful teaching and learning experiences for students.

Project Description

Potential Resources and Existing Supports

The PD training is expected to take place at the school site, and the school vice principal is expected to be the facilitator. The school's vice principal is a certified technology instructor with many years of experience in IT integration. The facilitator does provide PD on integration of technology to different schools. The school will provide the training resources (projector, smart board, laptops) and other materials (pens, sheets, highlighters, and markers) to be used for the PD. Teachers will be advised to bring their curricular framework and lesson plans for practice. Teachers will also receive handouts on the training content. PowerPoint presentations will be used to present the

training content. During the training, participants will be required to participate in-group work to discuss topics presented and work together for practice purposes. Whole-group discussion and hands-on activities will be conducted to promote the concept of professional learning community and assure skill practice by participants. The PD will take place during the summer holiday, which is the regular timing for the training schedule at school. A follow up training will be recommended to take place throughout the academic year for continuous support.

Potential Barriers

The potential barrier for conducting the PD is that some of the teachers might be travelling during the summer time. Depending on the date for the PD, some of the participants might have already planner summer vacation on the PD dates and therefore might not be able to attend. To overcome this barrier, the principal might decide to repeat the same training on different timing before the commencement of the school year. This might be during the resume time for the teachers "planning week." In this way, the teachers who missed the training can benefit.

Proposal for Implementation

The PD is a 3-day workshop to be implemented before the beginning of the school year of 2020-2021. I will make recommendations to the principal that the training be repeated before the beginning of the second semester as a refresher. Also, I will make recommendation that the training be provided each month for the teacher as follow up to provide tips or support for continuous improvements. Since each subject has a weekly

meeting scheduled, the school's vice principal can attend the meetings to provide support and answer all the inquiries and concerns that teachers might have.

The school's principal may consider that all the teachers be involved in the subject meetings for successful technology instructional planning. This will allow teachers to have ongoing support and communication. Teachers would discuss progress and share concerns they have regarding planning using technologies. This will strengthen the channels of communications among teachers and build a collaborative atmosphere. The weekly meetings will also allow teachers to discuss strategies and applications that worked well and what needs to be changed. It is proposed that the 3-day workshop be conducted 2 weeks before the beginning of the academic year so teachers can have time to plan and prepare their lessons. Teachers will start implementing strategies the first week of the school.

Roles and Responsibilities of Student and Others

My role is the developer of the project, and it is my responsibility to take into consideration the needs of the teachers as I develop the project. The teachers shared that they need training on how to have PD that provides for them successful strategies on how to integrate technology in their subject matter. Teachers also need continuous supports that help them overcome their concerns and answer the questions they have regarding technology integration. The teachers also reported the need to have solution to overcome the Internet problem they have at school. Therefore, all participants and teachers will be invited to attend the workshops and implement the learned strategies in their classrooms. The school principal will be invited to attend the training in order to be aware of the

suggested strategies and techniques for proper technology integration. It is important to provide teachers with necessary resources they need and also recommend that the principal schedules follow up training to provide them with ongoing support.

Project Evaluation Plan

The project was developed to educate teachers about effective strategies and techniques to integrate technology in their instruction. The project effectiveness will be evaluated using formative and summative evaluation. Using formative and summative feedback will inform about the success of the project and will also provide feedback for any modification if needed.

Formative Evaluation

Participants will be asked to respond to survey by the end of each day of the training. Participants will be asked to provide feedback on the overall organization and presentation of the PD. Participants will also provide feedback on the usefulness of the content presented and areas that need improvement. The feedback provided on daily basis will provide the project developer a means to respond the needs of the teachers to assure successful implementation of the project. It is the responsibility of the project developer to assure that the goals of the project are achieved. I will also make daily adjustments to the PD content where necessary.

Summative Evaluation

Participants will also complete a summative evaluation by the end of the school year to provide feedback on the effectiveness of the PD project. Participants will complete a survey to evaluate the PD goals and the overall effectiveness of the PD on

their instructional practices. The survey will provide feedback on whether the PD has changed teachers' instructional practices using technology (see Appendix A). The evaluation will also provide data on whether the outcome of the project has been attained. The project goal is to develop teacher knowledge and skills to effectively integrate technology in their instruction. The outcome of the PD may lead to enhanced teachers' performance using technology instruction which in turn will lead to increased students' performance.

The project was developed to educate teachers about how to effectively integrate technology in their instruction which may lead in return to improved students' performance. The content of the PD presentation is developed to help teachers understand, practice and apply knowledge on strategies to integrate technology in their content successfully. Successful implementation of the project will be determined by the summative evaluation by the end of the school year.

Project Implications

Local Community

Participants in this study believe in the value of technology in education and are in great support to integrating technology in their daily instruction. However, participants indicated that it is challenging. A major concern with the current professional development model is a lack of focus on personalized learning and mastery of skills. Participants indicated the need to have PD training tailored according to their needs to improve their knowledge and skills of integrating technology in their specific content area. Therefore, this project has been designed to positively effect teaching practices of

local teachers. This professional development project aims to promote personalized learning and mastery of skills, and also address the needs of teachers within the local community in a nonconventional manner; instead focusing on deliberate learning; the PD will provide teachers with hands on applications to improve their knowledge applications and skills. The PD may provide support to students to perform better because the PD focuses on instructional methodologies which may result in better students' achievements. The PD may also enhance teachers' self-efficacy and confidence level to using IT in the future.

Effective instructional practices lead to increased student achievement. According to Wilson, Zygouris-Coe, and Cardullo (2019), teachers have an undeniable influence on student results and are able to maximize that influence once they are supported by their school and provided with the time and resources necessary to engage in professional learning opportunities. Increased academic achievement within the school could have a far-reaching impact on families, community partners, businesses, and all community stakeholders because high achieving schools receives high reputations, acknowledgment from the government which also leads to high student enrollment.

Far-Reaching

The project has the potential to change the technology instructional practices in schools using technology for instruction. This project can help schools improving teachers' instructional methodology which may benefit students' performances. Although the project was designed to meet the needs of specific local teachers at one school, it could also benefit other neighboring schools or schools of the same district who use

technology in their instruction. This project can prepare teachers to meet wider range of students needs by utilizing technology as an assistive tool. The project also has the potential to improve the way teachers teach and the way students learn in the classroom. Existing professional development models focus on introducing new information and teaching new skills within a single setting to educators regardless of their professional needs, skills, or interest. The module based professional development model will focus on providing teachers with opportunities to practice knowledge and improve their skills based on their own needs. An additional far-reaching benefit of the module-based PD model is the fact that the model is not restricted solely to technology integration. Its principles could be applied to a variety of educational topics.

Conclusion

An emphasis on technology integration in schools requires investing in teachers' professional growth and technology skills. The PD project focused on developing teachers' knowledge and skills to effectively integrate technology in their instruction. The goal of the project is to provide teachers with knowledge and skills needed to utilize existing technology and improve their teaching practices. In addition, the PD helps to educate teachers to develop instructional goals and infuse technology as an aid to achieve the goal. Also, the Module based PD model will provide opportunities for teachers to gain knowledge on multiple instructional strategies to use in their own specific curricula. Furthermore, the PD will provide opportunities for teachers to form collaborative learning communities and develop an understanding on how collaboration with peers can enhance teaching using technology.

Section 4 discusses the strengths and limitations of the project and outline how the project addresses the problem. Also, I outlined what I learned in areas of scholarship, becoming a practitioner, and being the developer of a project as well as addressing how the project study can lead to positive social change and its implications for future research.

Section 4: Reflections and Conclusions

Introduction

The purpose of the study was to explore teachers' current use of IT and their perceptions of the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in classroom. In this section, I discuss the strengths and limitations of the project and outline how the project addresses the problem. A 3-day PD was developed to address teachers' needs as indicated in the data. In the following sections, I outline what I learned in areas of scholarship, becoming a practitioner, and being the developer of a project. I also address social change in the context of the project and its implications for future research.

Project Strengths and Limitations

Project Strengths

The study addressed the concerns of teachers regarding technology integration and problems encountered during implementation in the classroom. Teachers indicated that a PD would help them understand and learn about strategies they can use in their curricula to enhance their teaching and improve students' learning. The PD would also help develop teachers' knowledge and skills in IT planning and encourage teachers' collaboration (Wabule, 2016).

In the literature, PD is essential in helping teachers to properly integrate technology and enhance the teaching–learning experience (Dalal, Archambault, & Shelton, 2017). One of the strengths of the PD is that it will develop teachers' knowledge on how to plan for their instructional technology lessons and how to use a variety of

instructional strategies in their subject specific course. Also, the module-based PD model promotes personalized learning and mastery of skills; thus, the PD will provide teachers with hands-on applications to improve their knowledge and skills. Since it is a module-based learning, it encourages teachers' active participation in group discussions and learning together as teachers. This will strengthen their professional relationships and encourage support for each other in the classroom and during planning time (Bodil, 2020). Because the PD focuses on instructional methodologies, it has the potential to support students so that they perform better, which may result in better students' achievements (Lumpkin, Achen, & Dodd, 2015). Also, understanding principles of flipped classroom strategy and how to implement it in their teaching methodology could help teachers overcome the lack of an internet connection and a scarcity of resources (Ralimelina, Firdian, Tri Maulana, Aisyah, & Na'am, 2019). The PD experience may affect teachers' perspectives about the easiness of technology, the usefulness of technology, and their actual use of technology, which are the main constructs of the conceptual framework of the study (Egoza & Ruth, 2019). Through the 3-day training, administrators may understand the value and benefit of technology and establish opportunities for scheduled collaborative planning to build collaborative learning communities. This may also allow administrators to arrange for ongoing PD opportunities for teachers continuous support and development according to their own needs.

Project Limitations

The limitations of this project include participants' availability to attend the PD. The attendance of participants is beyond my control as developer of the project. As it is

suggested to offer the PD during the summer vacation, so some of the participants may not be available. Therefore, I would suggest to the principal to reschedule the training on the planning week which before the commencement of the academic year. In this way, the teachers who missed the training will have the opportunity to attend. Also, the monthly collaborative follow up planning is in the hands of the principal and I will not be able to have control on this issue.

Recommendations for Alternative Approaches

The problem as discussed in Section 1 focused on teachers' underutilization of IT in the classroom. An alternative approach to defining the problem could be students' low performance due to teachers' ineffective use of IT in their teaching methodology. An alternative way to address the problem could be using surveys to collect data on challenges teachers' face in the classroom. Also classroom observations and students records could be used to develop a mixed method approach (quantitative and qualitative). Through a mixed method design, I could collect data using qualitative and quantitative tools. I could focus on providing teachers with strategies needed to enhance students' performance in the classroom. I could also collect students' scores to compare and measure their progress after teachers receiving support on teaching strategies. Pre and posttests could be used to collect quantitative data.

Scholarship, Project Development and Evaluation

This study helped me to become patient and resilient through working on all the demanding hard work of the doctoral study. I realized that patience, and hard works are key elements to success. The best way to deal with challenging assignments is to work

hard, manage time and believe that this will pay off later. The historical definition of scholarship typically includes knowledge and learning (Boyer, 1990). This definition has evolved overtime to include four main elements of discovery, integration, application, and teaching (Ander & Love, 2017). Discovery is considered as the traditional research process of investigating certain phenomenon using a scientific method. Integration is the process of interpreting knowledge across multiple subjects. As for application, it is when the researcher uses educator's findings to help society and the final type of teaching involves studying various teaching models to maximize learning. As a researcher, I practiced scholarship in my study by reading and gaining more knowledge and using the knowledge in my writing and developing my project, which may have impact on the society. I also read literature about my topic to expand my knowledge and analyzed the information to support my findings. In addition, I searched a variety of data basis and read textbooks to develop understanding and learn about forms of styles of qualitative research. I participated in collegial dialogues and I was able to expand my knowledge and synapsis. During my study, I learned to view ideas from other peoples' perspectives which helped me to become more objectives and less biased to my views. Each participant in the study offered a unique experience and perspective that I valued and added to my research findings. Also, the observation of classroom provided me with valuable data as viewing things in their natural settings.

In this research study, I read literature, learned from my instructors, colleagues, and from being at the research site. I used the knowledge to conduct my data collection and analysis and to support my findings. This research helped me to develop clear goals,

be focused, work hard and develop time management and organization skills. Through this research, I was able to develop knowledge and demonstrate practice of the four types of scholarship.

Project Development

I developed my project based on the outcomes and findings of the study. I also reviewed peer-reviewed articles, and other dissertations to learn about project development. I considered teachers needs when developing the project in order to have positive impact on their teaching experiences. I accommodated their needs in the project to assure successful practice. In this project, I learned how to become focused with clear goals.

Creating a project to address the research problem and meet the needs of educators was critically important to me. I wanted to have a successful first contribution to scholarly work that would benefit instructional practices.

Leadership and Change

This doctoral experience taught me that the concept of leadership and change is beyond taking charge and dictating others to follow. I realized that leadership is more of taking into consideration the needs of people and building the leadership capacity in others. Leadership is about supporting others to become leaders by providing guidance towards achieving goals and enhancing the self-actualization. Leadership requires flexibility and the ability to understand when particular leadership behaviors are to be used depending on the context (Kramer, Day, Nguyen, Hoelscher, and Cooper, 2019). Throughout my study, I realized that the purpose of leadership is to create a reality that

influences the attitudes and behaviors of others to help achieve goals. Working on my study helped me to understand the importance of communication and collaboration in achieving goals and fostering change. Change is challenging and requires effective communication of shared vision and common goals. A leaders need to create opportunities for subordinates to grow and develop their self-efficacy in order to promote change. During completing this project, I realized that change requires leaders to promote collaborative working environment where everyone is motivated to work hard to achieve a common goals. It's not about imposing change but rather about inspiring everyone to work collaboratively if change is needed with regard to supporting others to grow.

Analysis of Self as Scholar

During this doctoral study, I have grown not only academically but also as a scholar. I recall on my early years as a high school teacher, I used to follow the approach of one-size fits all. Teacher-centered strategies were implemented in the class despite of the students' personalized needs. I was more focused on increasing the achievements of students more than helping them discover their own capabilities and support its continuous growth. However, completing my master's degree and starting to work on the doctorate degree has completely changed my educational vision and the value behind it. I began to view teaching and learning as life long process where people need to be equipped with skills that would help them develop knowledge and use this knowledge to solve problems. During my doctoral process, I have developed not only professionally but also as a scholar. My understanding of the word research has changed as I came to realize that research involved reflecting on the data gathered for improvement of the local

setting. Analyzing and reflecting on data gathered from different sources and applying this data to develop a project, which aims to address the need to particular group of people was a highlight of my growth as a scholar. I have also learned the importance of reading and learning from a variety of credible sources to expand my knowledge as a scholar and be able to achieve reliable results. As a scholar, I communicated with other scholars and colleagues in the field and shared and exchanged information about issues of concerns. I grew in my understanding to accept and learn from different perspectives and backgrounds. The learning process is a continuous process that requires life-long learners. Acknowledging the expertise of others and trying to support them to build their own capacity is vital. Throughout this doctoral study, I realized that commitment and hard work are keys to success. I realized that with determination, I could overcome the challenges and also learn from it. Accordingly, I became more confidence in my knowledge and skills as scholar. Developing the project gave me the opportunity to apply the knowledge I learned to benefit the local community. Finally, as a scholar, it is essential to contribute to the existing knowledge by adding new ideas and thoughts that may positively impact education, instructional practice and serve school community.

Analysis of Self as Practitioner

My knowledge and skills from my doctoral journey have made me develop as a practitioner. I learned that true learning comes with putting knowledge into practice. As a project developer, I searched for peer reviewed research-based practices to assure the credibility of findings. Each phase of my doctoral process has enabled me to apply the knowledge I learnt and put into practice. I now have the knowledge and practical

experience to transfer what I have learned into my professional context. I feel equipped with knowledge and skills to keep developing as a scholar and contribute positively to the learning community. Also, being engaged in continuous dialogue with scholars, and colleagues helped me to understand and learn from different perspectives and assure addressing other people's needs. In my project, I assured considering participants needs to ensure providing a successful experience that may positively impact their learning experience as adult learners.

Analysis of Self as Project Developer

This project was developed to address the needs of teachers in using technology in their instructional practices. The teachers indicated that they do not receive ongoing training personalized to their own professional needs to effectively use technology in the classroom. As a result, I developed this project while considering participant needs and paying attention to all details as indicated by teachers. Following the data analysis, I reviewed the data several times to ensure addressing the needs as shared my participants. Initially, I thought that teachers attitude played a very important aspect in shaping how teachers utilize technology in education. After conducting this study, I came to see things differently; I started to consider putting all my personal biases on side and deal with data collection and analysis with an objective approach. The outcome of the study proved that my initial assumptions were wrong as I came to understand that the improper PD and the lack of Internet connection were major challenges. Therefore, I learned not to reach conclusion about issues until I find out about it. Accordingly, I reviewed all the data again many times and eliminated my personal biases and focuses on the needs of the

teachers. As a project developer, I paid attention to every detail as indicated by participants and came to realize that conducting research and reaching reliable conclusions requires paying attention to all details.

Reflection on Importance of the Work

This project is important in providing teachers with the support needed to integrate technology into their classroom. Providing tailored PD for teachers that meet their needs as indicated during the data collection will provide teachers with a venue to develop their knowledge and practical skills to integrate technology in classroom. The PD is important, as teachers will gain knowledge on strategies to use in their specific subject, which, may in turn positively impact students learning. Also, the PD will provide alternative strategy for teachers to overcome the lack of Internet connection in class through learning to implement a flipped classroom strategy, which could enhance the teaching experience and increase students learning. In addition, the project will provide a venue for teachers to receive regular trainings and feedback which, would support their continuous development.

Implications, Applications, and Directions for Future Research

Like any other domain, the educational field is continuously developing and therefore, teachers need to be equipped with the knowledge and skills, which enable them to utilize the instructional resources and tools more effectively to benefit students' learning. This project may add to teachers' knowledge and help them integrate technology effectively and provide better opportunities for students learning. The project could also change the way of how PD is offered to teachers. The approach of learn by

doing followed in the PD could enhance the training experience for teachers and help them become more skillful in using IT. Also, the PD offers group work opportunities, which fosters teachers' collaborative work and continuous discussions. Teachers may gain confidence as they learn along with their peers. Collaborative planning may also help teachers face fewer struggles due to the accommodations they receive from their colleagues. The project may also benefit other schools of districts that use technology in learning.

Recommendation for Practice and Future Research

Teachers in the study indicated that they did not have time for collaborative planning and regular monitoring and feedback. Therefore, forming professional learning communities in schools may help teachers to share ideas and expertise to using technology and offer support for teachers who struggle to use technology in the class. Teachers collaborative planning may also benefit students as teachers would develop meaningful and effective lessons, which would in turn impact the learning experience. Also, the school could benefit from the collaborative meetings, as this would provide for teachers the support they need and offer a continuous PD experience for them. This kind of collaboration makes teachers more confident to using technology and provides a source for continuous feedback for them to improve their IT techniques. The school administrators should consider setting a scheduled time for collaborative planning that help in the implementation of IT and increase students learning.

PD should be designed according to teachers personalized needs (Wang, Hall, & Rahimi, 2015). The school may offer a PD that is designed according to teachers' skills

to using technology. This could be done through making use of scheduling collaborative time where teachers could benefit from the expertise of each other and have the support they need.

This research had addressed teachers' perceptions on barriers of using IT. Future research could be conducted to study the correlation between gender and teachers perceptions to using technology as instructional tool. It would be worth to explore how gender impacts teachers' attitude towards using technology. Also, understanding how teachers' pedagogy and current knowledge and skills and its relation to adopt new methods of teaching impact technology integration. In addition, future research may also explore the age factor as a barrier to technology integration. Investigating how teachers' age is associated with their technology skills can influence their self-efficacy to using technology. Future research could also study the impact of using technology on students learning. Students' records could be gathered to measure if students' scores have improved.

Conclusion

Teachers at the school site were underutilizing IT in the school. The reason for the limited use of technology may be because teachers did not receive training tailored to their own needs. The teachers indicated the need to receive PD that would help them use IT in their specific curriculum. The lack of Internet connection is one of the challenges indicated by teachers that limit their use of IT. Being able to work through a flipped classroom strategy may support teachers to overcome the connection problems in school as well as the lack of resources. Therefore, this project was designed to address the

problems shared by teachers. The project is also attempted to provide teachers with strategies they can use in the classroom that support their teaching methods and enhance students learning. In addition, the project addresses the teachers concern regarding collaborative planning time to effectively implement IT. The goal of the project is to develop teachers' knowledge and skills to effectively use IT to improve students learning experience and increase their achievement levels.

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Appendix A: The Project

Instructional Technology

Professional Development for Teachers

The professional development is designed to help teachers to effectively integrate instructional technology in their classroom and improve students' learning. The project was developed to address the needs of the teachers as indicted in the findings and outcomes.

Purpose	The purpose of the professional development is to address the problem of the underutilization of instructional technology. The PD will provide teachers with knowledge and information on collaborative instructional planning and developing instructional goals to integrate technology. The project will also provide teachers with research based instructional strategies to employ technology effectively in class. Teachers will have the time to develop collaborative lessons and discuss and share strategies to improve teaching and students learning experience. In addition, the training will develop knowledge on implementing a flipped classroom strategy in classroom to overcome connection problems
Targeted	The target group for this project is teachers of different

Audience	subject and grade levels. Also, the school's principal administrators, and technology specialist will be invited to attend the training to assure facilitating a collaborative working community.
Guiding Questions	Day 1 1. What is instructional technology? 2. Why do we use technology to enhance teaching and learning? 3. How to develop instructional goal to integrate technology? 4. How to select technology tool that serve instructional pedagogy? 5. How to align between curricula and digital tools? Day 2 1. What are the effective instructional strategies to integrate technology in different subject matters? 2. Why collaborative planning? 3. How to build a professional learning community to improve teaching with technology? Day 3 1. What is flipped classroom? 2. How to implement a flipped classroom strategy in class? 3. What are the effective instructional and assessment strategies to implement flipped classroom approach? 4. How to use technology to implement a flipped classroom environment?
Learning	This professional development is designed to achieve

Outcomes	the following learning outcomes: 1. Develop and enhance teachers' knowledge and skills to effectively use digital tools in their instruction. 2. Widen teacher's knowledge on strategies to be used to integrate technology in their specific content. 3. Enhance the channel of communication between teachers, supervisors and leadership and help in building a collaborative relationship through teamwork and professional learning community planning.
Evaluation	Participants will complete a formative and summative evaluation. By the end of the first two days, teachers will be required to complete a questionnaire (no names are required). At the end of the third day, participants will complete a summative evaluation for the complete three days they have attended.
Resources	PowerPoint Presentation Smart Board Internet connection

	Laptops/iPads Speakers Projector Handouts Flipped Chart Papers/pencils/Markers Formative assessment sheet Summative evaluation form
Timeline	The PD will consist of 6 hours session each day for three consecutive days

3-Day Professional Development Outline

Day 1: Understanding Instructional Technology	Day 2: Instructional Strategies and Collaborative Planning	Day 3: Flipped Classroom
• Understanding instructional	• Understanding instructional	• Understanding flipped classroom

technology • Developing instructional goals • Aligning curricular goals with digital tools	strategies • Strategies for collaborative planning • Developing lesson plans	• Instruction and assessment strategies through flipped classroom approach

Professional Development Session Day 1 Activities: Understanding Instructional Technology

PowerPoint, handouts, and formative evaluation will be handed to participants in a file during their registration prior to the beginning of the training.

Day 1 Learning Outcome: Teachers will understand what is meant by instructional technology and how to develop instructional goal.

Day 1: Agenda

8:30-9:00 Registration

09:00-9:30 Welcome and Introduction

9:30 – 10:00 AM - A presentation about instructional technology concept and definition

10:00 – 11:00 - Instructional technology enhances teaching and learning

11:00 – 11:30 Coffee Break

11:30- 12:30 Developing Instructional Goal

12:30- 01:00 Aligning Technology Tools with Curricula

01:00- 01:45 Lunch Break

01:45- 02:45 Group activity

02:45- 03:00 Complete Formative Evaluation Form

Training Facilitator's notes…

09:00- 09:30- welcome and introduction

The elementary principal/ technology specialist will serve as the facilitator of the

professional development course. The facilitator will start by:

Welcoming participants to the workshop

Provide introduction about the goal of the course

Introduce the objectives of the day and the desired learning outcomes

Allow participants to introduce themselves through an ice breaking activity

The ice breaking activity will provide an opportunity for participants to get to interact with each other and present themselves for the all the group.

Icebreaker: explain the ice breaking activity for participants. Assign number to each participant from 1 up to 5 and then ask participants with the same number to form a group together "all the 1s together". The group will be interviewing each other by first getting to know the subject and grade level, position and then each of the group need to answer the following questions:

- List three things that make you love using technology
- List two things that make not want to use technology

Each group will come together on the stage to present one another to the other participants present. Afterwards, participants within every group need to come up with solution on how overcome the barrier and challenge they have when using technology.

The facilitator then will ask participants to answer and discussion two brainstorming questions

9:30 – 11:00 AM - A presentation about instructional technology concept and definition (Handout)

After discussion on instructional technology, participants will engage in another activity to check for understanding.

Activity: Checking for Understanding

The purpose of this activity is to give participants a chance to experiment with using mobile devices to get a snapshot of student understanding or as a conversation starter.

Grades: 6-12

Subject: All

Digital tool: Socrative

Technology required: one laptop, tablet, or mobile phone per participant; Internet connection; projector connected to Internet-enabled computer

Note: Workshop provider should already have set up an account and a sample question and be familiar with how the tool works ahead of time.

How to:

Using a premade survey, have workshop participants respond, using their devices (phone, tablet, or computer) to respond to the question.

Explain the various kinds of questions that can be created using Socrative.

Ask participants how they see this tool being used in their classrooms.

Have participants create an account on Socrative so they can write their first survey question.

Have participants volunteer to share their questions and solicit votes (depending on the size of the group, either have all participants share or have a few volunteer). Participants may not be able to project their quizzes, but will be able to track answers in real time on their devices.

Have workshop participants' work through answers to questions such as these:

- How much time will I have with my students?
- What kind of access to technology do I have? Will I need to make special arrangements?
- How will student use of this tool transform my current practice?

11:00 – 11:30 Coffee Break

11:30- 01:00 Developing Instructional Goal - aligning technology tools with curricula

The facilitator will explain what is instructional goal and instructional objectives? Afterwards, the facilitator will explain in detail the steps for designing a lesson plan that properly integrates technology

01:00- 01:45 Lunch Break

01:45- 02:45 Group activity

The facilitator will explain the purpose of the group activity, which is designing a lesson plan that properly integrates technology as discussed in the slides. After participants complete their lesson plan, the facilitators will invite one or two groups to present their

work and open the stage for discussion, questions and feedback.

02:45- 03:00 Formative Evaluation

The facilitator will ask participants to complete the formative evaluation form and hand in before they leave.

Premade Survey

World Fact Survey

Choose the correct answer

1. What is the world's longest river?

A - The Mississippi River B - The Nile River C - The Danube River
D - The Amazon River E - The Yangtze River

2. This is the outline of which country?

A – France B – Italy C – Canada D – Vietnam E - Sweden

True or False

1. The diameter of Earth is 8,000 miles (12,875 km)?

A – True B - False

2. Iceland is the world's biggest island.

A – True B - False

Complete the following Sentences

The world's largest ocean is the _____ Ocean.

Instructional Technology and Lesson Design

An overview

OBJECTIVES

By the end of this day, participants will:

- Demonstrate an understanding of the definition of instructional technology, benefits and usefulness
- Understand and practice how to develop instructional goal to integrate technology
- Develop lesson plan in any subject/grade level that properly integrate technology

BRAIN STORM

Answer the following questions:

- What does instructional technology mean ?
- Is it important to you to integrate technology in your lesson? And why?

EXAMPLES OF TECHNOLOGY INTEGRATION IN SCHOOL

- Watching Videos
- PowerPoint Presentation
- Songs
- Games
- What's app

THE ISTE STUDENTS STANDARDS

- Empowered Learner
- Digital Citizen
- Knowledge Constructor
- Innovative Designer
- Conceptual Thinker
- Creative Communicator
- Global Collaborator

THE ISTE EDUCATORS STANDARDS

1. Learner
2. Leader
3. Citizen
4. Collaborator
5. Designer
6. Facilitator
7. Analyst

INSTRUCTIONAL TECHNOLOGY

- According to Tickton (1970), instructional technology involves designing, implementing, and evaluating the total process of learning; it combines the interaction of human and non- human resources to bring effective instruction.

Check for Understanding

Individual activity

- Grades: 6-12
- Subject: All
- Digital tool: Socrative
- Respond, using your devices (phone, tablet, or computer) to respond to the question.

Create an account on Socrative and try on different settings (5 mins)

Then, as a group please answer the following questions on a piece of paper

- How much time will I have with my students?
- What kind of access to technology do I have? Will I need to make special arrangements?
- How will student use of this tool transform my current practice?
-

3/28/20

INSTRUCTIONAL GOALS

- In planning a technology integrated lesson, it is dependent on many contextual factors such as local curriculum, students learning needs, availability of technology, as well as school and classroom context.
- Teachers' consideration in designing technology-integrated lesson can be facilitated by identifying goals, analyzing learners, planning instructional activities, and choosing media/create ICT-based resources

INSTRUCTIONAL OBJECTIVE

- Identifying the educationally and developmentally sound attitude, skills, and knowledge that students should learn from the subject matter.

5 STEPS TO DESIGN LESSON PLAN WITH TECHNOLOGY

Step 1: design your lesson without technology

- Choose the subject/topic/grade
- Identify instructional goal/objective
- Example: the learner will define what minority is
- The learner will research influential minority in history
- Create a presentation that presents the findings

Step2: Identify the resources

Consider the available technology tools and resources available in your school (computers/laptops, smart boards, internet access, mobiles, etc..)

Example: the school has a computer lab with internet access

The classroom has smart board

5 STEPS TO DESIGN LESSON PLAN WITH TECHNOLOGY

Step 3: Align Curriculum standards with technology standards

- Identify which technology standards will complement your lesson.
- You can use the ISTE students standards
- Example: know how to research the internet for information and how to create presentation using PowerPoint
- Technology standards : 1.2, 1.4

5 STEPS TO DESIGN LESSON PLAN WITH TECHNOLOGY

Step 4: Write learning objective that include technology

- Combine between the initial learning objective and technology standard to come up with a goal that include technology
- Example: using the computer lab, the learner will search the internet
- Using word, the learner will write 3 paragraph on minority
- Using PowerPoint, the learner will create a presentation on the findings

Step 5: Assessment of both Content and technology Component

- Assess the content objective and technology objective with specific form of tool (rubric, observation, project, etc.)
- Example: I will use a rubric to grade my students

Design your Lesson

Group Activity

Within your group, deign a lesson plan that include the following

- Grade and subject level
- Instructional goal
- Knowledge and skills
- Technology resources
- Assessment and evaluation

QUESTIONS AND DISCUSSIONS

- What new thing did you learn today?
- Did you understand what does instructional technology mean and how to implement it?
- Did you understand how to design lesson plan that integrate technology?
- Any Questions

Formative Evaluation

Please complete the formative evaluation form and hand in before you leave.

Professional Development of Instructional Technology

(Day 1 Formative Evaluation)

Circle one:

Teacher Administrator Technology specialist

Please take a few moments to respond to the following questions. Your answers will greatly assist us in determining how to improve professional development workshops

Circle Yes or No

Course/Activity was well organized Yes No

Course/Activity objectives were stated Yes No

Course/Activity assignments were relevant to Course/Activity objectives.
Yes No

How did this workshop relate to your job?

_____
_____
_____

5. What information was valuable to you?

_____
_____
_____

6. What specific suggestions do you have to improve this activity?

_____
_____
_____

7. Additional Comments

_____
_____

Day 1 – Handout

What is Instructional Technology?

Instructional technology (IT) is associated with designing, developing, managing, implementing and evaluating learning resources (Galbraith, 1967). According to Tickton (1970), instructional technology involves designing, implementing, and evaluating the total process of learning; it combines the interaction of human and non- human resources to bring effective instruction.

What is a Goal?

Goals are broad, generalized statements about what is to be learned. Think of them as a target to be reached, or "hit."

Goal Example: *Students will gain an understanding of world cultures*.

What is an Objective?

Objectives are the foundation upon which you can build lessons and assessments that you can prove meet your overall course or lesson goals. Think of objectives as tools you use to make sure you reach your goals. They are the arrows you shoot towards your target (goal).

Objective Example: *Given a list of comparison points, students will compare the three major points of two given cultures in writing with 90% accuracy.*

ISTE STANDARDS FOR EDUCATORS

1 Learner: Educators continually improve their practice by learning from and with others and exploring proven and promising practices that leverage technology to improve student learning. Educators:

1a. Set professional learning goals to explore and apply pedagogical approaches made possible by technology and reflect on their effectiveness.

1b. Pursue professional interests by creating and actively participating in local and global learning networks.

1c. Stay current with research that supports improved student learning outcomes, including findings from the learning sciences.

2. Leader Educators seek out opportunities for leadership to support student empowerment and success and to improve teaching and learning. Educators:

2a. Shape, advance and accelerate a shared vision for empowered learning with technology by engaging with education stakeholders.

2b. Advocate for equitable access to educational technology, digital content and learning opportunities to meet the diverse needs of all students.

2c. Model for colleagues the identification, exploration, evaluation, curation and adoption of new digital resources and tools for learning.

3. Citizen Educators inspire students to positively contribute to and responsibly participate in the digital world. Educators:

3a. Create experiences for learners to make positive, socially responsible contributions and exhibit empathetic behavior online that build relationships and community.

3b. Establish a learning culture that promotes curiosity and critical examination of online resources and fosters digital literacy and media fluency.

3c. Mentor students in safe, legal and ethical practices with digital tools and the protection of intellectual rights and property.

3d. Model and promote management of personal data and digital identity and protect student data privacy.

4. Collaborator Educators dedicate time to collaborate with both colleagues and students to improve practice, discover and share resources and ideas, and solve problems. Educators:

4a. Dedicate planning time to collaborate with colleagues to create authentic learning experiences that leverage technology.

4b. Collaborate and co-learn with students to discover and use new digital resources and diagnose and troubleshoot technology issues.

4c. Use collaborative tools to expand students' authentic, real-world learning experiences by engaging virtually with experts, teams and students, locally and globally.

4d. Demonstrate cultural competency when communicating with students, parents and colleagues and interact with them as co-collaborators in student learning.

5. Designer Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability. Educators:

5a. Use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs.

5b. Design authentic learning activities that align with content area standards and use

digital tools and resources to maximize active, deep learning.

5c. Explore and apply instructional design principles to create innovative digital learning environments that engage and support learning.

6. Facilitator Educators facilitate learning with technology to support student achievement of the ISTE Standards for Students. Educators:

6a. Foster a culture where students take ownership of their learning goals and outcomes in both independent and group settings.

6b. Manage the use of technology and student learning strategies in digital platforms, virtual environments, hands-on maker spaces or in the field.

6c. Create learning opportunities that challenge students to use a design process and computational thinking to innovate and solve problems.

6d. Model and nurture creativity and creative expression to communicate ideas, knowledge or connections.

7. Analyst Educators understand and use data to drive their instruction and support students in achieving their learning goals. Educators:

7a. Provide alternative ways for students to demonstrate competency and reflect on their learning using technology.

7b. Use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.

7c. Use assessment data to guide progress and communicate with students, parents and education stakeholders to build student self-direction.

ISTE STANDARDS FOR STUDENTS

1. Empowered Learner Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

1a. Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

1b. Students build networks and customize their learning environments in ways that support the learning process.

1c. Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

1d. Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2a. Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

2b. Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

2c. Students demonstrate an understanding of and respect for the rights and obligations of

using and sharing intellectual property.

2d. Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3. Knowledge Constructor Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3a. Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

3b. Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

3c. Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

3d. Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

4. Innovative Designer Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4a. Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

4b. Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

4c. Students develop, test and refine prototypes as part of a cyclical design process.

4d. Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

5. Computational Thinker Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

5a. Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

5b. Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

5c. Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

5d. Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

6a. Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

6b. Students create original works or responsibly repurpose or remix digital resources into new creations.

6c. Students communicate complex ideas clearly and effectively by creating or using a

variety of digital objects such as visualizations, models or simulations.

6d. Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

7a. Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

7b. Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

7c. Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

7d. Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.

Professional Development Session Day 2: Effective Instructional Strategies for Implementing Instructional Technology

PowerPoint, handouts, and other resources will be uploaded on the school's LMS prior to the PD so participants could have access on anytime.

Day 2 Agenda

09:00 – 09:15 AM – Sign -in, and welcome

09:15 – 09:30 AM – Objectives and Brainstorming

09:30 – 10:30 AM - PowerPoint Presentation

10:30 – 10:45 AM – Break

11:00 – 12:30 - PowerPoint Presentation

12:30 – 01:00 PM – Lunch Break

01:00 – 02:00 _ PowerPoint Presentation

02:00 – 02:30 Practice Time

02:30 – 02:45 PM - PowerPoint Presentation

02:45- 03:00 PM – Formative Evaluation

Training facilitator's notes:

09:00 – 9:15 AM – Welcome participants and assign number to each participant to form new groups. This will help participants to work with different colleagues and get to know about different expertise. This may help them form professional relationship that will be on going after the here day work shop.

Afterwards, the facilitator will introduce the objectives of the day and then start the session with brainstorming activity. Participants will brainstorm in their groups and complete a fishtail about various instructional technology strategies they know and

incorporate on a piece of chart. (Chart papers and markers will be available). Then, each group will present to the whole class what strategies they have written down (5 minutes for any comments, thoughts and ideas)

09:30 – 10:30 AM - PowerPoint Presentation – the facilitator will explain and discuss with participants what is mean by instructional technology and what are some of the frameworks ex: The SAMR and TPACK

10:30 – 10:45 AM – Break

11:00 – 12:30 - PowerPoint Presentation

- Effective types of instructional technology
- Levels of instructional technology

After discussion, participants will be engaged in the following activity for demonstration of knowledge

- Participants will choose a lesson or unit to teach in their classrooms.
- Grades: K-12
- Subject: All
- Digital tool: Common Sense Media website
- In a group of your own subject matter, create an individual account at common sense media and navigate the common sense curriculum page. Then choose a lesson or unit that is most applicable in your classroom.
- Answer the following questions:
    - How much time will I have with my students?
    - What kind of technology will I need? What kind of access to technology do I have? Will I need to make special arrangements?
    - How will use of this tool transform my current practice?

12:30 – 01:00 PM – Lunch Break

01:00 – 01:15 _ □ Brainstorming Activity

01:50 – 02:30 - PowerPoint□ Presentation

02:30 – 02:45 PM - PowerPoint□ Presentation

In the final session, the facilitator will discuss the meaning of collaborative planning and also share knowledge and information on how to implement collaborative planning process in schools and what are the topics of discussion.

02:45- 03:00 PM – Formative Evaluation

Remind participants to fill the form and hand in before they leave.

PowerPoint Presentation Slides – Day 2

3/29/20

Effective instructional strategies for implementing instructional technology

Instructional Strategies and Collaborative Planning

Objectives

- By the end of this day, participants will be able to:
- Compare between technology use and technology integration
- Develop knowledge on effective instructional strategies for technology integration
- Demonstrate use of technology to develop lesson plan
- Understand the importance of collaborative learning

Are you Ready to Travel Now?

Brainstorming !!!!!

- What Instructional technology do you use?

Use of Technology

- Random
- Focus on technology tool Not Learning goal
- Used by instructor not students
- Used individually

Integration of Technology

- Planned
- Aligned with learning goal
- Support the learning objective
- Develops technology skills
- Use by students to create, construct and connect knowledge
- Encourage collaboration among students & teachers
- Part of the school system

Technology Integration

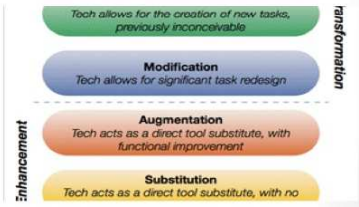
- Technology integration is the use of technology resources -- computers, mobile devices like smartphones and tablets, digital cameras, social media platforms and networks, software applications, the Internet, etc. -- in daily classroom practices, and in the management of a school.

Successful technology integration is achieved when the use of technology is:

- Routine and transparent
- Accessible and readily available for the task at hand
- Supporting the curricular goals, and helping the students to effectively reach their goals

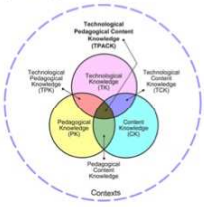
Frameworks for Technology Integration

The SAMR (Substitution, Augmentation, Modification, Redefinition)



Frameworks for Technology Integration

- The TPACK (Technological Pedagogical Content Knowledge)



Break

10:30 -10:45 AM

Effective Technology Integration

- Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. The technology should become an integral part of how the classroom functions -- as accessible as all other classroom tools." -- National Educational Technology Standards for Students, International Society for Technology in Education

Types of Technology Integration

- Online Learning and Blended Classrooms
- Project-Based Activities Incorporating Technology
- Game-Based Learning and Assessment
- Instructional Tools like Interactive Whiteboards and Student Response Systems
- Web-Based Projects, Explorations, and Research

Types of Technology Integration

- Student-Created Media like Podcasts, Videos, or Slideshows
- Collaborative Online Tools like Wikis or Google Docs
- Using Social Media to Engage Students

Levels of Technology Integration

What's your Level?

- Sparse
- Basic
- Comfortable
- Seamless

Levels of Technology Integration

- **Sparse:** Technology is rarely used or available. Students rarely use technology to complete assignments or projects.
- **Basic:** Technology is used or available occasionally/often in a lab rather than the classroom. Students are comfortable with one or two tools and sometimes use these tools to create projects that show understanding of content.

Levels of Technology Integration

- **Comfortable:** Technology is used in the classroom on a fairly regular basis. Students are comfortable with a variety of tools and often use these tools to create projects that show understanding of content.
- **Seamless:** Students employ technology daily in the classroom using a variety of tools to complete assignments and create projects that show a deep understanding of content.

Practice Time

Digital Citizenship

- Participants will choose a lesson or unit to teach in their classrooms.
- Grades: K-12
- Subject: All
- Digital tool: Common Sense Media website
- In a group of your own subject matter, create an individual account at common sense media and navigate the common sense curriculum page. Then choose a lesson or unit that is most applicable in your classroom.
- Answer the following questions:
  - How much time will I have with my students?
  - What kind of technology will I need? What kind of access to technology do I have? Will I need to make special arrangements?
  - How will use of this tool transform my current practice?

Lunch Break

12:30 – 01:00

Brainstorming

Group Activity

- What is collaborative planning? What are the benefits of collaborative planning? What topics to be discussed in collaborative planning?

Collaborative Planning

- In the teaching process, teachers must effectively organize the teaching content in a cooperative environment, and use specific strategies to plan and arrange "collaborative" teaching activities (Roselli, 2016)
- Collaborative planning does not occur simply by forming a group of two or more teachers and allowing them to spend some time to communicate. It requires the professional commitment of teachers to the process and a consistent focus on students' needs, curriculum decisions, and planning teaching strategies.

Collaborative Planning

- In collaborative planning process, coordinating with others, reaching consensus, and taking action to benefit from other people's perspectives will be highly relevant to the development of personal knowledge and abilities, and will enhance the personal value with social and coexistent characteristics based on knowledge acquisition (Lin, Yu, &He, 2018)

Collaborative Planning

- Collaborative planning is a potential source of teacher learning (Clark et al., 1996; Hargreaves, 1996; Lalik & Niles, 1990).

Benefits of Collaborative Planning

- Share different teaching strategies
- Discuss challenges and obstacles
- Develop lesson plans according to students needs
- Opens up the discussions around pedagogical technology knowledge and provides opportunities for reflection and shared critique of practice
- An opportunity for professional development

Benefits of Collaborative Planning

- Helps effective communication among teachers
- Foster collaborative decisions on curriculum
- Allow teachers to benefit from each others' expertise
- Assure students needs are taken inconsideration
- Feel less isolated and more empowered, and design better lessons. (Johnson, Reinhorn, & Simon, 2015).
- Help novice teachers feel more confident

Topics of Discussion

- Curriculum and pacing
- Teaching strategies that involve technology integration
- Students assessment and evaluation data
- Collaborative planning for projects
- Tools and resources
- Students interest
- Communication strategies and continuous feedback

Elements of Collaborative Planning

- **Time:** Organize scheduled meetings each week for teachers of each subject
- **Training and Support:** strong teacher leaders who facilitate planning meetings, Teachers' buy-in
- **Trust:** Trust between principals and teachers is key (Bauml, 2016).

Questions

- Any Questions
- Ideas
- Thoughts

Formative Evaluations

- Please complete the feedback survey and hand in before you leave

Professional Development of Instructional Technology

(Day 2 Formative Evaluation)

Circle one:

Teacher Administrator Technology specialist

Please take a few moments to respond to the following questions. Your answers will greatly assist us in determining how to improve professional development workshops

Circle Yes or No

Course/Activity was well organized Yes No

Course/Activity objectives were stated Yes No

Course/Activity assignments were relevant to Course/Activity objectives.

Yes No

How did this workshop relate to your job?

_____
_____
_____

5. What information was valuable to you?

_____
_____
_____

6. What specific suggestions do you have to improve this activity?

_____
_____
_____

7. Additional Comments

_____
_____

Professional Development Session Day 3: Flipped Classroom

PowerPoint, handouts, and other resources will be uploaded on the school's LMS prior to the PD so participants could have access on anytime.

Day 3 Agenda

09:00 – 09:15 AM – Welcome and Objectives

09:15 – 10:30 AM – PowerPoint Presentation

10:30 – 11:30 AM - PowerPoint Presentation and Brainstorming

11:00 – 11:30 AM – Break

11:30 – 12:30 - PowerPoint Presentation

12:30 – 01:00 PM – Lunch Break

01:00 – 02:00 _ PowerPoint Presentation

02:00 – 02:30 Practice Time

02:30 – 02:45 PM – Closing and questions

02:45- 03:00 PM – Summative Evaluation

Day 3 Facilitators Notes

09:00 – 09:15 AM – welcome participants, introduce Objectives, and form new groups

Welcome the participants to the final day of the workshop, introduce the objectives of the day and make sure to form new groups so everyone will get the chance to work with different colleagues and assure the collaborative sense is practiced and fostered.

09:15 – 10:30 AM – PowerPoint Presentation

10:30 – 11:30 AM - PowerPoint Presentation and Brainstorming

Invite participants to answer the question on the PowerPoint. What is the best of use of your face to face class time?. Tell participants to answer the question with their group and come up with a list of activities that makes the best use of face-to-face time in the face. Then invite a group or two to come and share their thoughts and ideas**.**

After the brainstorming activity, the facility will go through the PowerPoint presentation

and explain the meaning of flipped classroom, why to use the flipped classroom strategy and how to use it effectively in the classroom.

11:00 – 11:30 AM –□ Break

11:30 – 12:30 - PowerPoint Presentation

Through the PowerPoint the facilitator will explain the components of flipped classroom and how it fosters students' higher-order thinking skills. The facilitator will also discuss the different roles of teacher and students in a flipped classroom model.

□12:30 – 01:00 PM – Lunch Break

□01:00 – 02:00 _ □ PowerPoint□ Presentation

the facilitator will then discuss the different assessment strategies to use in a flipped classroom model and also discuss the challenges encountered with flipped classroom.

02:00 – 02:30 Practice Time

in this activity, the facilitator will ask participants within their own group to develop a lesson plan the include the following elements:

- Grade and subject level
- Objective
- Activities to be conducted at home
- Activities to be conducted in class
- Skills
- Resources and materials needed

After the activity, the facilitator will ask each group to come up and share their lesson with the rest of the participants. The facilitator will also open the room for discussions, ideas and thought on different activities shared by each group.

02:30 – 02:45 PM – Closing and questions

The facilitator will thank all of the participating teachers, principals and administrators for attending the workshop and will invite comments, thoughts, questions/ if any.□

02:45- 03:00 PM – Summative Evaluation

Give out the summative evaluation form to participants to complete

Flipped Classroom

An Overview

Objectives

By the end of this day, participants will:

- Demonstrate an understanding of meaning associated with flipped classroom
- Develop lesson with flipped classroom approach
- Integrate technology to develop a successful flipped classroom lesson.

Brain Storming (5 mins)

In your group, answer the following Question:

What is the best of use of my face to face class time?

What is Flipped Classroom ?

Flipped learning (or flipped classrooms) refers to a pedagogical model where the typical lecture and homework elements of a course are reversed (Khoo, Peter, Scott, &Round, 2018)

What is Flipped Classroom?

A flipped classroom, "...a dynamic, interactive learning environment where the educator guides students as they apply the concepts and engage creatively in the subject matter":

Why Flip?

- Access content anytime
- Students comes prepared with questions
- Students are more engaged and responsible of their learning
- Students learn at their own pace
- Teacher work with students individually
- Ability to differentiate instruction
- Promote various levels of learning

How to Flip the Classroom?

1. Buy In
2. Curate Resources Needed
3. Classroom Management (set rules and expectations)
4. Technology Training
5. Assign Content for Homework
6. Assign class time for problem solving and application
7. Foster Independent Learning
8. Encourage Peer Tutoring

Traditional Model of Teaching

Teacher-Centered

Teacher Deliver Content

Students apply and problem solve

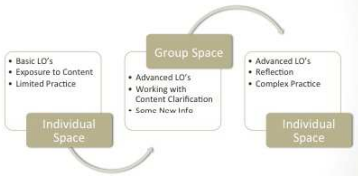
Flipped Classroom Model

Student-Centered Learning

Students Apply and Problem Solve

Content is Delivered Online

Flipped Classroom Model



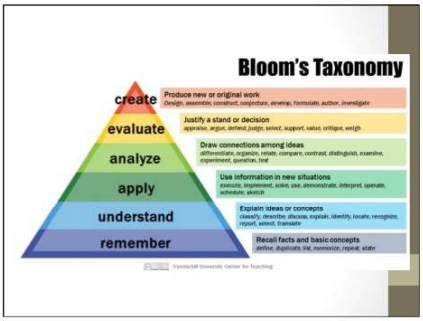
9 Steps to Flipped Classroom

1. Select the lesson
2. Choose your tech
3. Design you lesson
4. Create or adopt videos
5. Develop activities in class and at home
6. Introduce the tasks
7. Assign tasks
8. Assess and evaluate
9. Provide Feedback

Coffee Break (11:00-11:30)

Higher Order Thinking "HOT"

- The general components of a flipped lesson covers the ***levels of Bloom's taxonomy***
- In terms of engagement, the students are continuously engaged with the topic as they prepare ***(remember and understand)*** for the lesson at home
- In class, the emphasis is on peer interaction, student-teacher interaction, and problem-solving skills ***(applying, analyzing, and evaluating)***.



Lunch Break

12:30 – 01:00

How does Flipping Classroom Change Teacher Role ?

- You No longer deliver content
- You become instructional designer
- You become learning facilitator
- You are free during class time and able to work with students individually
- Classroom time is for discussion, debate, group work, project based learning, presentation, problem solving, application

- YOU USE TECHNOLOGY

How does Flipping Classroom Change Student Role ?

- Students shifts from being passive consumers of information into being active learners
- Have control over the pace of learning at home
- Is more responsible of his or her learning
- Enjoy interaction with his peers in class and online

COMPLETE TASKS USING TECHNOLOGY

Basic Framework

Basic Questions

- Content: What Knowledge and skills will be studied?
- Process: What materials and procedures will be used in home and in class?
- Product: What students will produce to demonstrate their learning?
- Evaluations: how will the learning be assessed?

Assessment of Flipped Classroom

- ***Peer Assessment*** is a key part of the lesson, which usually takes place in class sessions.
- ***Recursive and Excursive approaches*** are applied throughout the student's learning journey (Sun, 2017)." The availability of the material online means this can be done using an approach that suits the student."

Assessment of Flipped Classroom

- Meta-learning is also encouraged when flipped learning is used. This refers to the use of learning processes that focus students' attention on their own learning (**via self assessment**) and that of their peers (**via peer-assessment**) in a given context (Timmermans & Meyer, 2017). This can be achieved with **online tests** and **quizzes**, as well as interactive videos.

Assessment of Flipped Classroom

Interactive videos

- videos contain embedded interactive activities (such as quizzes and open questions) in order to gain a level of engagement from students (Galster, Mitrovic, & Gordon, 2018).
- Various research has shown that an interactive video is a powerful tool in the learning process, encouraging reflection and student-directed learning (Galster et al., 2018; Jisc, 2010; Langbauer & Lehner, 2015).

Benefits of Flipped Classroom

- Flipped classrooms allow for a ***wide range of variation in the classroom*** and allow teachers to transition from "surface learning to deep learning" (Unruh, Peters, and Willis, 2016)

Challenges

- Digital Divide (accessibility, skills, and digital literacy)
- Traditional Format (one hour recording !!)
- Time and Skill
- Students Buy In and Engagement

Group Activity

In your own group, develop a lesson plan that include the following:

- Grade and subject level
- Objective
- Activities to be conducted at home
- Activities to be conducted in class
- Skills
- Resources and materials needed


Questions !!!!!!


Please complete the summative Evaluation Form and hand in Before you leave
Thank You

Day 3 Handout

What is a flipped classroom, exactly?

In flipped classrooms, students review the work materials examples; PowerPoint presentations, online videos, handouts, lecture materials, before they come into the classroom. In class, time is dedicated to hands on activities, discussions, exercises, debates and independent work that have previously been completed at home — all under the guidance of the teacher, who is present and available to respond to any questions that may arise.

The materials reviewed prior to class can take the form of recorded lectures, curated videos, reading assignments, video broadcasts — any material that the instructor assigns as relevant to the topic at hand.

Course Design: Planning a Flipped Class

The idea of flipped classroom is not new, but the usage of the word "flipped: is associated with students engaging in online activities that can involve peer or group learning before they come to classroom.

There are many activities that can be part of a flipped class such as:

Discussions, debates, clicker questions, Q and A, demonstrations, simulations, peer tutoring and feedback, and role-playing.

An instructor may choose to flip just a few classes a term, or to flip all classes.

Why flip?

- In a lecture, the attention of most students starts to decrease after ten or fifteen minutes, so flipping the class can help keep students focused and learning for the

whole period.

- Flipping the classroom means that students have time to process and reflect on concepts and increase their knowledge base before coming to class to apply their learning.
- Instructors can get a sense of where students are having difficulty with the course material or have questions or misconceptions about concepts (possibly through an online assessment or discussion forum) before they come to class. Instructors can then adjust what will be done in class depending on this feedback. This is often called "just-in-time teaching" (JITT).
- Students can control the time, pace and place of learning with the online materials. Many students find it useful to repeat segments of an online presentation when they are having difficulty with a particular concept or when they are studying for the final exam. For some students the ability to rewind and listen to a presentation or explanation again can help them make more meaningful notes or overcome language fluency difficulties.
- Although an up-front investment of time is necessary to create online materials, including video content, the materials can be reused by the instructor from year to year.
- Flipping some classes can add some variety and change of pace to classes and make the course more interesting for both students and instructor.
- There is evidence that having students engage in active learning and peer learning in class leads to deeper understanding and greater retention of concepts than

traditional lecture information transfer in class.

A planning model for flipped classes

Often when instructors are planning to flip a class they focus all their attention on planning the activities that the students will do in class and on what the students will do online to prepare for that active learning in class. However, **there are two other aspects of the flipped-class design that require planning:** *how the activities will be introduced to the students and how the instructor and the students will know that they have adequately prepared for the in-class experience.*

Introduce the task

The goal of this stage of the flipped class is to maximize student participation/readiness for the activities they will be doing online and in-class. Instructors should introduce the tasks by clearly explaining their expectations for what the students will be doing and the amount of time the students will need to invest to be ready for the class activity. Explaining what they will be doing and why being prepared for the in-class activities is also important. For some students, active learning in the classroom will be a new experience so a "no surprises" approach can reduce possible anxiety about a more participatory approach to learning.

Out-of-class task

Carefully consider the choice of media for the online activities and materials. Instructors can create their own materials such as narrated PowerPoints, screencasts and podcasts, or reuse online content such as websites, readings and videos. Video content should be concise -- no more than 10-15 minute segments -- and it can be helpful to students if

there are guiding questions or prompts to help them recognize the keys objectives of the preparatory work. If instructors include an online means for students to submit questions about difficult concepts or other questions, they can use some class time to discuss these issues.

Assess the learning

Before the in-class session both the instructor and the students can benefit from knowing if the students are adequately prepared for the in-class activity. Self-assessment quizzes or low-stakes online quizzes can be a good way to assess if students are adequately prepared. Ideally these assessments are short (3 to 4 questions), and include questions that provide an opportunity for students to apply what they have learned rather than questions that merely test factual knowledge. **Formative feedback** on the assessment questions and an opportunity for students to pose their own questions to the instructor can also be included. Evidence of preparation can also be provided through a short assignment or assessment at the beginning of the in-class portion of the flipped class. Learning and assessment are interconnected: low stakes or formative assessment is a valuable learning tool for students.

In-class activities

The most effective activities for promoting deep learning are those that create opportunities for peer-to-peer learning, student-instructor dialogue, and opportunities for active learning. The objectives of an activity should be clearly linked to course objectives and assessments; the in-class activity time can be used to encourage students to be creative and make discoveries (and errors) in a relaxed, low-risk environment.

Motivation

Student motivation, which underlies the whole learning process, can be affected by the design of the activity. An enthusiastic instructor who has good rapport with students and creates an open and positive atmosphere in class can motivate student participation and learning. Activities that are designed to be challenging, but achievable, can help motivate students. Also students will be more motivated if they find personal meaning and value in the material and see that the course is relevant and linked to their future success. Providing frequent feedback to students as they complete their learning can also increase motivation.

Professional Development of Instructional Technology
(Day 3 Summative Evaluation)

Circle one:

Teacher Administrator Technology specialist

Please take a few moments to respond to the following questions. Your answers will greatly assist us in determining how to improve professional development workshops

Circle Yes or No

Course/Activity was well organized Yes No

Course/Activity objectives were stated Yes No

Course/Activity assignments were relevant to Course/Activity objectives.
Yes No

How did this workshop relate to your job?

_____
_____
_____

5. What information was valuable to you?

_____
_____
_____

6. What specific suggestions do you have to improve further trainings?

_____
_____
_____

7. Additional Comments

_____
_____

Appendix B: Teacher Interview Protocol

Perceptions of Teachers Regarding Barriers to Using Instructional Technology in Egyptian Schools

Date:	Interviewer:
Time:	Interviewee:
Location:	Cypher#:

Instructions: To ensure the accuracy of gathered data, I would like to audio record our interview. Information gathered from the interview will be stored safe and secured in my personal cabinet file at home. The researcher is the only person who will have access to the recordings; transcripts and therefore, all the information will remain confidential. Interview transcripts and recordings will be destroyed after 5 years. Please be assured that your participation is completely voluntary and you may withdraw your consent at any time prior or during the research. In the final report, no personal data will be reveled, I will only use cypher for reporting data. Thank you for your participation, your input will be highly valuable for this study.

Background Information:

Subject:	
Grade:	
Number of Teaching Experience:	
Number of Years using Instructional	

Technology:	

RQ 1. How are teachers currently using technology in their classrooms instruction?

1. How often do you use technology as an instructional tool?

2. Please describe in general the types of instructional activities you have used that involve technology?

3. Based on your experiences in using technology as an instructional tool, have you noticed any changes in your instructional planning? And if so, what changes have you noticed?

4. How often do you use technology in educational settings for administrative purposes (such as grades, attendance, etc...)?

RQ 2. What are teachers' perceptions on the ease of use of technology, usefulness of technology, and obstacles hindering them from effectively integrating technology in their classrooms?

5. Describe your perception regarding the ease of using technology.

6. How would you rate the usefulness of technology on education on a scale of 1 to 5, in which 1 means not useful and 5 means very useful? Explain your reason for this rating.

7. What do you believe are the most significant factors that may promote or hinder the use of technology in your classroom?

8. How have your beliefs about the use of technology as a teaching tool changed over the past 3 years and if so how? □

Appendix C: Observation Protocol

Perceptions of Teachers Regarding Barriers to Using Instructional Technology in Egyptian Schools

Participant/Cypher:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Subject:										
Grade:										
Date:				**Time:**						

Observation elements	Comments
Technology Use: Yes No	
Type of technology tools used for instruction (smart board, computer/laptop, projector, online application)	
Are teachers using technology to teach the lesson?	
Methods employed for instructional technology	

Do teacher's demonstrate skills in using instructional technology (ease of use)	
Is technology useful in the classroom?	
Are students engaged in learning?	
What are the type of activities students are performing using technology?	
Are students using technology as a mean of completing a task?	
Challenges observed (Obstacles)	
Additional Notes	

Appendix D: Field Notes on Documents Checks

Participant Number: ___1 ___2 ___3 ___4 ___5 ___6 ___7 __8 __*9*___10

Date: _____ Time: _____ Location: _____

Document (Lesson Plan)	Comment
Technology Use: Yes□ No□	
Types of Technology: Laptops Desktops□ I pads□ IPhones□ Smart Board Other	
Types of technology tools Digital Communication Discussion boards□ Google Drive□ Google Sites□ Surveys□ Wikispaces□ Safari	
The lesson includes technology use as a means of completing a task. Yes□ No□ Additional notes:	
The lesson demonstrates teacher's ease of using technology in planning instructional activities. Yes□ No□ Additional notes:	

The lesson promotes effective use of instructional technology. Yes□ No□ Additional notes:	
The designed lesson plan includes teachers' reflections and challenges encountered. Yes□ No□ Additional notes:	

Appendix E: Emerged Codes and Themes

Themes	Categories	Codes
Theme 1: Accessibility of Technology and Internet Connection	• Physical barriers of technology	• Troubleshooting and internet connection • Lack of resources • Maintenance • Usefulness of technology
Theme 2: Instructional Videos Enhance Teaching and Learning	• Easiness of technology • Instructional activities • Regularity of Use	• Smart board use everyday • Teacher planning • Clear instruction • Student motivation • Instructional videos • Easiness of use
Theme 3: PowerPoint Guided Lessons	• Usefulness of technology • Instructional planning	• Clear instruction • Knowledge and understanding • Instructional activities • Interactive lessons • Teacher planning • Student motivation
Theme 4:Teacher Professional Development	• Teacher Inductive Training • Lack of continuous training	• Teacher training • Subject related technology training
Theme 5: The Challenges and Needs of Instructional Technology	• Challenges of technology • Technology use recommendations	• Teachers attitudes • Technology policy • Leadership support • Benefits of technology • Easiness of technology • Supervision

Appendix F: Open Codes from Interview, Observations and Documents Checking

Open codes from interviews	Open codes from observations	Open codes from documents checking
• **Smart Board Everyday** • **Internet connection** • **Technical problems** • **Videos** • **PowerPoint** • **Songs** • **What's app** • **Teachers knowledge** • **Technical skills** • **Ease of use** • **Usefulness** • **Outdated equipment** • **Lack of resources** • **Planning and collaboration** • **Training**	• Smart Board use • PowerPoint in class • Mobile use and what's app • Technical problems • Videos • Games • Songs • Outdated equipment	• Smart Board use • PowerPoint lessons • Videos • Songs • Games • Limited knowledge • Instructional planning