AN ETHNOGRAPHIC CASE STUDY OF TECHNOLOGY USE IN THE ELEMENTARY
CLASSROOM

by

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CERTIFICATION OF PROJECT WORK

We, the undersigned, certify that this project entitled AN ETHNOGRAPHIC CASE STUDY OF
TECHNOLOGY USE IN THE ELEMENTARY CLASSROOM by Shahad Babaeer, Candidate
for the Degree of Master of Science in Education, CURRICULUM AND INSTRUCTION, is
acceptable in form and content and demonstrates a satisfactory knowledge of the field covered
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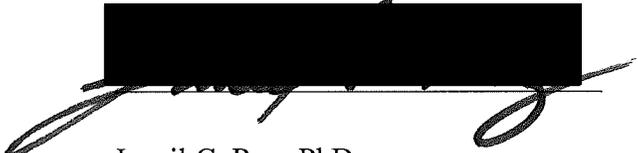
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Abstract

Technology has become an essential tool that supports the education process and offers educators effective strategies in order to address all learners' needs, and assess students' understanding. The purpose of any instructional technology is to enhance the experience of the learner and the learners' ability to master the material by using a range of technology such as computers, iPads, and SMART boards. This paper is an ethnographic case study to answer the research question, "How does a teacher effectively integrate appropriate educational technology to support students' learning in an elementary classroom"? This research examined effective ways of integrating educational technology into the elementary classroom. Data collected included non-participant observations and open- ended surveys of the teachers. The sample included four elementary classrooms and four elementary school teachers from an American school and four elementary teachers from a Saudi Arabian School. The most significant finding that I have seen through my research in the United States school is that there were a large and diverse number of technologies in each classroom. The SMART boards were the most prevalent technology tool being used with the teachers using SMART boards for their daily lessons. As a result of my study I believe that the SMART board should be a required teaching tool in each elementary classroom.

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Introduction

Research question

It can be clearly seen that 2014 is the year of technology in both scientific and practical life. Despite the fact that digital technology has appeared in our lives only a short period ago, the use of this technology has increased significantly. As a result of that, it is utilized in several areas in our lives from personal communication and entertainment to education. In this era, it seems to be difficult to dispose of using technology because technology has become a part of the daily routine and activities. In fact, individuals should have at least the minimal technological awareness and knowledge in order to be able to survive in the modern life. In this study, the main focus was to answer the research question "How does a teacher effectively integrate appropriate educational technology to support students learning in an elementary classroom"?

Since technology plays an essential role in education, it is difficult to ignore the value of integrating technology into the classroom. Many countries have believed in the importance of technology. As a result of this belief, they started to integrate technology into classrooms in order to be produce students highly qualified in using technology (Kurt and Ciftci, 2012). Many governments have spent significant money to increase the access of technology in classrooms. However, integrating technology into classrooms apparently is a huge issue in some countries. There is still disagreement about whether using technology in classrooms will alter the classroom instruction and affect students' achievement positively.

Despite the benefit of integrating technology in classroom, there are still some barriers that prevent the use of technology in classrooms and some teachers still resist this phenomenon Kurt and Ciftci (2012). There are several reasons that prevent teachers from using technology in classrooms such as personal and environmental factors. Some teachers said that their lack of

training, ability, and interest in using technology were the import reasons for their resistance to using technology in the classroom. On the other hand, some teachers mentioned that socio-economic status, physical setting, and crowded classrooms prevent them from applying the appropriate technology in their classroom. Overall, integrating technology in education adds some responsibility on teachers' work. Some teachers are able to integrate technology into the curriculum while others do not have the ability to do it so (Hicks, 2011). By understanding the advantages of using technology in classrooms and applying it in appropriate ways, technology would be a significant tool in education.

Importance to the field

Incorporating technology into classrooms to support students' learning is the most significant topic that concerns the field of education. Technology has altered and improved the education process. Also, technology use encourages students' learning and achievement (Hicks, 2011). According to Pitler, Hubbell, and Kuhn,

> two billion people in this world currently have access to the web. By the end of this
> decade, five billion will be connected through smart phones and laptops, and who knows
> what other devices we will have dreamed up by then. (2012, p. xv)

As result of this, the field of education faces some changes and difficulties with the widespread of use of technology. There are different types of technology that have entered classrooms such as SMART boards, laptops, and tablets. Each of these technologies has multiple uses as well as benefits and drawbacks. It is difficult to know if all teachers have the ability to integrate the technology in their classrooms in appropriate ways that could enhance students' learning and achievement.

Since students nowadays are proficient in using technology, they are known as the "Net generation" (Hicks, 2011). The majority of the students have a high level of interest in using technology and they use it in and out of the classroom. It can be clearly seen that the social network sites have had the most important impact on the students attached to technology. Those students seem more knowledgeable about technology than their teachers because they have been raised in an environment surrounded by various types of technologies, which makes them able to use technology naturally. Some researchers have illustrated that technology is an essential tool for learning in the 21st Century because it fits with students' interest (Hicks, 2011). So, integrating appropriate technology into the classroom could be one way to support students' learning. Technology has shown a positive impact for students both in and out of classroom if it is integrated in meaningful ways (Hicks, 2011). Also technology has shown a significant impact on students with and without disabilities. Indeed, technology is the most important solution for some classroom issues such as, diversity. According to (The National Council for Accreditation of Teacher Education, 2012) diversity is "differences among groups of people and individuals based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area". Since there are no two children exactly alike, technology can help teachers to provide multiple teaching methods to address all students' needs. Integrating technology into the classroom has reduced teachers' preparation time allowing the teachers to provide multiple activities to make the class more engaging. It is important for teachers to have skills and at least simple training to be able to utilize the technology effectively in the classroom.

Importance to me

Integrating technology to support students' learning is an important area of study for me due to several reasons. Having this experience in the US Schools will help me to be aware of the various technologies that can be used in the classroom to support students' learning. Also, it assists me to be able to apply technology into the classroom in appropriate way. It will provide ways to know the appropriate technology that can be used to encourage student's learning as well encourage me to advance my own professional skills through using technologies. Since the US has longer and greater experience with technology and education than Saudi Arabia, this study will help me to transfer the information and experiences to my country.

Despite the fact that Saudi Arabia is a wealthy country, it is still developing in integrating technology into the classroom. It is clear that the discovery of oil in the late 1930s helped the country to develop in different areas especially the field of education. Prior to the discovery of oil, older generation teachers were teaching their students in their homes or in the community mosques with simple tools. The percentage of illiteracy was very high due to the large size of the country with insufficient funds. The Saudi Arabian government spent a significant amount of money that came from the oil income to build new schools in order to develop the nation's education system. In 1953, the Ministry of Education was established. As a result of that the number of students increased with female education recording the fastest development (Ministry of Education, 1985).

In 1993, King Fahd University of Petroleum and Minerals (KFUPM) in Dhahran became the first Saudi institution to connect to the internet. Then the Internet was allowed to public access in 1997 (Ali, Sait, and Al-Tawil, 2003). There are some factors that prevent full implementation of educational technology in Saudi schools such as infrastructure shortage, lack

of appropriate policies, teachers' resistance, and the insufficient preparation of teachers. Some Saudi teachers believe that technology encourages cooperative learning and small group work, develops intellectual skills, and increases students' confidence. According to Al-Fahad (2009), "the Saudis have been unable to reap the optimal benefit at all levels of operation, but the present level of use of technology are encouraging and there is hope for improvement and a brighter future". I believe that this study will help me as teacher to effectively integrate appropriate technology to support students learning in an elementary classroom. In addition, the next section will provide more information about technology types in the classroom and how this technology could encourage students' learning.

Literature Review

Conditions of Learning Theory

The learning goals. Integrating instructional technology in the classroom is an advanced strategy to stimulate students' learning. The purpose of any instructional technology is to enhance the experience of the learner and the learners' ability to master the material by using a range of technology such as computers, iPads, and SMART boards.

Robert M. Gagne is most known for incorporating instructional psychology with instructional technology, and creating a framework for instructional design. Although much of Gagne's work, such as his extremely important book, *The Conditions of Learning*, was written more than four decades ago, it is still influential in educational planning and technology today. Part of the reason for his success was that he was able to connect psychology, especially from the behavioral and cognitive schools, with education (Richey, 1996). The first step towards Gagne's instructional design is for the designer to determine what the "conditions of learning" are (Gagne

& Merrill, 1990). This means the instructor needs to determine what students need to learn at the end of instruction.

Differentiate instruction. If the teachers think about all of the different things that teachers need to help their students do and understand, teachers can see that there are many different types of tasks and things to be learned. Different subjects require different skills and have different learning goals and educational technology tools. Students do not learn the same things in history as they do in math, obviously. The fact is, however, that everything that a student learns can be classified into a condition of learning: verbal information (declarative knowledge), intellectual skills (procedural knowledge), cognitive strategies (general skills or procedures), attitudes, and motor skills. These are, ". . . obviously different in terms of the observed response, [and] the observed performance . . . they are different in how they are organized internally" (Gagne & Merrill, 1990).

A key part of Gagne's conception of instructional design has to do with the organization of knowledge by the individual and how that knowledge will be used in a variety of different situations. Each of the five conditions of learning (verbal, intellectual, etc.), while different in their performance goals, have a number of "steps to be followed in arranging the stimulation to be given to the learner . . . the events of instruction" (Gagne & Merrill, 1990, p. 39), including the understanding of objectives, what prior learning best leads to the acquisition of that type of knowledge, the stimulus that helps the student learn, appropriate guidance, useful performance indicators (e.g., being able to summarize or paraphrase verbal knowledge), feedback, assessment and how to encourage the retention and transfer of that information (Gagne & Merrill, 1990). While the steps for teaching all of the conditions of learning (verbal, intellectual, etc.) are the same.

Classroom management and students' prior knowledge. These ideas have been more or less taken for granted for many years. Gagne's framework is motivated by what the teacher wants to teach the student, the content, not the learner. The teacher does have control of what happens in the classroom, outside of the learner, the learner is an active participant in internalizing his or her learning. Furthermore, the instructor needs to fully understand the level of prior learning the student has and understand the student when creating lessons. Technology helps teachers to create different lessons based on students' prior knowledge. Individualized instruction is still possible with Gagne's theories, and so are learning methods such as computer programs, which give much control to the students, as long as, "the design of this instruction has been grounded in an analysis of the subject matter and learner prerequisites" (Richey, 1996, p. 597).

In addition to being compatible with modern concepts of learner-centered learning, Gagne's approaches also works with context-rich environments. Context is important because it makes learning meaningful to the student, but according to Gagne, it should not come at the expense of being able to transfer knowledge from one situation to the next. Learning to transfer knowledge can be a part of practice and the reinforcement process for teachers (Richey, 1996).

It is important for the teachers to control what happens in the classroom, outside of the learner and ensure students are learning. Individualized instruction is still possible in accordance with Gagne's theories, and so are learning methods such as computer programs, which give much control to the students. It is important that, "the design of this instruction has been grounded in an analysis of the subject matter and learner prerequisites" (Richey, 1996). In addition, there are various types of technology that help teachers to understand the level of prior knowledge when creating lessons to engage students such as SMART boards, clickers, and iPads.

How does a teacher effectively integrate appropriate educational technology to support students learning in elementary classroom? According to Mehlinger and Power (2003, p.11), "The term of educational technology refers to the use of technology in educational settings, whether it be elementary and secondary schools, colleges and universities, corporate training sites, or independent study at home."

It is important to define technology integration in the classroom in order to have a successful integration that affects students' learning positively. To clarify what the term of integration means, one must first understand what it does not mean.

Integration is not the use of managed instructional software, where a computer delivers content and tracks students' progress. Integration is not having students go to a computer lab to learn technical skills while the classroom teacher stays behind to plan or grade papers. Integration is not using the Internet to access games sponsored by toy manufacturers or popular television shows. Integration is not using specialty software for drill and practice day after day. Integration does not replace a teacher with a computer. Integration is when classroom teachers use technology to introduce, reinforce, extend, enrich, assess, and remediate student mastery of curricular targets (Student Engagement 2014, April 28).

Technology can bring many benefits both for a teacher and students through using appropriate tools and applications. Educators need to think and plan for the effective strategies of integrating technology in classrooms and the daily learning process in order to increase the level of engagement and improve the academic achievement.

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

(International Society for Technology in Education, 2000).

In this research, the focus on educational technology will be at the elementary level.

There are several components that teachers should keep in their mind when integrating

technology into the classrooms such as, types of technology, physical setting, students' ages and

interests, and students' literacy needs. Also, teachers should at least have minimal knowledge

and training to be able to use the educational technology in an appropriate way.

Types of educational technology

The purpose of integrating technology into classrooms is to enhance and develop

students' twenty-first century learning skills. There are different types of educational technology

that has infiltrated the classrooms such as computers, SMART boards, clickers, and tablets. On

the other hand, there are some schools with limited technology due to barriers of physical setting,

limited budget, or lack of training for teachers. In fact, computers were the first digital

educational technology to be adopted in schools.

Computer, laptop definition and availability. "The digital computer is a device that

processes numerical information; more generally, any device that manipulates symbolic

information according to specified computational procedures" (Hayes, 2002). Many countries

have started to integrate computer technology into classrooms in order to prepare their students

to be highly qualified in using technology. Many governments have paid much money to

increase the access of computer technology in classrooms. It can be clearly seen that computers

seem to be available in the majority of schools and many teachers are using computers in their

classrooms. On the other hand, a laptop is a personal computer, easy to travel with that can be

used in various environments. Also, laptop computers have become increasingly popular.

According to Smith, Salaway, and Borreson Caruso (2009), 98% of 30,616 undergraduate

students owned a computer. This statistic also highlights the need for secondary students to be

appropriately prepared for using computer technology in their college level work.

    Use, benefits, and drawbacks. The majority of the students have a high level of interest

in using computer technology and they use it in and out the classroom continuously for multiple

purposes (Hicks, 2011).There are many ways that teachers can use computers in the classroom in

order to keep students attention such as, using YouTube videos, making games and creating

activities. Since no two children are alike, computers help teachers to provide multiple teaching

methods to address all students' needs. Integrating technology into the classroom has reduced

teachers' time preparation allowing the teachers to provide multiple activities to make the class

more engaging. Also, it is encourages students' learning and achievement (Hicks, 2011).

    In addition, teachers can use laptop computers effectively in the classroom to enhance

students' learning by providing presentations, sharing videos, and making class activities. On the

other hand, if the students have access to the internet, they would be able to use the laptop in the

classroom to develop a group projects, share information, and improve their writing skills

Kaganer, E., Giordano, G., Brion, S., & Tortoriello, M. (2013). A benefit of laptops is the ability

to take them back and forth between school and home or to use them across multiple classrooms.

Also, laptops have shown a significant impact in flipping the classroom. The concept of flipping

the classroom is that students are required to watch the lecturer at home and complete the

exercise at school with the help of the teacher.

    There are some drawbacks of using this technology in the classroom. One of the

drawbacks is that using computers requires at least minimal training. Some teachers said that

their lack of training, ability, and interest in using technology were the important reasons of

resisting using technology in classroom. While others mention that socio-economic status,

physical setting, and crowded classrooms prevent them from applying the appropriate technology

in classrooms (Hicks, 2011). Despite the fact that much research has shown that laptops are an

essential tool in students' learning, Fried (2008), found that using the computer for a long time in

the classroom might distract students' learning because in the classroom students are required to

do multiple types of work such as listening to teachers' instructions, responding to peer

comments, and learning new information. It seems difficult for students to be focusing on all

those multiple tasks for a sustained period of time. After approximately fifteen to twenty years of

integrating technology into the classroom mainly in the form of computers, the SMART board

started to appear in classrooms.

SMART boards' definition and availability. SMART boards are Interactive

Whiteboards (IWB) that are connected to a computer and work by touching the screen. The

widespread adoption of the SMART boards in many schools illustrates that the SMART board is

available and can be utilized by teachers effectively. According to the National Center for

Education Statistics (NCES, 2010) 23% of all teachers said they have SMART boards in their

classrooms, while, 28% of teachers mention that they had access to a SMART board in the

building.

Use, benefits and drawbacks. Many teachers who used SMART boards reported that

SMART boards provide special features that help teachers to use multiple teaching methods to

meet all students' literacy needs (Kennewell, Tanner, Jones, and Beauchamp, 2008). Also, there

are other reasons that encourage teachers to adopt the SMART board in their classrooms such as

flexibility, and interactivity. Since SMART boards are a flexible technology teachers can use

SMART boards for different purposes in order to make the classroom more interactive

(Kennewell et al., 2008). The utilization of the SMART board has shown several benefits for

both students with and without disabilities due to the significant interactivity. According to Ngao

(2006), the ability of the board to make the keyboard in different sizes helps students with

special needs to produce their work more effectively. The SMART board has special features

help to keep students' attention for a longer time. Also, it allows teachers to differentiate by

using multiple teaching methods. In addition, the b SMART board plays an essential role in

supporting visual learners as well as students with special needs (Ngao, 2006).

 Despite the fact that for over 20 years, SMART boards have been supporting educators to

achieve their goals and encouraging students' learning, there are still some drawbacks that

prevent teachers from integrating SMART boards into their classroom such as the costs of the

SMART board. According to David (2007), each SMART board cost approximately $3,000. It

appears that digital technology is changing quickly and within a year or two there are many new

technologies available for the classroom. It will be more expensive for schools to provide these

technologies to each class and change it after a maximum of five years. After the integration of

computers and SMART boards in the classrooms, the next technology was personal response

systems commonly called clickers.

Clickers Definition and availability.

Zhu, Bierwert, and Bayer define the clickers as,

A clicker system consists of three components first, clickers: wireless

 handheld transmitters that resemble small, TV remote controls; second, receiver: a

 transportable device that receives signals from the clickers; third software: an application

installed on the instructor's computer to record, display, and manage student responses

and data. In the 1980s, colleges started to use clickers in the classrooms (2006, 2007).

Colleges started to use clicker in the large classrooms in order to allow all students to participate

and show their level of understanding during a lecture. Liu (2011), found that after designing an

instructional module that would increase the motivation and proficiency of elementary teachers

to use clickers, ten of the elementary teachers with little or no experience using clickers said that

they felt more comfortable with using clickers in the classrooms, and they believed that clickers

were an essential tool to use in the elementary classrooms.

Use, benefits and drawbacks. According to Zhu, Bierwert, and Bayer (2006, 2007),

teachers can use clickers to check students' understanding, encourage cooperative learning, and

assess students' knowledge. Clickers have shown some benefits when used in the classrooms

such as, increasing students' chances to participate in the large classroom. Also, clickers

encourage students to interact effectively with the given material and stimulate cooperative

learning. In addition, clickers are increasing students' engagement in the classroom because

teachers often allow students to discuss with their peers before they respond to the questions

(Duncan, 2005). It can be clearly seen that clickers encourage the elementary students to be

active participants in their learning (Liu, 2011).

There are some drawbacks to using clickers in the classroom. Some students reported that

they cannot see the importance of using clickers in the classroom. On the other hand, some

students who enrolled in school with limited budgets mentioned that the cost of clickers is a

negative aspect because they need to buy their own clickers. It is obvious that there is a rapid

evolution in using technology in the classrooms. The last device has been introduced to the

classroom is the tablet.

Tablet, iPad definition and availability. According to the Editors Dictionary,

A tablet computer, or simply tablet, is a mobile computer with display, circuitry and

battery in a single unit. Tablets are equipped with sensors, including cameras,

microphone, accelerometer and touch screen, with finger or stylus gestures replacing

computer mouse and keyboard. Tablets may include physical buttons, e.g., to control

basic features such as speaker volume and power and ports for network communications

and to charge the battery. An on-screen, pop-up virtual keyboard is usually used for

typing. Tablets are typically larger than smart phones or personal digital assistants at 7

inches (18 cm) or larger, measured diagonally (2010).

An iPad is a kind of tablet computer designed by the Apple Company. According to Galligan,

Loch, McDonald, and Taylor, (2010) the tablet computer started to be available from the

beginning of this century gaining popularity in 2002. Soon after its introduction the tablet

computer became a widespread tool in educating (Garland, 2006). In fact, during the few weeks

following the launch of the iPads, the company sold approximately 3 million devices. IPads are

widespread due to the over 250,000 applications that can be used on the device (Murray and

Olcese, 2011).

Use, benefits and drawbacks. Tablet computers can be used by both teachers as well as

students. There are many ways teachers can use tablets as a teaching tool such as creating blogs

for the class as one part of their learning, making specific class documents, watching videos, or

making small group activities (Gentile, 2012). On the other hand, the students can use tablet

computers for taking notes during class time, reading ebooks, sharing information, drawing,

listening to music, or watching videos. In addition, tablets help students to complete and save

their assignments (Hieb and Ralston, 2010)

There are many benefits of using the tablet computers such as encouraging cooperative learning and enhancing students' engagement. Also, it develops the students' ability to take notes (Hieb and Ralston, 2010). Tablet computers play a significant role in supporting students' literacy needs in several areas such as reading and writing skills. Also, iPads show an essential impact on students with disabilities such as improving students' communication skills (Price, 2014). In addition to those benefits, iPads come with three storage capacities for example: 16, 32, or 64 GB so teachers as well as students are able to save and download applications and information effectively. Additional advantages for tablets are relative low cost, portability, and familiarity. By comparing the cost of laptops to tablets, it can be clearly seen that laptops cost approximately more than one thousand dollars while tablets start at only three hundred dollars. Also, tablets are more portable than computers, even laptops, because of their size and weight. In addition, tablets require very little training because they are easy to use and the majority of students are familiar with them and the use of applications.

Despite the advantages of using tablets in the classroom, there are still some disadvantages. According to Payton (2008) "For younger students, the pen may be a much more comfortable and familiar input device than a keyboard. Indeed, introducing tablet PC pen functionality at lowest grades can establish pen input as a normal part of the computing experience"(p.50). Additional disadvantages of using tablets are too much time spent on screen that will affect students' vision and playing non-instructional games such as Angry Bird, Rings Linking, and Candy Crush will reduce students' instructional time. It is clear that tablets can be more for consuming content than creating content.

Each type of technology has a unique feature, specific use, as well as some advantages and disadvantages. The next section will focus on how this technology will help teachers to use

differentiated instruction appropriately in order to increase students' engagement and achievement.

Effectiveness in using technology with elementary level

Since the twenty-first century is characterized as the era of technology, one of the teachers' roles is to effectively integrate technology into the classroom in order to support students' learning. Many teachers believe in the effectiveness of using technology in the classroom and they are using it in the daily lessons. In addition, technology can be a significant tool for motivating and engaging students. Clearly, the use of technology in the classroom is due to the several benefits that technology supplies. For example multiple teaching methods, increased student engagement, and improved student achievement.

Differentiated Instruction. The definition of differentiated instruction is

An approach that recognizes the strengths and weaknesses of diverse learners and requires the teacher to base instructional accommodations on student strengths and weaknesses. Specifically, teachers use DI strategies to adjust the content, process, or product of instruction depending on student needs (Tricarico and Yendol- Hoppey, 2012, p. 140).

Each classroom includes diverse students such as students with disabilities, gifted and talented students, and typical students. Therefore, teachers must provide differentiated instruction to be able to meet all students' needs. There are many strategies that teachers can use to fit the students' needs. Teachers can differentiate interaction by using several types of assessments in order to know students' learning styles. It is important for teachers to incorporate a variety of strategies to address the diversity of the classroom. In addition, teachers need to provide opportunities for students to work as a whole class, in a small group, and individually

According to Tomlinson (2001) the following proscriptions make differentiation possible for teachers to attain:

1-   Clarify key concepts and generalizations to ensure that all learners gain powerful understandings that serve as the foundation for future learning.

2-   Use assessment as a teaching tool to extend versus merely measure instruction.

3-   Emphasize critical and creative thinking as a goal in lesson design.

4-   Engaging all learners is essential.

5-   Provide a balance between teacher-assigned and student-selected tasks.

Since each student in the classroom is different and has some strengths and weaknesses in their literacy skills, educators need to use multiple teaching methods in order to address the diversity in the classroom (The National Council for Accreditation of Teacher Education, 2012). In each classroom there are three types of individual learning styles that teachers should think about when designing a lesson plan. First, one of these learning styles is the visual student who relies on pictures, color, highlights, and maps to understand the given material. Second are verbal learners who depend on the verbal teacher clarification to learn the content. Finally, the third learner is the kinesthetic learner who likes cooperative learning and learns through movement and trying things (Zywno and Waalen, 2002). By using various types of technology in the classroom, teachers can help all learners in different ways. There is a strong relationship between teaching style and students learning. According to Liang, T., Huang, Y., & Tsai, C. (2012) the integration of SMART boards supports classroom learning activities by using multimedia such as audio, video, and pictures.

Also, the integration of laptops in the classroom help teachers to use many web sites that teachers can access to support the teaching method in order to meet students' needs.

According to Attard, (2011, p.31) one of the many websites that teachers could use is, "Brainpop (www.brainpop.com), an American website that consists of animated, curriculum based content from all subject areas". Tim and Moby are the two animated characters who rely on simple language to help students' to understand the content. This website has a follow up activities and quizzes to assess students' learning

According to Kaganer et al. (2013), using laptops in the classroom provides the students with various teaching methods, which allow students to cooperate in group projects, and share information. These multiple methods which laptops provide will meet the visual, verbal, and kinesthetic students' needs because they will address the students' learning characteristics (Zywno and Waalen, 2002). Students can use an iPad for several classroom activities such as sharing information, drawing, listening to music, watching video, reading books, making presentations or taking notes. Teachers could use iPads in the classroom to deliver multiple teaching methods for the students (Gentile, 2012). In addition, teachers must use multiple teaching methods by integrating an appropriate technology into classroom in order to increase students' engagement and achievement

> **Engagement.** According to Student Engagement,
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> In education, student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education (2014, p.1).

In the traditional classroom, it is easy for teachers to know if the students are engaged because students will be paying attention, taking notes, listening, and responding to questions. However, in the modern classroom using different types of technology, it will be difficult to identify the

level of students' engagement because with some devices, such as laptops, or iPads students are going to use technology individually.

The majority of students have a high level of interest in using technology and they are using it in and out the classroom because they are growing up in environments surrounded by technology (Hicks, 2011). According to Rafool, Sullivan, and Al-Bataineh (2012), it can be clearly seen that the social network sites have had the most important impact on the students attached to technology. Social network sites have features that stimulate the students' senses, such as pictures, and sound effects, and free texting. Teachers should focus on students' interest to be able to support students' literacy needs by making the classroom more engaging.

In schools some technology has been integrated into classrooms and shows a high impact on students' engagement (Hicks, 2011). Technology has enhanced students' engagement and it plays an important role in engaging both students with and without disabilities. When using technology in the classroom students show positive impacts on their learning and high levels of engagement. Research illustrates that there is a strong link between students working in a technology-wealthy classroom and their critical thinking skills (McMahon, 2009). There are many factors that make students more engaged in the classroom. Some of these factors are to encourage students to think and analyze, so providing various types of technology could enhance students' engagement (McMahon, 2009).

Each type of the available technologies has specific impacts on students and it plays a significant role in increasing students' engagement, for example, SMART boards help students with disabilities to develop their communication skills in order to be more engaged in the classroom (Xin, and Sutman, 2011). Also, the SMART boards have special features such as touch screen pictures, and sound effects. All these features stimulate the students senses, which

make them more engaged during the lesson. Teachers can use SMART boards to engage students

by providing students with video conferencing technology in the classroom Video conferencing

will be an exciting experience for students and will increase students' engagement. For example,

using Skype in the classroom allows students and teachers to spread the word of their own

projects through these types of programs.

On the other hand, since today's students are more comfortable with using computer

technology, the integration of technology into classroom increases students' engagement.

According to Spires, Lee, Turner, and Johnson's (2008) survey, using computers in the

classroom was the activity that students enjoyed the most. Since a high percentage of students

are visual learners, teachers can use YouTube videos to engage students and provide a clear

picture of the topic for the students.

Tablet computers recorded a significant impact in increasing young student's engagement

because they encourage students' thinking (Couse and Chen, 2010). In addition to this

technology, the use of iPads also enhances both students with and without disability (Price,

2014). IPads play an essential role in increasing student engagement because students can use it

in many different ways such as in a group or individually. According to Zhu, Bierwert, and

Bayer's (2006, 2007) surveys, using clickers in the classroom increases students' engagement

because the teacher allows students to discuss with peers in order to answer the given questions.

Teachers should integrate technology into the classroom in appropriate ways by using multiple

teaching methods in order to address students' needs. Many researchers have shown that the

increase of students' engagement will have a positive impact on their achievement.

Achievement. According to Fincher, the definition of achievement is, "The attainment of knowledge, competencies, and higher-level status, as may be reflected in grades, degrees, and other forms of certification or public acknowledgement" (2003, p.4). There is a strong relationship between students' engagement and their achievement. Many studies have shown that whenever students' engagement increases, their achievement increases as well. Teachers need to be aware of students' background, culture, and interest t order to make the classroom an engaging environment for students.

It is clear that the utilization of multiple teaching methods in the classroom will increase students' engagement, which will lead to high levels of achievement. Today's students are familiar with using different types of technology in and outside the classroom, and they are showing a fast growth in learning the new technology, often in less than one hour. Also, the daily use of technology at home makes it easy for children to learn new technology comfortably (Couse, and Chen, 2010). Since technology is a significant tool for students' learning, teachers are integrating technology into their classrooms to build students literacy and numeracy skills as well as help students to be prepare for after school life (Hicks, 2011). According to Delen, and Bulut, (2011) students who are using technology at home have higher achievement levels. The utilization of multiple teaching methods that technology provides, such as visual materials, videos, PowerPoint presentations and CD's, raise students' achievements (Serİn, 2011). Incorporating the use of laptops into the classrooms has a positives effect on students' learning and achievements. Using laptops helps students to be aware of other cultures and expand their knowledge about the world around them. Technology is an appropriate way to help students to improve their learning skills as well as their after school career (Shapley, Sheehan, Maloney, and Caranikas-Walker, 2011). By incorporating technology into the classroom, students become

more independent, able to make decision, and intelligent in solving problems. It can be clearly

seen that the integration of technology into classroom improves student achievement more than

traditional teaching and leads to the development of twenty-first century skills such as complex

thinking, creative problem solving, and collaboration.

There are many ways that teachers use to improve students' achievement such as teacher

credibility, classroom management, and cooperative learning. Educators can integrate technology

into the daily lesson in order to increase students' achievement. Teachers can also use

technology to assess students' performance by using several types of technology such as

computers, and clickers. One strategy that teachers can use is an ePortfolio, which is a web-based

collection of work that helps both teachers and students present and track their work and

progress. This web-based collection encourages students to assemble and curate digital archives

to prove their learning and achievement. On the other hand, teachers can use the ePortfolio to

record students' work during the year to be able to see students' progress and achievement. In

addition, clickers also play an important role in helping teachers to assess all students'

achievement and help students to participate. Since some students are shy and unsure of

themselves, clickers encourage students to be more interactive. Also, by using clickers students

will be able to see if they answered the questions correctly and in a short period of time. Lastly,

after illustrating the types of technology and effectiveness in using technology with elementary

level, the next section will introduce the students' characteristics.

First and second grade

These students are usually 6-7 years old, depending on when their birthday occurs.

According to Wood (2001) characteristics of students in this age are divided as follows:

cognitive, physical, and social/emotional. Because some of the students' cognitive characteristics

are: liking new games and ideas, learning best through discovery, and liking to review learning,

the technology integration allows teachers to address their students' needs. By using computers,

SMART boards, and iPads in the classrooms, students can learn through games, and they will

have chance to learn through discovering new apps or blogs. Also, the diversity in the teaching

methods that technology can provide will help teachers to review the lesson in different ways.

Furthermore, one of the students' physical characters is good visual pursuit for reading. The

SMART board and iPad are significant tools that support the visual learner because they provide

pictures in different size and colors.

Table 1

Characteristics of First Grade Students

Cognitive	Physical	Social/Emotional
Loves to ask questions.	Good visual pursuit for	Wants to be first
Likes new games; ideas.	reading.	Competitive; enthusiastic
Loves to color; paint	More aware of fingers as	Sometimes a "poor sort" or
Learns best through discovery	tools.	dishonest; invents rules.
Enjoys process more than	Enjoys out of doors, gym.	Anxious to do well, but does a
product	Noisy in classroom.	lot of testing.
Dramatic play elaborated	Falls backward out of chair.	Can be bossy, teasing, and
Beginning interest in skill and	Learning to distinguish left	critical of others.
technique for its own sake.	from right.	Easily upset when hurt
		Friend are important

(Wood, pp. 62-63)

Table 2

Characteristics of Second Grade Students

Cognitive	Physical	Social/Emotional
Likes to review learning.	Visually myopic.	Sometimes moody.
Like to work slowly.	Works with head down	Touchy.
Like to work alone.	on desk.	" Nobody likes me"
Can classify spontaneously.	Pincer grasp a pencil	Changeable feelings.
Likes to be read to	point	Need security, structure.
Likes to repeat tasks	Written work tidy, neat.	Relies on teacher for help.
Likes board games	Sometimes tense.	Conscientious; serious.
Enjoys manipulative	Likes confined space.	Keeps a neater desk,
Wants to discover how things	Many hurts, real and	room
work; likes to take things apart	imagined.	Needs constant
		reinforcement.
		Strong likes or dislikes.

(Wood, pp. 74-75)

Third and fourth grade students

These students are usually 8-9 years old, depending on when their birthday occurs.

According to Wood (2001) characteristics of students in this age are divided as following:

cognitive, physical, and social emotional. It can be obviously seen that the technology integration

supports students' characters and needs. One of the students' cognitive characteristics is liking

groups and group activity. Computers and SMART boards help students to work as a group to

present their project in a Power Point. For this group age, the physical characteristics are that

they are full of energy and their attention span is limited. By using technology such as

computers, SMART boards, and iPads in the classrooms, teachers can keep students' attention

for a longer time. These devices can provide pictures, videos, and games that help teachers to get

students' attention.

Table 3

Characteristics of Third Grade Students

Cognitive	Physical	Social/Emotional
Engrossed in activity at hand; Loves to socialize at same time. Likes groups and group activity. Very industrious. Often works quickly. Concrete operations solidifying. Basic skills begin to be mastered. Begins to feel a sense of competence with skills.	Speedy, works in a hurry. Full of energy. Needs physical release, outdoor time. Somewhat awkward. Attention span limited. Vision strong in near and far.	Gregarious, humorous. Likes to work cooperatively. Prefers same gender activities. Trouble with limits and boundaries.

(Wood, pp. 86-87)

Table 4

Characteristics of Fourth Grade Students

Cognitive	Physical	Social/Emotional
Industrious and self-critical. Dawn of "bigger world". Less imaginative. Intellectual curiosity. Ability to deal with multiples variables emerges. Trouble with abstractions- large numbers, periods of time or space.	Increased coordination. Pushes self to physical limits. Fatigues easily. Numerous injuries. Somatic complaints. Tension Outlets such as nail-biting hair-twisting, lip- pursing. Trouble with limits and boundaries. Friendship groups often include more children than at seven.	Highly competitive. Self- aware. Impatient. Warrior; anxious. Aloof. Complainer: fairness issues. Sees adult inconsistencies and imperfection. Critical. Can be sullen and moody. Individualistic

(Wood, pp. 98-99)

Grade expectations regarding technology

According to International Society for Technology in Education (ISTE) (2000), the

performance indicators for technology-literate students are divided into two levels. The first level

addresses skills to be mastered by the completion of grade two, and the second level addresses skills and concepts to be mastered prior to the completion of grade five. These two levels of standards are similar and they confirm three important criteria. First, before the end of the year, students should be able to identify the input devices such as, mouse and keyboard as well as the output devices such as, the monitor, and printer to successfully operate computers, and other technologies. Second, students should be aware of the appropriate multimedia resources for example, interactive books, educational software, and elementary multimedia encyclopedias to support learning. Finally, students should be able to demonstrate positive social and ethical behaviors when using technology.

This literature review focused on the types of technology in the classrooms and how teachers can effectively integrate technology in their classrooms in order to increase students' engagement and learning. In the next section, I will introduce the methodology for this ethnographic case study.

Methodology

This research was an ethnographic case study using a qualitative approach to answer for the research question "How does a teacher effectively integrate appropriate educational technology to support student learning in an elementary classroom?"

Setting

My original proposal was to focus on one elementary school in Western New York. However, I decided to add another school located in South Saudi Arabia in order to examine the contrast in the teachers' experiences and skills of using technology in two different locations as well as the different technologies available in each setting.

First location. The study took place in a suburban town in Western New York in May 2014. The number of K-12 students enrolled in the school was 1,502 students. The average class size was 20 students. The percentage of students who were eligible for free lunch was 24% and reduced-price lunch percentages were 7%. In addition, the total number of teachers in this district was 139. The number of students by grade was as follows: first grade, 107 students; second grade, 112, students; third grade, 94 students; and fourth grade, 110 students. The school has 11% students with disability and 3% limited English proficient students. I chose this school because they are highly effective in using technology in the classroom.

Second location. The second part of the study took place in a small South Saudi Arabian town in May of 2014. This school has a special education program. The number of the general students in the school was 400 while the number of students with disabilities was 50 students. The school consists of 12 classes for general education students and 6 for students with disabilities. The school has 31 teachers for general education. There were 14 teachers for the students with disabilities. All students and teachers in this school were from a middle class background. In fact, I chose this school because of two reasons: first, because the school uses some technology and secondly, it has students with and without disabilities. In these ways and in the number of students and grade configurations, it was similar to the school studied in the US.

Participants

Originally, the only participant was going to be a teacher of a third grade classroom. Then I decided to add three more grades in order to have the opportunity to see the different use of technology in each class. By this change, the participants became teachers of 1st, 2nd, 3rd, and 4th grade elementary classes.

The students' ages were between 6-10 years old. In the Western New York School, the average number of students in the class was 20 students while in South Saudi Arabia School the average number of students in the classes was 30 students per class. The number of teachers who were participating in this study was four teachers from the Western New York School as well as four teachers from the south Saudi Arabia school. The teachers' ages were approximately between 30 to 55 years old. All teachers of Western New York School had a master's degrees. However, none of the teachers in the South Saudi Arabia School had a master's degree, but all of them had a bachelor's degree. In the Western New York School, three of the teachers were women and one was a man. In the South Saudi Arabia School, all teachers were women because the girls and boys schools are separated**.**

Design

In this ethnographic case study, I used qualitative methods, specifically, non-participant observations and interviews. I visited the Western New York School classrooms twelve times through a month. At the first meeting, I talked to the teachers and we prepared the appropriate schedule to be able to observe the four classrooms at different times and for various subjects. Also, I shared the open-ended survey questions with the teachers (See Appendix A).

In each classroom, I had a similar routine. During the class time, first I started to take notes about the following points such as: grade, time, date, and types of technologies used during the class. Then I took notes about how the teacher integrated technology into the classroom and what types of activities he or she provided. When the teachers asked students to work on any digital devices, I used the class seating chart to assess their technology engagement (See Appendix B).Following the observation, I returned home and immediately transcribed my notes using Microsoft word. I had the same routine for all days and with all teachers.

After I finished my study in the Western New York School, I went to the South Saudi Arabia School. My study in Saudi Arabia took two weeks, which was a shorter period compared to the time that I spent at the Western New York School. In the South Saudi Arabia School, I did not observe the use of technology in the classroom because the students were still on their summer vacation. However, I did conduct the same survey that was done with the United States teachers (See Appendix A). I decided to provide the same questions to both groups of teachers in the two different countries in order to see the difference in experiences, skills, and ideas.

All teachers from both schools were cooperative and interactive with the subject of research. I have learned from them various teaching strategies for using technology in the classrooms. They turned in the open- ended surveys for me by typing on the sheets of paper and some of them by email. However, one of the Western New York School teachers did not turn in the open- ended survey. I sent her several emails, but I did not receive any answer. In the final email, I gave her two weeks in order to include her answers, but I still did not receive any answer. Consequently, I have completed open ended surveys from seven teachers.

Data Collection

There were three ways that I used in order to collect the data for my qualitative research. First, I used field notes from observing the teachers. Through twelve visits to the classrooms in Western New York, I collected the data on the teacher by sitting in the back of the classroom and observing the teacher's use of technology with different tools and subjects. In all the classes that I observed, the teachers were using SMART boards except in one class where the teacher was using an iPads.

Then I collected the data from the teacher survey that I provided for both the Western New York School teachers and the South Saudi Arabia School teachers (See Appendix A). The

survey consisted of ten questions in order to understand teachers' perspectives, philosophy, and

pedagogical skills in using technology in their classrooms. Finally, I used a class seating chart

and coded tally marks to track students' technology engagement (See Appendix B) to be able to

see how students engaged when the teachers integrated technology into the classrooms.

Data Analysis

After gathering the data, I analyzed the data by using the grounded theory approach

called open coding. In this step, I identified the common themes across the three data sets and

between the teachers and classes. I took the field notes from observing the teachers and I sorted

them depending on the subjects such as math, reading, writing, and science. Then I realized how

the teachers used the technology in each subject and what type of technology tools they used.

Then I analyzed the data from the teacher survey that I provided for both the Western

New York School teachers and the South Saudi Arabia School teachers (See Appendix A) by

using colored envelopes. After that, I cut each question and I put it in the colored envelope

separately in order to help me make comparisons between   teachers' answers.

Finally, I analyzed the class seating charts that I used to track students' technology

engagement when teachers integrated technology in the classrooms. I looked for the overall

engagement of the students, and the percentage of the students' engagement. From this analysis,

I described a contextually rich view of an elementary classroom in which technology has been

effectively integrated to support student learning.

<div align="center">

Findings

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Instructional Observations

Types of technology in the classrooms. There is no doubt that there is a diversity of

technology used in the classrooms I observed. Through my visits to the two schools in two

different countries, I found that there was a clear variety of educational technologies in the

classrooms. The number of technology devices in the classroom is different from class to class. There was a rich technology environment, less rich, and poor technology environment. One of the richest technology classrooms that I visited was in the Western New York School, which included all of the following technologies computers, microphones, digital cameras, televisions, and SMART boards. Furthermore, it can be clearly seen that each tool played a significant role in engaging and improving students' literacy skills. Also, I found that the computers and the SMART boards were the most commonly used devices in all the Western New York classrooms. The iPad was a less used device, as it was available in only a second grade classroom. In addition, I realized that in each class in the Western New York School, the number of electronic devices in the class was not less than four to five devices and they were useful for students' learning and engagement. The teachers were using technology in their daily lessons and for all subjects. In addition, the school has a computer lab available for all students at any time.

Back in the South Saudi Arabia School, I found that the use of technology in the classrooms was much less than the use of technology in the Western New York School. This is not a surprise because the United States is ahead of Saudi Arabia in the field of education. However, a SMART board was available in a first grade classroom in Saudi Arabia, while other classes were using projectors for some subjects such as math, science, and reading. There were a few devices in the classrooms, but no more than two in each classroom. There was no computer lab for elementary students but, computer instruction is a required course for high school students. In fact, I feel the existence of the SMART board in a first grade classroom was a positive step for the new generation. It is evident that there are serious attempts to introduce technology in the educational process and that there has been a clear evolution in technology in a short period of time.

In addition, in both settings, I found that the teachers were keen to teach students the skills to use technology, so they could apply these skills beyond the immediate lesson. Teachers allowed students to use technology by themselves, gave them the chance to discover how to use these technologies, and provided help when they needed it. I found that the incorporation of technology into the classrooms positively affects students' leaning as evidenced by their increased engagement when using the technology. Also, students had a good opportunity to discover the new educational technology and improve their ability to use these devices in and out of school.

Uses observed by subject. In the reading class for second grade students in Western New York, the teacher used iPad applications to encourage students' learning such as, the Accelerated Reading (AR) student APP. There was no need to download an APP, students simply opened a web browser and went to the homepage, then logged in, and found the book by the title or the author. Then students had two choices as follows: reading practice or vocabulary. Also, if the students chose to read, there were three choices: read to, read with someone, or read alone. At the end, students took a quiz and received a score. The students were able to use the app by themselves and they enjoyed reading books with this support.

On the other hand, in the math class for third grade students, the teacher used the SMART board. The teacher used different pictures as examples to help students to be able to differentiate the shapes. One of the examples was pizza. The teacher asked the students to divide the pizza for two people and then for four people, so everyone would have the same number of pizza pieces by using the SMART board options. Students were able to do this activity by using two different ways such as touching the screen with their fingers or using a pen or markers. In addition, at the end of the lesson the students played an educational game as review of addition,

subtraction and division on the SMART board. The SMART board effectively encourages the students to work and participate because it has sound and provides pictures. Finally, the teacher gave the students activities on the lesson and activities were offered on the SMART board in case there was an inquiry by the students. The use of the SMART board enabled the teacher to make the questions larger size for the students. In this activity, three of the students were taking and asking friends. Then the teacher and the students answered the questions on the SMART board in order to help students who did not get the right answer to get the correct answer.

Furthermore, in the reading class for first grade students, the lesson was about reviewing some grammar such as (singular nouns and plural nouns). The teacher used the SMAR board to review the definitions of singular nouns and plural nouns. He used some pictures to help students to differentiate between the two types of nouns. The pictures were in appropriate sizes and nice colors. One of the examples that the teacher used was a picture of an apple and another one for three apples. Then he showed the students a YouTube video about singular nouns and plural nouns. After reviewing the grammar, the teacher asked the students to teach each other and take turns with one student asking another student for answers.

In addition, in a science class for fourth grade students, the teacher used the SMART board to describe the parts of the machine for the students by using pictures. After that she explained for the students how the machine works. Then she displayed a video in order to help students understand the use of the machine. In addition to that, she asked the students to come up to the SMART board to identify the parts of the machine and describe how to use it.

As I have outlined above there are different types of technology in the classrooms and the teachers were using it in various ways in the classrooms. It is important for teachers to be aware

of the impact of technology on teaching and learning if they are to use technology in appropriate and effective ways.

Open-ended survey And Teacher Perspectives

Using an open-ended survey in my research allowed me to discover teachers' knowledge, ideas, and feelings about the incorporation of technology in the classrooms. In addition, this type of questioning affords the chance for others to express themselves more openly and honestly.

Philosophies of education. By asking both teachers from the Western New York School and the South Saudi Arabia School about their philosophies of education, I found that every teacher has personal beliefs about education. One teacher said,

My philosophy of education is to allow all students an opportunity to learn at their peak performance level. To do that, I need to create an atmosphere conducive to learning where the students are actively engaged on a daily basis.

Another teacher said,

I know that my philosophy will constantly change and evolve as I grow as a teacher. I will continue to learn, along with my students. I will always try to remain open- minded and willing to grow in my beliefs and practice as teacher. Since society is constantly evolving, so most I. I believe that students should be taught about the importance of different perspectives. Seeing new points of view can be truly eye- opening. I will strive to make the environment of my class mirror a community, with students being productive members.

 In addition, another teacher said,

My philosophy of education is to allow choice. In Jonathan Irwin's book, *The Classroom of Choice* he establishes five basic needs of learners. Each individual students is driven by one of these need including, survival, love and belonging, power, freedom, and, fun. Once I have established what motivates a student I employ strategies that target the specific need. Trust and choice are the two driving forces that create an environment where each student can succeed.

It can be clear that the philosophies of education of these teachers were similar in some points. The similarities illustrated by the teachers focus on the classrooms environment. In order to have a positive environment for the students, teachers need to build a clear classroom management plan. For example, teachers could create an engaging atmosphere; also trust and choice are the two driving forces that create an environment where each student can succeed.

There is a strong relationship between the positive classrooms environment and the use of technology in the classrooms. The technology integration effectively increases students' engagement in the classrooms. For example, the uses of iPads in the classrooms allow teachers to provide the choices for the students. So students will have the chance to work individually or in a group. Also, the teacher could use SMART boars to address students' needs because the SMART boards allow teachers to differentiate instruction by using pictures, videos, and educational games. Technology plays an essential role in helping teachers to create an appropriate environment where each student can succeed.

Technology skills and tools. According to the open- ended surveys, all teachers agreed that there is technology teaching skills that every educator should have in order to be able to integrate and use technology tools in classrooms effectively. In both countries teachers agreed

that the abilities of using Computers, SMART boards, and iPads were the most recommended skills that every educator should have. Despite the notable lack of availability of the SMART board and iPad at the Saudi Arabian school, the teachers were convinced that the skills to use are these technologies were important for them. Overall, I found that the skills of using computers, SMART boards, and iPads were the most valued skills that the teachers mentioned.

When I asked the teachers in both the South Saudi Arabia School and the Western New York School about the most effective tool for the elementary classrooms I found that there was a clear difference between the views of teachers' classrooms because of the different technologies available to each group. The Western New York teachers cited SMART boards as the most valuable tools, while the Saudi teachers indicated that computers were the most available.

Technology has increased in the field of education and turned out to be an important element of the educational process of the twenty-first century. In the open- ended surveys, I asked the teachers if technology training should be required for all current teachers or not. Everyone was supportive of the technology training for all current teachers. All teachers in both countries reported that they joined training programs, belonged to an online community, and attended technology workshops to learn and develop their technology skills. Also, teachers said through their training they have learned different technology skills and now better understand how to implement technology into their classrooms.

Through teachers' knowledge and experience, I found that all teachers at least have minimal technology skills that enable them to keep pace with the rapid development of the process of instruction in the modern era.

When I asked the teachers in Western New York School about how they select technology to meet their learning goals, one teacher said, "I usually select what is age appropriate or a little bit harder so that they constantly work on the skill, but also are striving to get better". Another teacher said, "I use the tool which students' are familiar with and comfortable using". When I asked the same question for the South Saudi Arabia School teachers, one said, "I use what is available because there are no multiple options of educational electronic devices in the classrooms". Another teacher said "Most often I will find a short video to reinforce a concept or help build background knowledge. When the students need to memorize or recall information I like to find a song". It is obvious that the lack of the availability of the technology in the classrooms in Saudi Arabia prevents teachers from diversifying their use of technology in order to meet their learning goals.

There is no doubt that the diversity of technology teaching tools in the classrooms increases the students' engagement and increases their desire to learn. Through my visit to the schools, I found that there were different tools and strategies in each classroom and each subject. Every teacher used unique strategies to engage students' leaning in the classroom. Some of them put the technology in the students' daily responsibility after teaching them how to use it, and then monitored this use closely to help them improve. Furthermore, some teachers relied on stimulating students' engagement through using active learning strategies, which require all students to participate in class in several ways in order to keep the students engaged during the lesson. Computers and SMART boards played an important role in supporting the active learning in the classroom because it allowed students to think, share, and discuss.

In addition, I found that some teachers used the YouTube video and the PowerPoint presentation tool, which have had a clear impact in increasing students' engagement and

achievement because   these approaches address students' audio and visual senses. Students were

especially attentive when the teachers told them that they would be asked questions about the

video. All of the YouTube videos and the PowerPoint presentations that I have seen were clear

for the students of this age, had pleasant colors, interesting pictures, and included appropriate

music. During the videos, all students were focused, engaged, and having fun at the same time.

Impact of technology on teaching and learning. In the 21st century, technology has

changed the ways in which we learn and teach. Generally, the study found that teachers agreed

that technology is a significant tool that effectively enhances and improves the education

process. On the other hand, a few teachers disagreed with the idea that technology has changed

the teaching and learning process. One teacher said, "Technology has allowed the teachers to

pick more things that are available to meet the needs of the students at whatever grade level they

are teaching". Furthermore, some teachers reported that technology enhanced learning in K-12

classrooms by integrating knowledge of learning and teaching with knowledge of educational

technology, media, and multiple instructional methods. Also, some teachers said technology has

renewed and developed their approach to teaching, shortened their preparation time, and helped

them to share information with the students.

In addition, teachers reported that technology helped them to assess students' learning

and performance in the classroom. Also, technology helped teachers to keep track of students'

learning and allowed them to give feedback for students to reflect on their work. Some teachers

used digital Portfolios to collect students' work and enhance information technology skills.

Furthermore, teachers were using technology to encourage students' learning in many ways. Some teachers reported that they encouraged students' learning by allowing them to use technology some-times by themselves to search information related to the lesson.

In this part, I found that all teachers have positive opinions about how technology has changed their way of teaching. In all classrooms that I visited, I found that teachers were trying to increase students' engagement in the classroom by using technology because of their belief in the positive impact of using technology in teaching and learning. To increase students' engagement in the classrooms teachers used videos, games, and class blogs

Students' engagement. There is no extraordinary difference in the students' engagement from one grade to another. The approximate percentage of students' engagement was similar in each classroom. In all classes, the percentage of students' engagement was over 90%. Overall, I found that the use of SMART board in the classrooms enhanced students' engagement.

Chart 1.1

The Percentage of Students' Engagement When Using Smart Boards in the Classrooms
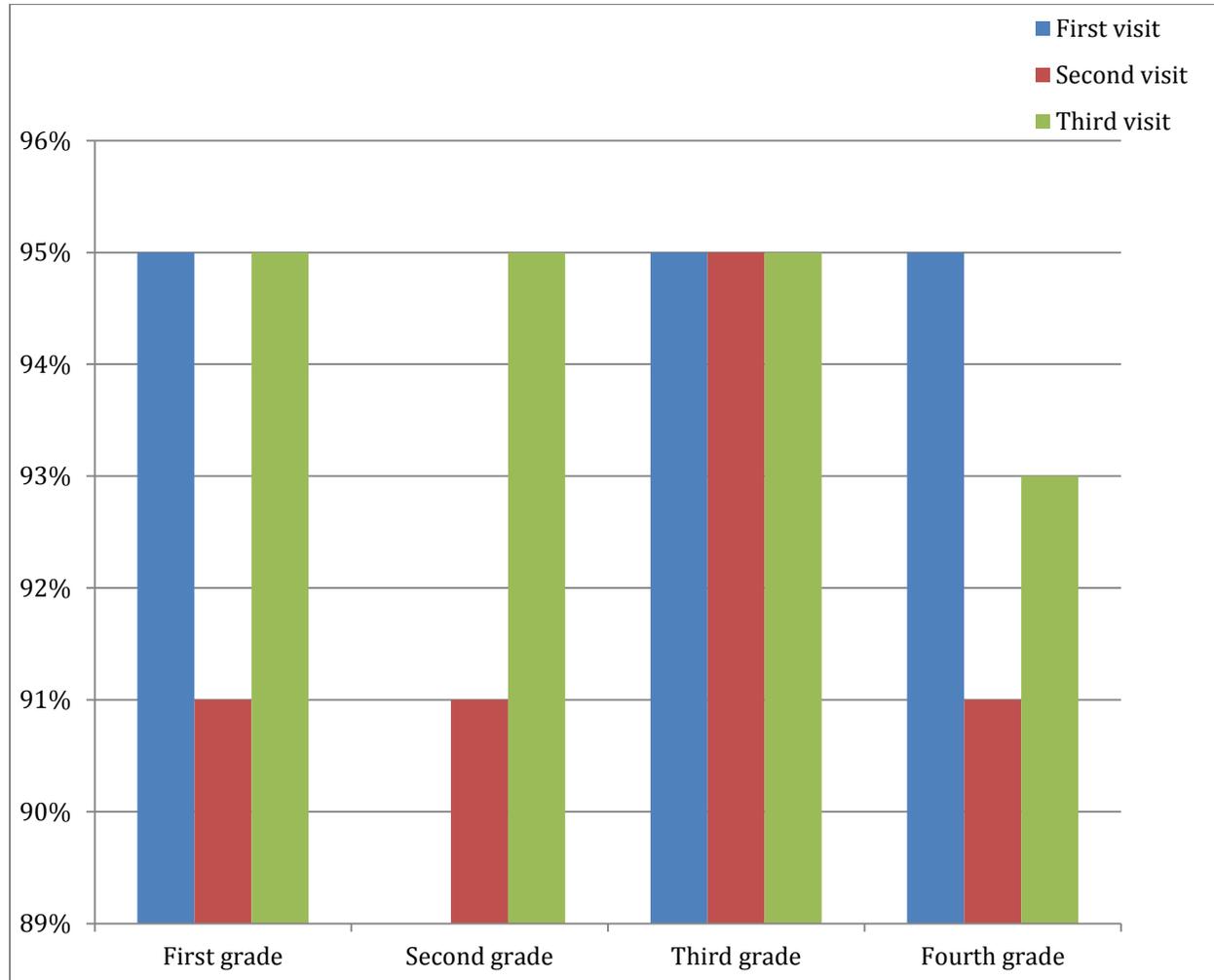
Finally, this is the most significant finding that I have seen through my visit to the United

States school. There were a large and diverse number of technologies in each classroom. The

SMART boards were the most prevalent technology tool being used with the teachers using

SMART boards for their daily lessons. The teachers used the SMART boards because it has an

effective feature that allows them to use different teaching methods and strategies to stimulate

students' senses. In addition, through students' engagement and participation in the classrooms I found that the integration of the technology positively affects students' learning.

Discussion

This study examined, "How does a teacher effectively integrate appropriate educational technology to support student learning in an elementary classroom"? In general, the purpose of any instructional technology is to enhance the experience of the learner and the learners' ability to master the material by using a range of technology such as computers, iPads, and SMART boards.

Types of technology in the classrooms. The literature review, presented different types of educational technology that has infiltrated the classrooms such as computers, SMART boards, clickers, and tablets. During my visit to the two schools I saw the daily use of these technologies with the exception of clickers. Clickers were not used in either school. In the literature review, I mentioned that one of the clickers' benefits is that clickers are useful tools for large classrooms that contain a large number of students such as colleges and universities. I think because of that I did not see clickers used in elementary classrooms. Furthermore, in the literature review, it can be clearly seen that computers seem to be available in the majority of schools. During the field study, in both schools, computers were the most available type of technology because computers were the first educational technology to be adopted in schools.

In the literature review, According to the National Center for Education Statistics (NCES, 2010) 23% of all teachers said they have SMART boards in their classrooms, while, 28% of teachers mention that they had access to a SMART board in the building. Through my visit to the schools is, in the United States School, I saw SMART boards available in each classroom.

However, in the Saudi Arabia school, there was only one SMART board available in the school. Due to the many benefits of the SMART board the Saudi Arabia school has started to integrate this educational technology gradually.

In the literature review, it was mentioned that students can use tablet computers for taking notes during class time, reading eBooks, sharing information, drawing, and listening to music, or watching videos. In addition, tablets help students to complete and save their assignments (Hieb and Ralston, 2010). During the field study, in the reading class for second grade students, the teacher used iPad applications to encourage students' learning such as, the Accelerated Reading (AR) student APP. There is no need to download an APP, students simply open a web browser to the homepage, then log in, and find the book by the title or the author. Then students have two choices as follows: reading practice or vocabulary. Also, if the students chose to read, there are three choices: read to, read with someone, or read alone. At the end, students have to take a quiz and receive a score. Despite that benefit of the tablet computers on student learning, it is still unavailable in all classrooms. I believe that the cost of the tablet and the rapid change of the technology were some of the reasons behind the lack of this tool.

Teachers' perspective and their technology skills. In the literature review, there are some schools with limited technology due to barriers of physical setting, limited budget, or lack of training for teachers. During the field study, in the United States school, the availability of the educational technology was absolutely amazing. On the other hand, in the Saudi Arabian school there was limited technology due to limited budget, or lack of training for teachers. In the Saudi Arabian schools, the teachers were aware of the value of the educational technology and they were willing to have technology in the classroom. I think if the teachers received the training and

the support they needed they would improve the education in Saudi Arabia in a short period of time.

In the literature review, one of the drawbacks is that using computers requires at least minimal training. Some teachers said that their lack of training, ability, and interest in using technology were the important reasons of resisting using technology in classroom. However, through my visit to both schools, I found that computers were the easiest technology to use in the classroom because computers were one of the first modern technologies that entered the schools and all teachers from both schools were skillful in using computers.

In the literature review, many teachers who used SMART boards reported that the SMART board provides special features that help teachers to use multiple teaching methods to meet all students' literacy needs. In all classes in the US that I observed, teachers were using SMART boards for every day lessons, for multiple teaching methods, and for different subjects. It was evident that SMART boards allowed them to use different teaching methods and strategies to stimulate students' senses.

The literature reviewed mentioned that teachers can also use technology to assess students' performance by using several types of technology such as computers, and ePortfolios. During the field study, it was clearly seen that technology helped teachers to assess students' learning and performance in the classroom. Also, technology helped teachers to keep track of students' learning and allowed them to give feedback for students to reflect on their work. The literature review included many instances of teachers' beliefs in the effectiveness of using technology in the classroom, which they are using it in their daily lessons. In both schools that I visited the teachers were using technologies in their daily lessons because they believe in the benefit of this

approach. No one can deny the many advantages that technology has provided of both teachers and students.

Impact of technology on teaching and learning. In the literature review, the majority of the students have a high level of interest in using computer technology and they use it in and out the classroom continuously for multiple purposes (Hicks, 2011). In both schools it was clear that students were able to use computers for multiple purposes such as searching for information, collecting pictures, and watching educational videos. Over all, all current K-12 students were born since the dawn of the internet into an environment surrounded by technology. They are known as the "Net generation". These students have the ability to learn and readily adopt almost any type of new technology.

There are many benefits of technology integration into the classroom from the teacher's side that were mentioned in the literature review. Integrating technology into the classroom has reduced teachers' preparation time allowing the teachers to provide multiple activities to make the class more engaging by using educational videos and gams. Also, it encourages students' learning and achievement (Hicks, 2011). During the field study, integrating technology into the classroom has reduced teachers' time allowing the teachers to provide multiple activities to make the class more engaging. It is noticeable that technology integration into the classrooms has changed the educational processes, positively affecting students' learning, and allowing teachers to provided multiple activities for their students

According to the literature reviewed, the SMART board has special features that help to keep students' attention for a longer time. Also, it allows teachers to differentiate by using multiple teaching methods. In addition, the SMART board plays an essential role in supporting visual learners as well as students with special needs (Ngao, 2006). When reviewing the

classroom seating chart of technology engagement especially with the use of SMART boards, the number of students who were engaged was high. There is no extraordinary difference in the students' engagement from one grade to another. The percentage of the students' engagement was above 90% throughout the classrooms and grades. There is no doubt that SMART boards are the most effective tool in the elementary classroom and the SMART boards were useful tools for both teachers and students. The SMART boards have special features such as touch screens, visual pictures, and sound effects. All these features stimulate the students senses, which make them more engaged during the lesson.

The common theme that I found from the teachers' beliefs is that in both schools the teachers are focusing on the classroom environment. In the classrooms I found that the teachers are building positive environments for the students in order to address students' need to feel more comfortable and enhance their learning. Teachers are creating an effective physical classroom environment for all students allowing students to move in the classroom, encouraging the students with positive feedback, and using several technology tools. The technology in the classroom supports teachers to build positive classroom environments for all students. Also, I found that teachers were skillful in using technology to create an appropriate environment to enhance students' learning

Implications for practice

One of my objectives in this study was to inform future classroom practice in Saudi Arabia in terms of technology. As we all know despite the fact that Saudi Arabia is a wealthy country, it is still developing in integrating technology into classrooms. In the future, there are many things that I would like to see in Saudi Arabia classrooms, as follows.

Providing modern educational technology for classrooms. Since Saudi Arabia is a wealthy country, I believe that the government can provide any new technology for each classroom. During my visit to the Saudi Arabian school, there was a clear lack of availability of technology in the classrooms compared to the United States classrooms. It is important to provide the modern educational technology in each classroom in order to help teachers to continue to learn and be open-minded for the newest technology. In addition, the reason why I would like to see more technology in Saudi Arabia classrooms is that through my visit to United States school I found that the incorporation of technology into the classrooms positively affects students' leaning as evidenced by their increased engagement when using the technology. Also, students had a good opportunity to discover the new educational technology and improve their ability to use these devices in and out of school.

Provide training courses for teachers. Technology plays an essential role in education and it is difficult to ignore the value of integrating technology into the classroom. Generally, through my visit to Saudi Arabia school I found that teachers agreed that technology is a significant tool that effectively enhances and improves the educational process. The majority of teachers were willing to integrate and use the technology in the classrooms. However, the lack of the availability of technology in the classrooms and their minimal technology skills prevented them from using technology. I believe that providing training courses for teachers will help the teachers improve their technology skills. If the teachers have the ability to use technology in the classrooms, they will address students' needs, save classroom time, increase students' engagement, and improve students' leaning.

Provide positive learning environments. Building a positive learning environment is one of the teachers' responsibilities. There are many strategies that teachers can use to create

positive learning environments for students. In the classroom of the future, I would like to see

teachers increasing students' understanding by using different types of technology in the

classrooms in order to address students' needs and improve their performance. In addition, I

believe that building a strong relationship with students allows teachers to understand their

students' needs and increase the students' performance. Furthermore, it is important for teachers

to think about the physical setting of their classroom to meet their learning goals. Teachers

should make sure that students are comfortable and allow them to move in the classroom.

Teachers need to create flexible space for individual and group work in the classrooms. For

example, the use of iPads in the classroom positively affects the flexibility of the classroom

environment because it allows students to easily work individually or in groups. In addition,

technologies help teachers to create positive environment for the students. For example, the large

sizes of the SMART boards allow teachers to use different physical configurations in their

classroom. The SMART boards increase the students' chances to see the information and the

pictures clearly even for the students who sit in the back of the classroom. Finally, having a

positive learning environment is significant for increasing students' engagement and encouraging

students' participation.

Implications for future research

In future research, this study could be replicated for more than one school in each

country in order to have variety of participants with not only white middle class students and

teachers. Also, to avoid the small sample, this study could be used in more than 1st, 2nd, 3rd, and

4th grade elementary classes. A similar study could include all elementary school teachers'

because a large group of teachers would provide a wider scope of data. In addition, this study

could also be done for different education levels starting from preschool until high school.

In future research, I would like to have a longer period of time for observations and data collection to avoid the limited observation. The longer time period would allow me to have more data and observe the use of technology in different grades and different subjects. I recommend that researchers observe students during the whole semester to have comprehensive ideas about the impact of the use of technology on students' performance.

Limitations

It can be clearly seen that this study has limitations that should be taken into consideration when interpreting the results. The limitations were using only one school in each country. Also, the majority of the teachers and the students were white, middle class. Therefore, there was limited diversity in the participants in the research.

In addition, the small sample size was another limitation of the study. I interviewed only four teachers from each school, so the number participating in the study was small and that limits the scope of the data. Also, the observations confined to a short period of time were another limitation. I visited the classrooms only twelve times during one month.

This paper is an ethnographic case study to answer the research question, "How does a teacher effectively integrate appropriate educational technology to support students' learning in an elementary classroom"? This research examined effective ways of integrating educational technology into the elementary classrooms. The goal of this research was to investigate ways to enhance the experience of the learner and the learners' ability to master the material by using a range of technology such as computers, iPads, and SMART boards.

I did this research in the United States and Saudi Arabia by using data including non-participant observations and open- ended surveys of the teachers. There were some challenges

that I faced though the field study was conducted over a short period of time and the number

participating in the study was small. However, I have learned new knowledge and discovered

information though the study.

In this study I learned that there is a clear variety of educational technologies in the

classrooms. The number of technological devices in the classroom was different from class to

class. I observed a rich technology environment, less rich, and poor technology environment.

Also, the availability of the technology in the classrooms differed from country to country. I

have discovered that the majority of teachers were willing to integrate and use technology in

their classroom as well as the students.

Furthermore, I have learned that integration of technology into elementary classroom has

changed and improved the educational process. In addition, I discovered that despite the

diversity of the educational technology types, the SMART boards were the most used of all of

the available classroom technologies. Through the review of the classroom engagement chart

that I recorded when the teachers used SMART boards in their classrooms, I discovered that the

percentage of students' engagement was over 90%. Overall, I found that the use of SMART

boards in the classrooms enhanced students' engagement. Finally, as a result of my study I

believe that the SMART board should be a required teaching tool in each elementary classroom.

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Appendices

Appendix A

Interview Questions for an Elementary School Teacher

1. What is your philosophy of education?

2. What are the technology teaching skills that every educator should have?

3. What tech tools should be required knowledge for an elementary teacher?

4. What is the most effective technology tool for elementary classroom?

5. Should tech training be required for all current teachers?

6. Have you joined any training program? Can you describe this training?

7. How has technology changed the way you teach?

8. How do you select technology to meet your learning goals?

9. How has technology been used to help assess and analyze the data to impact instruction?

10. How do you encourage students learning by using technology?

Appendix B

Teacher's Name: **Observation Date**:

Observer's Name: **Classroom:**

Classroom Seating Chart of Technology Engagement

Student A	Time	Student B	Time
Student C	Time	Student D	Time
Student E	Time	Student F	Time
Student G	Time	Student H	Time
Student I	Time	Student J	Time
Student K	Time	Student L	Time
Student M	Time	Student N	Time
Student O	Time	Student P	Time
Student Q	Time	Student W	Time
Student X	Time	Student Y	Time

Key: W: Working on   **A:** Seating help from the teacher   **OFF:** Off task   **B:** Seating help from peers

Appendix C

Performance Indicators for Technology-Literate Students.

The National Education Technology Standards (NETS, 2002)

Prior to completion of Grade 2, students will:

1- Use input devices (e.g. mouse, keyboard, remote control) and output devices (e.g. monitor, printer) to successfully operate computers, VCRs, audiotapes, and other technologies.

2- Use a variety of media and technology resources for directed and independent learning activities.

3- Communicate about technology using developmentally appropriate and accurate terminology.

4- Use developmentally appropriate multimedia resources (e.g. interactive books, educational software, and elementary multimedia encyclopedias) to support learning.

5- Work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom.

6- Demonstrate positive social and ethical behaviors when using technology.

7- Practice responsible use of technology systems and software.

8- Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.

9- Use technology resources (e.g. puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.

10- Gather information and communicate with others using telecommunications, with support

from teachers, family members.

Appendix D

Performances Indicators for Technology-Literate Students.

The National Education Technology Standards (NETS, 2002)

Prior to completion of Grade 3-5, students will:

1. Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively.

2. Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide.

3. Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use.

4. Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum.

5. Use technology tools (e.g., multimedia authoring, presentation, Web tools, digital cameras, and scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom.

6. Use telecommunications efficiently to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests.

7. Use telecommunications and online resources (e.g., e-mail, online discussions, Web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom.

8. Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities.

9. Determine which technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems.

10. Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources.