LEBANESE AMERICAN UNIVERSITY

THE EFFECT OF TEACHERS' ATTITUDES AND PERCEPTIONS ON THEIR
ABILITY TO INTEGRATE TECHNOLOGY

By
LAMA MO'DAD

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Thesis Approval Form

Student Name: Lama Mu'dad

I.D. #: 200302203

Thesis Title: The Effect Of Teachers' Attitudes And Perceptions On Their Ability To Integrate Technology

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Department: Education

School: **School of Arts and Sciences**

Approved by:

Thesis Advisor: Pura Bahous Signature:

Member: Layla Harmouh Signature:

Member: Mona Majdalawi Signature:

Date: August 2011

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The Effect Of Teachers' Attitudes And Perceptions On Their Ability To Integrate Technology

Lama Mo'dad

Abstract

The purpose of this research is to study the effect of teachers' perceptions and beliefs about technology on their abilities to integrate computer use in their teaching practices. Both quantitative and qualitative methods are used sequentially to answer the three research questions proposed in the study. This study conducted in five private schools in Beirut incorporates three data collection methods. First, an attitude scale is distributed to purposefully selected schools in order to assess teachers' attitudes towards technology. Second, a questionnaire is distributed to staff responsible for professional development in these selected schools to evaluate technology professional development for teachers. Finally, to develop a deeper insight of the results gained the attitude scale and the questionnaire are complemented with in-person semi-structured interviews. The results portray that teachers' positive attitude towards technology was coupled with a moderate use of technology integration in the classroom. Although teachers perceived the importance of the role of technology they were still resistant to integrate it. Furthermore, the results gathered suggest that some private schools in Beirut are not preparing teachers with the skills needed to become long life technology learners but rather they are mostly focusing on teaching specific technical skills. Finally the results gathered in this thesis suggest that teachers' personal use of computers as cognitive and communicative tools is not considered as a predictor for their willingness and ability to integrate technology.

Keywords: Integrating Educational Technology, Instructional Technology, Educational Technology, Technology Professional Development, Teachers' Attitudes towards Technology, Teachers' Perceptions towards Technology.

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CHAPTER ONE

Introduction

The role of information technology (IT) in education has significantly increased, but resistance to technology by school teachers worldwide remains high (Hu, Clark & Ma, 2003). Due to the wide spread of technology in the past few years, computers have become essential communication, entertainment and learning tools for our children. Unfortunately, some students are still entering universities with a deficiency in essential technological skills and knowledge needed to succeed in their studies. Thus, schools need to adjust their practices and visions in order to prepare children to become technologically competent. Our goal as teachers should be to improve students' learning and provide them with a chance to gain 21st century skills rather than teaching for the sole purpose of official testing.

Before going into details let us define some important terminology that will be frequently used through out this thesis. Throughout history, several definition of the term 'instructional technology' emerged; one of these definitions was developed by the educational technology historian Paul Saettler. Saettler (as cited in Roblyer, 2006) defined instructional technology as being both "the media born of the communication revolution which can be used for instructional purposes...." (p.6) in addition to being "a systematic way of designing, carrying out, and evaluating the total process of learning and teaching..." (p.6). As for the term 'educational technology' it is widely used in schools that cater for 21st century learners. Educational technology was defined by the Association for Communication and Technology in 1994 (as cited in Franklin, 2007) as

“the theory and practice of design development, utilization, management and evaluation of processes and resources for learning”.

Before concluding this paragraph, it is highly important to define the term ‘integrating educational technology’ which will be heavily used in the subsequent chapters. Roblyer (2006) defined integrating educational technology as “...the process of determining which electronic tools and which methods for implementing them are appropriate responses to given classroom situations and problems” (p.9).

Ertmer and Ottenbreit-Leftwich (2010) stated that the aim of purposeful technology integration is to facilitate enriching learning experiences by enabling students to develop deep and connected knowledge that can be useful in real life situations. Technology integration is the incorporation of technology resources and technology-based practices into the daily routines in efficient and effective ways to support school goals and purposes (Lawless & Pellegrino, 2007). Allowing students to access educational websites and to play games as a form of rewards for their efforts is not considered an effective technology integration. Lauen & Gladden, 2002 (as cited in Lawless & Pellegrino, 2007) stated that evidence suggests that technology is often poorly integrated with classroom instructional activities, although an increase in the availability of electronic resources in schools is evident. Teachers need to use technology to better achieve the standards and the goals set by the curriculum. Word processing, computer games that focus on drill and practice, paint programs and image search via google are the most common uses of computers in instructions; however, the use of programs that engage students through stimulation in problem solving and higher order thinking skills are rarely used. Several research conducted reveal that technology

is used to either support traditional teaching methods (teacher-centered classrooms) or to achieve administrative and communicative purposes (Maddux & Lamont, 2006; Grant, Ross, Wang & Potter, 2005; Mueller, Wood, Willoughby, Ross & Specht, 2008). Unfortunately, teachers use Power Point presentations or some search engines to support teacher centered instruction rather than to help students construct their own learning. The use of technology in classrooms needs to exceed traditional instruction and target meaningful learning. Even though most private schools in Beirut have new equipment (such as computers, overhead projectors, smart boards) and internet access, purposeful technology integration is considered relatively low. Most teachers use technology equipment in schools for administrative and preparatory tasks rather than for instructional purposes. Teachers tend to use technology either to get activities, educational movies and lesson plans posted on-line, or to communicate with parents or administrations via e-mails, blogs and wikis. This basic use of technology does not support student-centered instruction where children are provided with a chance to build their skills by connecting to interdisciplinary information and by actively engaging them in their own learning.

According to Ragonis and Hazzan (2009) the underlying assumption was that once adequate resources were obtained, integration would follow. Integration is not achieved by increasing the number of computers available in the classroom or by buying the newest software, but rather it is determined by its contribution to the teaching and learning process. Technology integration is achieved when teachers use computers to facilitate, enrich and enhance students' learning process. Successful integration is achieved when new technology devices are used to create a student-

centered environment that cater for the needs of students in constructing their own learning by gaining 21st century skills. Technology should not be viewed as an additional component to the curriculum but rather as a “new” tool to accomplish authentic and multidisciplinary objectives. It may be used as a tool that enables a student-centered curriculum as well as a facilitating an environment that fosters meaningful learning activities (Carlson & Gadio, 2002). Teachers need to become convinced of the essential role of technology as a mean to allow students explore and construct their own ideas. Technology needs to be viewed as a mean to support constructivist pedagogies in classrooms.

Throughout the last decade, teachers were trained to overcome first order barriers. Trainings used to focus on helping teachers develop some technical skills such as operating a computer, installing software, using e-mails, wikis or blogs rather than helping them understand the important role of technology and its usefulness in the teaching and learning process. That is, technology trainings use to focus on helping teachers overcome first order barriers rather than overcome second order barriers. First order barriers are described as extrinsic to teachers and include time constraints, lack of access to resources and equipments, teaching for the sole purpose of tests and inadequate technical support (Wachira & Keengwe, 2011; Ertmer & Ottenbreit-Leftwich, 2010; Bauer & Kenton, 2005). As for the second order barriers, they are considered by researchers in the field as intrinsic to teachers and consist of beliefs regarding teaching, perceived ease of the use of technology, beliefs regarding the role and usefulness of computer technology, beliefs about their self efficacy and their role in the classroom. Second order barriers may not be easily observed, but rather can be

detected by analyzing the arguments that teachers present to explain their frustration from first order barriers (Collerette et al., 2003; Rovai & Childless, 2003; Ertmer & Ottenbreit-Leftwich, 2010).

Since integrating computer technology requires a change in teaching methods, teachers play a central role in such a transition (Ragonis & Hazzan, 2009). Schools, administrators and professional development teams need to continuously stress and overemphasize the importance of the role of teachers as facilitators of the learning process. The International Society for Technology in Education [ISTE] (as cited in Franklin, 2007) stated that teachers should not only demonstrate proficient use of technology but also develop “developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners” (p.12). Teachers graduate from universities with a set of ideas and theories that affect their teaching practices and behaviors inside their classrooms. Thus, classroom teachers possess theoretical orientations that organize and trigger their instructional behaviors (Yang & Tsai, 2010). These beliefs that were built throughout their education and teaching practices act as filters through which various instructional judgments and decisions are being made (Belland, 2009). The teacher’s own experience as a student will affect his/her attitude and the pedagogy that he/she will embody as a teacher which guides and influences his/her practices, behaviors and perceptions. According to Yang and Tsai (2010) a teacher’s belief can be embodied in the teacher’s expectations of his/her students’ performance or it can be embodied in his/her theories about a particular subject in learning and teaching. Thus, it is highly recommended that further research and investigations need to be conducted in order to understand the

origins and aspects of these beliefs. A better understanding of these beliefs will positively contribute to the process of school improvement and educational effectiveness.

Achieving technology integration is a multifaceted challenge that entails more than the simple fact of acquiring and distributing computers (Ertmer & Ottenbreit-Leftwich, 2010). Logistical issues are only a part of the problem; teachers' perceptions and beliefs about the role of technology in the classroom is considered the second component of the problem. Schools should not aim at eliminating first order barriers before addressing second order barriers. Due to the dynamic nature and continuous interactions between barriers, it may be more effective to address first and second order barriers simultaneously (Hu et al., 2003). In fact, technology integration into teaching practices has been a worldwide topic of research interest for the last decades. However, in Lebanon, very few research studies have been conducted in order to identify the barriers that inhibit efficient and successful technology integration.

Purpose

Studies have investigated teachers' attitudes towards computer technology. Research has focused mainly on investigating (a) how teachers perceive innovative practices; (b) how the personal teaching philosophy of teachers affects the level of technology integration; (c) how teachers' self efficacy beliefs affect the actual computer use in the classroom; and (d) how teachers perceive the effect of technology on their role.

However, few investigations were conducted in Lebanon in order to research how teachers' perceptions or beliefs regarding technology affect their abilities to integrate computer use in their teaching practices.

Rationale

The findings of the proposed research will provide feedback that enables administrators, professional development teams and teachers reflect on the process of technology integration. The results of this research will help educators determine the first order and second order barriers that hinder the process of effective technology integration. Once barriers are determined, effective integration plans that take into consideration second order barriers can be developed.

Research questions

This study aims to answer the following research questions: (1) Do teachers' attitudes and perceptions towards the role of technology affect their abilities to purposefully integrate technology in their teaching practices? and (2) Do schools convey to teachers the relevance and value of technology in their classrooms throughout professional development?, and (3) Is there a correlation between teachers' personal use of technology and their willingness to integrate computer technology in their teaching practices?

Participants

The participants in this study include teachers and staff enrolled in private schools located in Beirut. The participants constitute a purposive sample chosen due to

its availability. Five private schools in Beirut were selected to gather the data needed. The schools chosen reflect the socioeconomic diversity of private schools in Beirut. One school caters to low socio-economic status students, another one caters to high socio-economic status students and the remaining three cater to middle socio-economic status students. However, it is important to note that one of the three schools caters at the same time to middle and low socio-economic status students. Furthermore, it is important to highlight that one of the selected schools follows the American program, but the remaining four schools offer the Lebanese program.

As a conclusion, teachers need to adjust and regulate their attitudes and perceptions towards technology in order to acknowledge that technology is no longer considered as a supplemental teaching tool but rather as an essential mean to improve students' learning process. It is becoming a necessity if we want to adequately prepare our students for the competitive jobs. As mentioned by Ertmer and Ottenbreit-Leftwich (2010), effective teaching requires effective technology. Thus, technology should be considered as a mean to achieve the objectives and standards set by the curriculum while fostering a deep understanding of the concepts introduced.

CHAPTER TWO

Literature Review

After introducing the research study, a brief literature review will be conducted to provide the researcher with a solid ground from which the instruments for data collection will be developed. The research articles discussed in this chapter portray and highlight the most emerging ideas developed by the leaders in the field of technology integration in education. In fact, the subsequent literature review will provide the reader with a greater understanding of the research question investigated in this study.

First- and second order barriers

Based on the prominent models of IT usage, there are a number of personal, behavioral and environmental factors that influence a teacher's use of technology (Hu et al., 2003). Personal and behavioral problems are directly related to teachers; however, environmental factors are based on the school's mission and policies to embark on a new paradigm shift. According to Kim and Freemyer (2011) barriers to change are related to extrinsic and intrinsic factors that affect the efforts invested by teachers in order to integrate technology in their teaching practices.

First order barriers are described as being extrinsic to teachers and include insufficient planning time, lack of access to software and computers, teaching for tests and inadequate technical support (Wachira & Keengwe, 2011; Ertmer & Ottenbreit-Leftwich, 2010; Bauer & Kenton, 2005).

Time restraint is considered as a major first order barrier. One of the greatest barriers said to be encountered was lack of time due to required curriculum and official testing (Maddux & Lamont, 2006). Teachers race against time to fulfill the standards set by the curriculum. The pressure faced by teachers to cover the objectives set by the curriculum is tremendous especially that schools highly emphasize students' results in standardized tests. According to Liu, Maddux and Johnson (2008) teachers are doing as much as possible with technology given the curriculum constraints. Furthermore, putting scientific research aside, teachers have heavy loads, they have meetings to attend, papers to grade, tests to prepare, activities to plan and differentiated instructions to develop. Thus, teachers face difficulties finding time for learning about new technological devices into their heavy workload.

The lack of access to the right types of technology in appropriate locations are considered as first order key barriers to technology integration into the classroom (Wachira & Keengwe, 2011). Access problems include lack of hardware (Ertmer & Ottenbreit- Leftwich, 2010; Ertmer 2005; Bauer & Kenton, 2005) and lack of access to educational software or programs (Staples, Pugach & Himes, 2005). Teachers believe that limited access to schools' computer labs, unreliability of technology and lack of technical support are hindering their ability to integrate technology. Bauer and Kenton (2005) mentioned that although schools have technological equipments in their computer labs, they believe that access to these computers is limited due to teachers' competition to reserve the laboratory. The presence of few computers for the whole school makes it very difficult for teachers to use technology constantly in their teaching practices.

The results of official exams in Lebanon are commonly used not only to evaluate individual students' achievement, but also to evaluate their teachers and their schools (Osta, 2008). Some schools in Lebanon evaluate and measure the learning process of students by viewing the results acquired by students at official exams (such as brevet and baccalaureate). Parents and caregivers evaluate and compare schools based on the percentage of students' success in official exams. Thus, teachers at such schools aim to teach only the skills tested in official exams using traditional instruction methods. Teachers aim only to increase students' scores in official exams, they overlook deep understanding of a domain and they rather emphasize isolated mental processing (Lowther et al., 2008). Integrating various subjects and tackling various skills are neglected when teachers cater or "teach for exams" only. Integrating technology is not considered one of the main standards set by the new Lebanese curriculum. Thus in the majority of private schools in Lebanon teachers do not integrate technology in the learning process. As mentioned by Osta (2008) the official exams set the standards about the priorities of the subjects studied and the skills to be developed.

As for the second order barriers, they are considered intrinsic to teachers and they include beliefs about teaching, beliefs about the role and usefulness of computer technology, perceived ease of use, beliefs about their self efficacy and their role in the classroom. Second order barriers may not be easily observed, their presence can be noticed when we analyze the arguments teachers give for being frustrated by first order barriers (Collerette, Ingham, Legris, 2003; Rovai & Childless, 2003; Ertmer & Ottenbreit-Leftwich, 2010). Teachers may state that the lack of resources, equipment

and time hinder their technology integration process; however, these arguments may point to internal reasons and beliefs. Second order barriers may impede meaningful use, whereas first-order barriers may hinder actualization of more facilitative beliefs (Ertmer & Ottenbreit-Leftwich, 2010). First order barriers can hinder the process of technology integration; however, second order barriers can downgrade and upgrade their effect (Lowther et al., 2008).

First order barriers can be dealt with by increasing teachers' planning time and developing the IT department by providing financial and human resources. The problem is not about the software but the human side of the implementation cycle that will block progress in seeing that the delivered systems are used effectively (Subramanian, 2007). However, the process of overcoming the second order barriers is considered more complicated especially that dealing with such barriers requires modifying and adjusting the school culture regarding the teacher's role, the importance of the textbook, the importance of students' engagement and the constituents of the learning process (Fullan, 2007).

Kerr's (as cited in Ertmer & Ottenbreit-Leftwich, 2010) second order barriers are usually rooted in teachers' underlying beliefs concerning the whole teaching and learning process so they cannot be easily observed by others or even by teachers themselves. These hidden or less tangible barriers are harder to change because they are personal and they are rooted deeply in their minds. Ritchie and Wiburg (as cited in Staples et. al, 2005) stated that technology's greatest power can be the way in which its use causes teachers and administrators to rethink the teaching and learning process.

Teachers' beliefs and perceptions

Kim and Freemyer (2011) mentioned that the modification process that teachers need to go through should be gradual since it requires challenging teachers' belief systems. Teachers' beliefs about the role of computer as an instructional tool may depend on its perceived usefulness. On one hand, some research conducted (Collerette et al., 2003; Sinclair, 2009; Belland, 2009) noted that teachers' perception of technology usefulness is overly emphasized especially when the teacher has limited knowledge and few experience related to technology integration. Belland (2009) stated that although a teacher may highly believe in the importance of technology integration, there may still be resistance to integration since it is a modification of personal habits. On the other hand, other research conducted (Kumar, Che Rose & Laurence D'Silva, 2008; Rovai & Childress, 2003; Chau & Hu, 2002; Subramaniam, 2007) suggest that teachers who possess a positive perception of technology usefulness demonstrated a greater usage of computer while those who negatively perceived technology usefulness did not acquire and integrate their skills and repertoires in their teaching practices. The research conducted in this thesis, will help readers to re-examine the previously mentioned inconsistent findings.

If teachers perceive computer technology as a useful tool that will inspire and help them communicate their message effectively, they are more likely to value it and use it. However, if teachers believe that technology is replacing their traditional role and changing their social relationships with their students, they will be reluctant to embrace new computer technologies (Cuban, 2001). Some teachers do not feel secure when they

are released from their traditional centered role. In their opinion, the computer is conceived as the new class brain and the teacher's role would be reduced to guidance, support and navigation (Ragonis & Hazzan, 2009). Some teachers believe that by integrating technology into their teaching practices, they are losing their authority. Teachers tend to use traditional teaching methods because they would like to maintain their role that they have been familiar with since their childhood. According to Ertmer (2005), the teachers' traditional perceptions of what teaching and learning should look like are major limiting factors to technology integration.

Some teachers have defined beliefs or perceptions for their traditional role, their classroom setting, their assessment practices and their interaction with students. These underlying beliefs can be considered as barriers that will hinder teachers' ability to implement technology integration in meaningful ways. Effective technology integration requires a radical shift in both the teacher's style and vision of what classroom life is all about (Hew & Brush, 2007). This new vision should incorporate a change in the teachers' personal beliefs about their roles, their teaching practices and their management styles.

Teachers' beliefs are not expected to change abruptly but this process should rather occur steadily and in a timely manner. According to Lawless and Pellegrino (2007), change is a multidimensional variable including both cognitive and affective components. Teachers should be convinced to view computers as inspirational and instructional tools rather than imposed new technological trends. In fact, several researchers suggested that teachers beliefs concerning the role and importance of

computer technology can affect their practices (Lowther, Inan, Strahl & Ross, 2008; Kumar et al., 2008; Hu et al., 2003; Brinkerhoff, 2006).

Marcinkiewicz (as cited in Wozney, Venkatesh, & Abrami, 2006) described that complete integration of computers into the educational system is a distant aim unless reconciliation between teachers and computers occur. Therefore, it is highly important to study the factors (or beliefs) that affect teachers' use of the new educational innovation. Rovai and Childress (2003) mentioned that many teachers resist the use of computers even though there are several studies that clearly show the positive correlation between achievement, opportunities to learn and the application of information technology.

According to the literature, some teachers believe that technology is used as a reinforcement tool that will help them motivate students in order to complete the assigned work on time (Kumar et al, 2008; Ertmer & Ottenbreit-Leftwich, 2010; Keller, 2008; Kim & Freemyer, 2011). These teachers believe that computer activities are supplemental or additional activities rather than learning opportunities. It is believed that students generally enjoy using the computer and with enjoyment comes motivation (Kumar et al.,, 2008). In this era computers are considered as part of students' natural environment and upbringing and thus teachers consider computers as the most appropriate reinforcement and motivational tool. Keller (2008) reported in his findings that some teachers believe that by simply providing a technological version of the workbook they are providing students with great incentives that will motivate them to become more involved in their learning process. Kim and Freemyer (2011) describe that

some teachers acknowledge that students should learn how to use technology since early childhood; however, they are unable to see the connections between technology and the curriculum they are teaching in their classrooms. In fact, the use of computer is perceived as a reward that is administered to students upon the completion of the task at hand. In this case, technology is a part of the behavioral system used in the classroom. Computers are considered as reinforcement tools that will enhance and stimulate students' desired behaviors rather than instructional tools.

The literature also highlighted that teachers might also believe that technology is used as a supporting tool that will help them reinforce students' skills by providing them with additional drill and practice activities (Sinclair, 2009; Lawless & Pellegrino, 2007; Ragonis & Hazzan, 2009). These teachers aim to plan their lessons first before starting to search for additional technology resources that will help them support these lessons. Integrating computer into classrooms is not used as a mean to introduce new skills but rather it is used to reinforce what has been already taught. In this case, educational software and websites are used to provide students with new motivational drill and practices activities rather than additional learning resources. These teachers advocate the use of technology as an effective method to increase students' retention of course materials rather than a tool to enhance students' comprehension (Ertmer & Ottenbreit-Leftwich, 2010). Teachers use drill and practice software to allow students to practice the skills taught in the classroom. These programs are used by teachers to develop students' competency in specific areas which support very little student-centered learning (Sinclair, 2009).

In addition to the previously mentioned beliefs, the literature highlighted that some teachers perceive technology as a driving force that aim to strengthen the curriculum. As mentioned in Franklin (2007), some teachers believe that using technology will help them to take the curriculum in new directions. These teachers believe that technology can be used to drive instructions and stimulate students' thinking process. Technology changes the way different subjects such as science are taught especially that it tends to accord more closely with the way students think (Russel, O'Dwyer, Damian & Wei, 2007). Technology is not only used to review previously introduced concepts but it is rather a mean to drive instructions and thus allows students to take control of their own meaning-making (Beckett, E., Wetzel, K., Chishlom, I., Zamboo, R. et al., 2003). Students are excited to explore educational programs and websites that cater for their different learning styles and abilities and thus they would be able to satisfy their curiosity with a great deal of freedom. Integrating computer stimulates the pupils' thinking and leads them to develop connections among various topics and disciplines (Ragonis & Hazzan, 2009). Independent inquiry and research offered by the World Wide Web will provide students with opportunities to develop their research skills and perceive the same subject from various perspectives. By conducting a simple on-line research, students may develop their communication, cooperation and thinking skills. Technology will help students create bridges between disciplines and encourage inventiveness (Hew & Brush, 2007; Yang & Tsai, 2010). The teachers who perceive technology as a driving force believe that educational and graphics software provide students with tools that will enable them to express their creativity and develop their imaginations. According to Kumar et al. (2008), this category of teachers aims to create technologically literate students that would be

competent and confident to perform in a global IT intensive work environment. Students exposed to technological devices in their daily lives are expected to use technology efficiently in a productive way to facilitate their work.

Teachers' self efficacy

Ertmer and Ottenbreit-Leftwich (2010) pointed out that learning about technology is a hard task for 21st century teachers who are always in a state of flux. New hardware and software are constantly being developed; thus, teachers are often faced with the need to learn about new available tools. This state of flux is developed due to the novice effect which suggests the need for teachers to have strong self efficacy for teaching with technology (Mueller et al., 2008). Teachers' perceived computer self efficacy refers to their judgment of their ability to use a computer (Hu et al., 2003). When teachers are confident in their abilities to integrate technology in their lessons, they will become more motivated to learn and adopt new technologies. Confidence is highly related to technology use (Franklin & Molebash, 2007). In fact, once teachers are confident in their abilities and thus feel comfortable about the use of technology, they will be ready to go through a training program to learn methods that will enable them to integrate computer technology into their teaching practices. Johnson, Marakas and Palmer (2006) stated that teachers' perceived self efficacy may influence their personal perception of a technology's ease of use and acceptance.

The correlation between teachers' computer self-efficacy and academic achievement was investigated by several researchers in the field. Several published research argued that education students' exposure to technology throughout their

university studies and pre-service trainings positively affect their computer self efficacy (Koh & Frick, 2009; Baker & Christies, 2005; Rice, Cullen & Davis, 2011; Davis and Roblyer, 2005; Koç, 2005; Milman & Molebash, 2008). Rice et al., (2011) stated that the undergraduate and graduate coursework received by a teacher will affect his/her computer self-efficacy which will influence his/her willingness to integrate technology in his/her classroom. This idea was also emphasized by Baker and Christie (2005) who argued that although the results of the research “do not conclusively prove that teachers will be more likely to use technology in their classrooms”, the data gathered indicates that learning how to use technology (especially digital portfolio) in their studies had a positive effect in that particular direction. Learning with technology will increase education students’ confidence in their abilities to teach using these tools, thus overcoming the fear barrier. Education students’ exposure to technology through their pre-service education and training positively affected their response to technology integration (Davis & Roblyer, 2005). While discussing the correlation between teachers’ academic achievement and their computer self efficacy, it is highly important to note that some researchers argued that educational programs need to embrace technology integration in their content to adequately prepare teachers to adopt new technology tools in their teaching practices (Koç, 2005; Koh & Frick, 2009). Koç (2005) stated that reforms cannot be achieved by adding a course to teachers’ education programs, but rather a “transformation of the culture of teacher education in which technology is seen as a changing relationship between students and teachers and between learners and knowledge is needed” (p.11).

Before we conclude this section, it is highly important to note that some researchers such as AbRahim and Shamsiah (2008) and Watson (2006) found that teachers' computer self-efficacy is susceptible to various environmental factors that can not be easily counterbalanced. These researchers believe that over time environmental factors may influence teachers' self-efficacy towards technology integration in their classrooms. Furthermore, in their research conducted in Malaysia, Ab.Rahim and Shamsiah (2008) found an insignificant correlation between academic achievement and teachers' level of confidence in integrating technology in their teaching practices.

Professional development

Lawless and Pellegrino (2007) commented that professional development is essential to ensure that teachers keep up with changes in student performance standards, learn and acquire new methods of teaching, discover ways to make an effective use of new technologies for teaching and learning, and adapt their teaching to the changing school environments and the diversity of their students. Thus, high quality professional development is extremely essential to schools that aim to promote learning and prepare children for their future. Brinkerhoff (2006) mentioned that high-quality professional development have lengthy duration, provide access to new technologies for teaching and learning, create meaningful contexts to actively engage teachers in learning activities, promote cooperation and collaboration among staff, and communicate a common vision for students achievement.

Several researchers mentioned that the amount of technology training received by teachers is significantly related to their ability to integrate computer in their teaching

practices (Kumar et al., 2008; Schlitz, O' Connor, Pang, Stryker, Markell, Krupp, Byers, Dove Jones & Redern, 2009; Fullan, 2007; Franklin & Molebash, 2007; Peterson & Bond, 2004; Keller, Hixon, Bonk, & Ehman, 2004). The majority of schools in Beirut require teachers to attend specific professional development sessions. Teachers rarely choose professional development sessions tailored to their needs or interest, they are often asked to participate in trainings that cater to the whole school. According to Davis and Roblyer (2005), volunteers differ from non-volunteers in their motivation to learn, dedication to improve or change, and their willingness to be risk takers. In fact, the intrinsic motivation may differ from volunteer to non-volunteer teachers. Teachers who personally seek out opportunities to improve their practices are intrinsically motivated and committed to change (Lowther et al., 2008).

It is highly important to differentiate between professional development that focuses on purposeful technology integration strategies and professional development that focuses on operating a specific technological tool or software and professional development that emphasize the importance of technology integration into instructions. Thus, the content and the duration of the professional development may differ based on the school's vision and teachers' personal needs. Lowther et al., (2008) stated that schools must carefully examine the content focus of the professional development they are offering to teachers. Professional development teams should aim to meet the various needs of teachers by providing a variety of professional development opportunities rather than focusing on one or two fragmented approaches (Franklin, 2007; Lawless & Pellegrino, 2007; Davis & Roblyer, 2005; Brinkerhoff, 2006).

Hu et al. (2003) contend that technology professionals should anchor technology introduction in routine teaching support and enhancement rather than using examples not highly related to classroom activities. “Trainers” need to convey to teachers the relevance and value of technology to their classroom in order to provide them with a chance to develop acceptance overtime. Once acceptance is established, “trainers” must provide teachers with professional development that will enable them to acquire some baseline learning. Being prepared to adopt and use technology and knowing how that technology can support student learning must become integral skills in every teacher’s professional repertoire (Kumar et al., 2008).

Professional development teams in schools should aim to provide teachers with various methods to use technology in their teaching process in order to attain and fulfill the new educational standards set by local and international organizations as (IBO, Ministry of Education, International Society for Technology in Education and the National Educational Technology Standards for Teachers). Professional development offices should highlight the diverse ways in which information technologies can be used to help support the creation of educational environments that cater for achieving the learning outcomes adopted in international educational standards (Lawless & Pellegrino, 2007).

Professional development experiences should not only provide teachers with the basic skills needed to use computers in classrooms, but rather they should develop and enhance teachers’ expectation of success. Teachers need to believe that they can successfully implement the innovation within their own context so they would be risk

takers and thus they would continue to persevere in implementing technology integration. Teacher in service helps teachers overcome their phobia or computer illiteracy, but it does not help teachers take what they have learned and integrate it into their curriculum (Davis & Roblyer, 2005). Thus, teachers should develop awareness of the various barriers that they might face when they start the implementation process to enhance their skills and develop a set of strategies to be used when necessary. By being aware of the various strategies that they can implement in order to overcome any unpredictable obstacle, teachers would be more prepared to start the process of technology integration. According to Pickens (as cited in Yang & Tsai, 2010) it is important that teachers gain technical skills as well as pedagogical knowledge of effective instructional practices that incorporate meaningful uses of technology. With practice, teachers can choose the approach or the strategy that will be most useful for them. Dexter, Anderson, and Becker (as cited in Tun Hussein, 2005) contend that this autonomy provides teachers with choices to adopt, adapt or reject the newly introduced approaches and strategies. That is, by developing teachers' sense of autonomy, schools are motivating teachers to become inquirers that aim to expand their knowledge, search for and adapt new approaches and strategies that will help them to practice meaningful technology integration. Decisions concerning the right timing to use technology, the most appropriate device or program, and the aim or purpose of technology integration are best made by teachers who are aware of their students' needs (Brinkerhoff, 2006).

Some of the teachers who are trained to develop their knowledge and skills in technology integration return to their traditional teaching styles as soon as they re-join their classrooms (Carlson & Gadio, 2002). Professional development trainings should

not only provide teachers with methods to successfully implement innovation in their own context but rather teachers must be introduced to other practitioners that will provide them with continuous support. Wozney et al. (2006) proposed that it might be useful but not sufficient to show teachers how successful others have been with technology application. Therefore, teachers must receive support and help from other practitioners around the world. In fact, it is highly important to provide teachers with access to wikis, blogs and other forums that will allow them to interact with other practitioners. This process of sharing will make teachers proud of their achievement, highlight the importance of technology integration in the teaching-learning process and provide incentives and recognition to these teachers. Teachers will be positively influenced by the diversity of information and feedback available from their colleagues (Vannatta & Fordham, 2004). They will be able to exploit this diversity to expand their knowledge and abilities. According to Keengwe, Kidd & Kyei-Blankson (2009) school administrators should consider creating user communities or interest groups to support and encourage experience sharing and technical knowledge transfer among teachers. In fact, networking sites are effective communication stimulators that can weave together various experiences and thread of knowledge.

Furthermore, professional development should emphasize the idea that computers cannot replace teachers in classrooms especially that teachers are the essential key to significant and efficient technology use. Schlitz et al., (2009) mentioned that even if students try to learn independently how to use technology to improve their learning and develop their skills, with little or without guidance from their teachers, they are unlikely to improve since teachers remain the gatekeepers for students' access

to educational opportunities afforded by technology. Schools, administrators and professional development teams need to continuously remind and overemphasize the importance of teachers' role as facilitator of the learning process. In some cases technology is perceived as a threat to teachers' personalities thus, it's highly important to convince teachers that with computer based learning interaction with students is more important and effective than ever. Technology is a channel that will enhance the communication between teachers and students by developing a motivating learner-centered environment (Roblyer, 2006; Beckett et al., 2003). The professional development team should always take into consideration that the problem of low-tech teaching is a dilemma of conflicting value rather than a dilemma of technical support (Cuban, 2001).

Teachers also need to learn about the various criteria needed to evaluate professional development experiences. It's highly recommended that teachers would become aware of the value of choosing appropriate learning experiences that will enrich their repertoire and improve their instructions (Virgen-Heim, Erlanger & Crowe; 2002). Thus, teachers should be provided with opportunities to reflect on their learning experience.

Teachers' personal use of technology

Throughout the literature reviewed, several articles noted the presence of a positive correlation between teachers' personal use of technology as a cognitive and communicative tool and their willingness and ability to integrate computer technology in their teaching practices (Wozney et al., 2006; Virgen Heim et al., 2002; Wachira &

Keengwe, 2011; Fer, 2004; Guha, 2003). Schools need to nurture teachers who use technology as a personal cognitive and communicative tool to help them grasp new strategies that will help them expand their knowledge about technology to their students. Increased access to computers leads to consequential usage of technologies in the classroom (Wozney et al., 2006). Teachers who tend to use computers in their daily lives are more comfortable with technological devices and show additional willingness to learn about these powerful devices. Brinkerhoff (2006), mentions that knowing how to use computers for one's personal use is a necessary foundation to the development of electronic pedagogical content knowledge and skill. Furthermore, the research conducted by Virgen-Heim et al., (2002), portrayed that teachers who utilize technology for communication and research purposes in their personal lives are more willing to explore ways in which they can integrate technology into their curriculum. Teachers are expected to be familiar with some basic use of technology (such as conducting online research, communicating via e-mails and using social networking) before they're expected to progress to a new level of proficiency and thus integrate technology into their teaching. Grant et al., (2005) described that teachers using technology as cognitive and communicative tools in their personal lives will enter classrooms with more confidence in their ability to use technology as an effective instructional tool. These teachers will be more motivated to implement new ideas and integrate technology in an enriching way. The quantitative study conducted by Guha (2003), showed a relationship between teachers' personal use of technology and the manner and frequency of using technology as an instructional tool in the classroom. Teachers who use technology in their daily lives had higher personal technology competency and thus technology was integrated in the learning process more purposefully.

However, it is important to highlight that some researchers disagreed with the previously mentioned idea. Maddux and Lamont (2006) suggested that inadequate teachers' trainings and lack of resources are the only problems that negatively affect teachers' ability to integrate technology into their teaching. Furthermore, Franklin (2007) stated that teachers' knowledge to use computers for personal use is not synonymous with knowing how to teach with technology. Franklin argued that electronic pedagogical content knowledge and skills are not automatically transferred from teachers' knowledge on how to use computers. In fact, knowing the content is positively correlated to teachers' attitude towards integrating technology but being able to teach a content efficiently to improve and maximize students' learning cannot be achieved by simply knowing the content.

Teachers' personal use of technology is not considered as a predictor of their ability to purposively integrate technology (Maddux & Lamont, 2006). Furthermore, Maddux and Lamont (2006) stated that inadequate teachers' trainings and limited computers and software are considered the barriers that inhibit effective technology integration into classrooms.

The various books and research articles discussed previously in this chapter reveal the increased interest about technology integration into teaching practices. Technology integration has been a worldwide topic of research interest for the last decades. However, it's important to note that the literature review reveals that further research should be done in Lebanon in order to investigate the effect of teachers'

attitudes and perceptions on their ability to integrate technology. Thus, the need to conduct such a research in Lebanon is evident.

CHAPTER THREE

Methodology

After a brief review of the literature, a discussion concerning the various methods used to collect the data needed to answer the three research questions asked at the beginning of this study is needed. The attitude scale, the questionnaire and the interview protocol developed by the researcher will be discussed thoroughly. Throughout this chapter a referral to some leaders in educational research (such as Robson, 2002; Johnson & Christensen 2008; Cohen, Marrion and Morrison 2007; Savenye & Robinson, 2004; Fraenkel and Wallen, 2009) is needed to rationalize and explain the use of specific methods such as mixed research, semi-structured interviews, cross-checked statements, rating scales, sectionalizing the attitude scales.....

Mixed methodology

In the research conducted, both quantitative and qualitative methods are used to answer the three research questions previously proposed in the study. Qualitative research was defined by Savenye and Robinson (2004) “as research devoted to developing an understanding of human systems” (p.1046). As for quantitative research it was defined by Robson (2002) as a fixed design strategy where data is usually recorded in the form of numbers. First, attitude scales were distributed to teachers and questionnaires were distributed to professional development staff in five private schools in Beirut; then semi-structured interviews were conducted with five participants in order to develop a deeper understanding about teachers’ attitudes and perceptions towards technology in a natural setting. Johnson and Christensen (2008) stated that using mixed

research methods helps to improve the quality of research by combining “complementary strengths and non overlapping weaknesses” (p.51). By combining quantitative and qualitative research methods we are decreasing the probability of having gaps in our study. These complementary methods will add value to the study conducted (Robson, 2002). Using several methods in order to investigate the three research questions proposed at the beginning of the study will enable the researcher to have a greater confidence in the results obtained. As stated by Shalvelson and Towne (as cited in Suter, 2005) in a research study, qualitative methods explain the results obtained through statistics and quantitative methods.

Attitude scale

This study is exploratory in nature. Three instruments were used to collect data: attitude scale, questionnaire and semi structured interview (Refer to Appendixes A, B & C). The data obtained from the closed and structured attitude scale (distributed to teachers) is going to be used to determine whether teachers’ beliefs about technology affect their abilities to integrate technology in their teaching practices. According to Cohen et al., (2007) rating scales allow the researcher to interpret data more sensitively and make more differentiation among respondents, which make it an exceptionally useful method to collect data about attitudes, perceptions and opinions. The items included in the attitude scale are developed by the researcher based on the literature review. Throughout the development process, several attitude scales previously used by researchers such as Technology Implementation Scale, Teachers’ Attitudes towards Computers (TAC), The Computer Attitude Questionnaire (CAQ) and the Computer Attitude Items were reviewed. These attitude scales have been used by Hu et al., (2003);

Lawless and Pellegrino (2007); Brinkerhoff (2006); and Wozney et al. (2006). The need to create a new attitude scale for the proposed research emerged from the belief that questionnaires and attitude scales should be tailored to the characteristics and attributes of a sample. Attitude scales published in literature were tailored to teachers in the United States or Canada and thus they did not take into consideration the characteristics of teachers in the Middle East. Cohen et al., (2007) stated that “it is not only a matter of appeal to respondents but it is a matter of accessibility of the questionnaires to the respondents i.e. a matter of reliability and validity” (p.338).

The attitude scale developed consists of three sections. The sectionalizing of the attitude scale and its layout aim to encourage the respondents to answer all the items imbedded. In fact, avoiding cluttered pages and inserting clear and bolded instructions at the beginning of each section suggest clarity and coherence. As stated by Dillman (2007) the sectionalizing of a questionnaire can be considered as a kind of visual deception that will make it look shorter. Furthermore, numbering the questions or statements in each section independently will make the attitude scale appear more manageable. Long list of questions will communicate lack of coherence and organization and thus increase the probability of having blank answers (Barnette, 2000; Cohen et al., 2007).

An attached cover letter that clearly states the purpose of the study, the needed information to contact the researcher and the importance of the topic researched was used to encourage participants' reply. This brief letter addresses the respondents specifically by assuring confidentiality and emphasizing the impact of the research

conducted on effective technology integration. The address and the return date needed to submit the attitude scale was omitted since it differed from one school to another. Some schools asked the researcher to provide teachers with a two weeks deadline while others requested only 3 to 4 days.

The first section of the attitude scale provides the researcher with nominal data concerning the e-mail address, age, gender and education of the participants. The name and e-mail address of the participants were asked for further in-depth queries (interviews). The cover letter attached to each attitude scale guaranteed the anonymity of the respondents to the school administration. The data gathered from the first section concerning age, gender and education were coded and thus every category was associated with a numerical value.

Table 3.1

Values associated with age range

<i>Age Response</i>	<i>Value</i>
21-24	1
25-29	2
30-34	3
35-39	4
40-44	5
45-49	6
50-54	7
55 ⁺	8

Table 3.2

Values associated with gender

<i>Gender Response</i>	<i>Value</i>
Male	0
Female	1

Table 3.3

Values associated with educational achievement

<i>Education Response</i>	<i>Value</i>
BA/BS	1
MA/MBA	2
Teaching Diploma	3
Lebanese Baccalaureate	4
BS in Food Science	5
Montessori Diploma	6
BT	7
Architecture	8
AA	9

The second section of the attitude scale consists of six questions. Teachers are asked to choose the answer that best expresses their perceptions. The categories or range of responses included under each question do not overlap which will make the coding

process easier for the researcher. The uses of several categories enable the collection of nominal data that can be analyzed through SPSS (Statistical Package for the Social Sciences). In fact, using a rating scale for the answers given by the respondents will provide valuable quantitative data. The value given to each category is as follow:

Table 3.4

Values given for the categories in the second section of the attitude scale

<i>Response</i>	<i>Value</i>
A	1
B	2
C	3
D	4
E	5

In the third section, teachers were asked to note the extent of approval and disapproval towards the twenty four statements included in the last section of the questionnaire. Teachers were asked to mark the column which best describes and shows their feelings towards the statement mentioned below. The answers given by the participants provided the researcher with quantitative data. Using the Likert rating scale, every category or column (i.e. Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree) was associated with a numerical value.

Table 3.5

Values associated with the categories in the third section of the attitude scale

<i>Response</i>	<i>Value</i>
Strongly Disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly Agree	5

According to Barnette (2000), the Likert rating scale was constructed by a famous social psychologist Rensis Likert in 1932 in order to provide researchers with more reliable and variable scores that will help them to measure complex constructs. Thus, every category or column was associated with a different value to get an accurate picture of teachers' attitude and beliefs towards the statements mentioned. Furthermore, throughout the data analysis process, values of statements that reveal negative attitudes or beliefs will be reversed. For example 'Strongly Agree' for the S₈, S₁₃, S₁₆, S₂₁ and S₂₄ will be associated with the value one rather than the value five.

Reverse wording was used in three out of the twenty four statements (S₁₃, S₂₁, S₂₄) embedded in the attitude scale. This technique was used to ensure the participants' full engagement in reading each item carefully. However, it is highly important to note that the use of reverse wording was debatable in literature. Some researchers believe that the use of reverse wording may reduce the reliability and validity of scales or

questionnaires (Barnette, 2000). Other researchers believe that reversing the wording does not reduce reliability (Dillman, 2007; Johnson & Christensen; 2008). Due to the inconsistency in literature results, reversing the wording technique was only used when the answers provided by the statements raise high concern and thus are considered highly valuable for the researcher.

Similar statements (S_{13} & S_{24} ; S_{19} & S_{23} ; S_6 & S_{17}) were used to cross-check respondents' engagement in reading and answering the questions. For example, conflicting answers for S_{13} & S_{24} will imply a low level of engagement. It is valuable to determine whether respondents read all the statements carefully before writing their answers. However, it is important to note that cross-check statements were not over used in order to communicate simplicity and avoid confusion. As mentioned by Robson (2002) seeking similarities between statements should be used carefully not to irritate some respondents.

In the second and third section of the attitude scale, the respondents' answers were used to answer the following research questions:

First research question: Q_2 , Q_6 , S_{15} , S_7 , S_{12} , S_{20} , S_{21} , S_{10} , S_{24} , S_5 , S_{22} , S_1 , S_7 , S_{19} , S_{23} , S_6 , S_1 .

Second research question: S_{16} , S_{18} , S_8 , S_{21}

Third research question: Q_1 , Q_2 , S_4 , S_2

Questionnaire

In addition to the attitude scale distributed to teachers, a short structured questionnaire (18 items) will be distributed to the staff responsible for professional development in schools (Refer to the Appendix B). The questionnaire intended for the professional development teams in schools selectively focuses on the key components emphasized in the literature on technology professional development for teachers. Several resources such as Lawless and Pellegrino, (2007); Rosaen, Hobson and Kahn, (2003); Keller et al., (2004); Keengwe and Kyei-Blankson, (2009) were used to construct the 18 items included in the questionnaire. In fact this instrument constructed by the researcher is based on the various models highlighted and reviewed in the literature to evaluate technology professional development for teachers. Thus, it is important to note that evaluation models reviewed in literature focus on five different categories: type of professional development used, duration, content, evaluation procedures and attendance policy. These categories are evident in the constructed questionnaire since they provide the researcher with valuable information related to the second research question investigated.

Throughout the process of constructing the questionnaire, flow charts were developed. According to Cohen et al., (2007) flow charts are helpful techniques to plan the sequencing of questions and thus start with straight forward and non threatening questions that can be easily answered before moving towards difficult and personalized questions. By determining the most suitable sequence of questions, the researcher maintains respondents interest and thus encourage their participation to complete the questionnaire. The smooth and discrete move from objective facts to subjective

opinions or attitudes will build up the motivation of the respondent and encourage participation (Johnson & Christensen, 2008).

The first section of the questionnaire consists of twelve questions. Professional development staffs are asked to choose the answer that best expresses their perceptions. The coding process was facilitated by the presence of separate categories or range of responses (A, B, C, D and E) included under each question. By using SPSS (Statistical Package for the Social Sciences) nominal data was collected based on the responses categories. The value given to each category is as follow:

Table 3.6

Values associated with the categories present in the first section of the questionnaire

<i>Response</i>	<i>Value</i>
A	1
B	2
C	3
D	4
E	5

In the second section, teachers were asked to note the extent of approval and disapproval towards the six statements included. Professional development staff were asked to mark the column which best describes and shows their feelings towards the statement mentioned below. The quantitative data gathered from the questionnaires was analyzed using SPSS. In order to achieve the previously mentioned aim, a Likert rating

scale was used by the researcher and thus every category or column was associated with a numerical value.

Table 3.7

Values associated with the various categories in the second section of the questionnaire

<i>Response</i>	<i>Value</i>
Strongly Disagree	1
Disagree	2
Undecided	3
Agree	4
Strongly Agree	5

Piloting

The attitude scale and the questionnaire were piloted on 16 graduate students at LAU. The graduate students who contributed in the piloting process possess the same characteristics as the sample. First, the participants were briefly introduced to the research conducted before they were asked to read and fill out the attitude scale and questionnaire carefully. After giving them an adequate time, the participants were asked to provide the researcher with feedback and constructive criticism. Several suggestions were given concerning the format of the attitude scale, thus statement numbering was added and instruction statements were inserted as headings on each page. Furthermore, the wording of some statements or questions in the attitude scale (Q₁, S₁, S₂, S₃, S₄, S₅ and S₂₃) was changed to add extra clarifications for the meaning. The respondents' (i.e. graduate students) interpretation of wording helped the researcher to avoid ambiguous

words that might be interpreted differently based on the reader's personal schemata. The previously stated idea was repeatedly mentioned throughout research methods literature who emphasized the use of clear and simple wording to reduce the chance of blank answers. Brief explanations were also added to few statements included in the professional development questionnaire (S₇, S₁₁, S₁₂) in order to enhance the participants' understanding and ensure the continuous cooperation of the respondents. The feedback gathered through the piloting process was essential since it enabled the researcher to view the questionnaire through the eyes of the respondents. It is important to note that no validity or reliability tests were conducted on the attitude scale or the questionnaire constructed by the researcher.

Interviews

The attitude scale and the questionnaire are also complemented with in-person semi-structured interviews with a sample of five teachers chosen from the responding population. Interviews are form of conversations that help the researcher to gather data that answers the questions revealed by the study conducted (Suter, 2005). Interviews are considered as qualitative methods that enable researchers to collect data. In fact, a debate concerning the purpose of using qualitative methods in technology integration research emerged since the late 70s (Savenye & Robinson, 2004). In their book, Savenye and Robinson (2004) mentioned that some authors as Wolcott argued for rejecting validity in qualitative research as for others as An De Vaney and the Association for Educational Communication and Technology (AECT) have demonstrated a strong support for the use of qualitative data collection methods in

technology integration research. Due to this debate, the researcher used both qualitative and quantitative data analysis methods.

The researcher chose interviews as a third method to collect data in order to overcome generalities and gather more information about particular events and actions. For example, in order to achieve this aim, a question that asks teachers to provide an example of successful computer use was imbedded in the second section of the interview and another question that asks teachers to describe the process they use to implement newly learned techniques was added to the third section of the interview protocol (Refer to Appendix C). Furthermore, interviews were used to validate other data collection methods and thus develop a deeper insight about teachers' attitudes and perceptions towards technology integration. By conducting semi-structured interviews, the researcher will be able to learn more about the authentic experience and the true attitudes of teachers towards technology integration. If researchers would like to gather personalized and non-standardized data about individuals' view of a specific situation, they should focus on qualitative and open-ended interviews that will allow them to interpret data more sensitively to respondents (Cohen et al., 2007).

The semi-structured interviews were used to ask open-ended questions that will provide the researcher with valuable information and in-depth query. As mentioned by Oppenheim (as cited in Fraenkel & Wallen, 2009) interviews are used to handle more difficult and open-ended questions because the interpersonal interaction with the interviewer will increase the motivation and willingness of the interviewee to share his/her ideas. Thus it is highly important that the interviewer (i.e. researcher) establish

trust with the interviewees by ensuring confidentiality of the participants, explaining the purpose of the researcher and finally stating his/her appreciation to teachers' valuable contribution to the proposed study. Establishing trust with the interviewees will encourage them to express their attitudes and perceptions towards technology by describing their personal and authentic experience with technology integration.

An interview protocol was constructed before conducting the interviews. This protocol was developed based on the research questions and the most emerging concepts and questions highlighted in literature (Johnson et al., 2006; Franklin & Molebash, 2007; Lowther et al., 2008). In fact, the questions that made up the main body of the interview were developed from the three research questions proposed at the beginning of the study. Thus the questions in the interview protocol were divided into three major themes: first interviewee's perception concerning the role of technology, second professional development provided by schools and finally personal use of technology. These open-ended questions were asked to all the interviewees; however the order of the questions was sometimes modified based on the context discussed. Furthermore, it is important to note that prompts or probes were used by the interviewer in order to get more clarification. These prompts or questions were not prepared by the researcher in advanced but rather they naturally emerged from the context. Paton (as cited in Savenye & Robinson, 2004) stated that prompts and probes are the basic characteristics of successful interviewing, the former provide the researcher with the chance to clarify a certain idea or topic and the latter enable the interviewer to extend and elaborate responses to get in-depth data.

As stated by Savenye and Robinson (2004) in qualitative research, we aim to “maintain the integrity of raw data, using respondents’ words, including quotes” (p.1056). It is highly important to present for readers the true attitudes or perceptions of teachers towards technology without any distortion. The researcher’s personal interpretations should not be included in the data gathered. In order to achieve the previously mentioned aim, a tape recorder was used to record the exact words of the interviewee. In fact, this technique helps to decrease the researcher’s bias. In the data analysis phase, the data gathered from the interviews will be incorporated as quotations that will validate the data gathered from the attitude scales and questionnaires. Thus, the information acquired through interviews will not be categorized.

Sampling in interviews

Stratified sampling was used to choose the sample of teachers that will be interviewed for in-depth queries. The attitude scales and questionnaires gathered from the five schools who participated in the study were segregated into five different groups or strata. Each group corresponds to one school. For example, the first group contains all the attitude scales and questionnaires gathered from the school that caters for low socio-economic students as for the second group, it contains all the questionnaires gathered from the school that caters for middle socio-economic students. After categorization, simple random selection was done by the researcher to ensure that one name from each category is randomly chosen. As stated by Fraenkel and Wallen (2009), stratified sampling is a blend of randomization and categorization. Thus, all schools were represented in the conducted interviews. However, it is important to note that some attitude scales did not contain the name of the participants thus the random

selection was sometimes repeated more than once to get an attitude scale that contains the name and contact information of the respondents.

Triangulation of data

The aim of triangulation is to improve, complement and clarify the results obtained from one method to the results from another method (Cohen et al., 2007). By using three different methods to collect data, the researcher is minimizing the effects of the drawbacks of each method. In fact, when a certain idea is studied from three different standpoints, we are decreasing the margin of error. Robson (2002) stated that triangulation is an important tool that helps to demonstrate validity. Relying on only one method to collect data may not provide the researcher with an accurate picture about the questions investigated. In fact, the confidence of the researcher in the results obtained will decrease if only one method was used to obtain all the data. As stated by Suter (2005) triangulation can significantly improve trustworthiness of the study results. Due to the previously mentioned reasons, methodological triangulation was used to increase the validity of the results of our study.

Methodological triangulation is defined by Cohen et al., (2007) as “the use of more than one method in the pursuit of a given objective” (p.143). The attitude scales distributed to teachers, the questionnaires distributed to professional development offices and the interviews conducted with teachers were all used in order to gather data that will help the researcher to provide answers for the three research questions proposed in the study. Methodological triangulation helps the researcher to have better evidence and thus ensure the validity of the results (Johnson & Christensen, 2008).

Ethics

Ethics of research emerged in the mid- 1960s due to misconduct of researchers in conducting their studies (Savenye & Robinson, 2004). Some researchers are willing to jeopardize the safety and wellbeing of the participants in order to gather information that will allow them to publish their breakthrough discoveries. Being leaders in their fields might be more valuable for some researchers than publishing ethical studies that protect the right of participants. Ethics is defined by Johnson and Christensen (2008) as the “principles and guidelines that help us uphold the things we value” (p.101).

A description of the study (its aim, importance of the topic researched, confidentiality of the results, and volunteer participation) was given to participants before taking their consent to participate in the study. For example, in the description of the study, a brief explanation concerning the importance of including the e-mail address for future in-depth queries was embedded in order to provide the respondents with all the information that might affect their willingness to participate. By informing the respondents of the importance of including their e-mail address in an early stage, the researcher provided them with the freedom to choose whether they are willing to participate in the study by filling out the attitude scale or not. The informed consent increased the validity of the study and helped the researcher to conduct an ethically sound study. Furthermore, making an informed judgment decreased the number of participants’ withdrawals in the middle of the study. Extra effort was invested by the researcher to reassure teachers that their willingness to participate or withdraw from the study will not affect their jobs at the school. During the data collection phase, a verbal

reinforcement was also used to assure teachers that their participation in the study will not jeopardize their current positions in the schools.

The privacy of the participants was also emphasized in the cover letters attached to the questionnaires by ensuring the confidentiality of the data gathered. A clear statement posted on the attitude scales and questionnaires assured teachers that the name and contact information of the participants will not be shared with the school administration. This statement reassured the participants and thus helped them avoid emotional stress. Johnson and Christensen (2008) defined confidentiality as “an agreement with the research investigators about what maybe done with the information obtained about a research participant” (p.119). Not revealing the identity of the respondents was discussed with the school administration before starting the data collection process. The schools that refused to abide by the confidentiality condition were disregarded from the purposive sample chosen for the study.

Furthermore, the researcher made sure not to place the participants at risk by not mentioning the name of the teacher or the name of the school in the interview transcription. In fact, the name of the school was replaced by the general characteristics of the school. The ethical concern of the researcher was highly evident when written transcriptions for all interviews were added to the appendix of the thesis (Refer to Appendix D). These transcriptions will enable the readers to make sure that data was not selectively reported. Providing the whole context of the interviews will decrease the possibility of having falsified data which highlight the significance of research integrity in the study.

After a detailed discussion of the various methodologies used to gather the data needed to answer the research questions developed at the beginning of this study, the need to transition to the next chapter arises. In the subsequent chapter, a statistical analysis of the results gathered from the attitude scales and the questionnaires will be conducted using the SPSS software (version 16.0) followed by a brief description of the information gathered from the 5 semi-structured interviews conducted.

CHAPTER FOUR

Results

Data analysis

Statistical analysis was conducted using the SPSS software (version 16.0). All of the variables of interest were measured on a categorical scale (more than 2 groups). For most variables, descriptive analysis using frequencies and percentages were generated and examined. A bivariate analysis was carried out to examine the association between teachers' personal use of technology and their willingness to integrate computer technology in their teaching practices.

Characteristics of the participants

Out of the 150 teachers who responded to the questionnaire 9.4% were males and 90.6% were females. Almost $\frac{1}{4}$ of the teachers' ages ranged between 25 and 29 years. However, only 6.5% of the teachers were seniors (above 50 years). Almost all of the teachers have a university degree, only 0.7% have a BT degree. In fact, 33.3% have either a BS or a BA degree. Furthermore, 31.2% have either an MA or an MBA degree and 30.4% of the participants have acquired a teaching diploma.

Table 4.1

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA/BS	46	33.3	33.3	33.3
	MA/MBA	43	31.2	31.2	64.5
	Teaching Diploma	42	30.4	30.4	94.9
	Lebanese	1	.7	.7	95.7
	Baccalaureate				
	BS in Food Science	1	.7	.7	96.4
	Montessori Diploma	1	.7	.7	97.1
	BT	1	.7	.7	97.8
	Architecture	2	1.4	1.4	99.3
	AA	1	.7	.7	100.0
	Total	138	100.0	100.0

Characteristics of professional development staff

Out of the 12 staff members responsible for professional development in the 5 selected schools, 41.7% were males and 58.3% were females. 25% of the staff aged between 55 and 64 years. The rest of the staff were equally divided between age ranges of 30-34, 35-39 and 50-54 at 16.7%, and 25-29, 40-44 and 45-49 at 8.3%. Most of the professional development staff either had an MA or MBA (58.3%).

Research question 1

The effect of teachers' attitude and perceptions towards the role of technology on their abilities to purposefully integrate technology in their teaching practices.

In an attempt to obtain data on the attitude and perceptions of teachers towards technology integration in their teaching practices, teachers were asked to answer multiple choice questions as well as to respond to 24 statements on a Likert Attitude Scale.

Attitude

Thirty four percent of the teachers indicated that they were frequent computer users as part of their teaching practices. 32.6% occasionally used their computers, while 15.2% indicated that they used their computers always. Thirteen percent responded that they use their computers rarely and only 5% did not use computers at all as part of their teaching activities. Most of the teachers described themselves as being able to use various computer applications as an instructional tool in their practice (37.7%). Twenty one percent of the teachers responded that they are able to adapt easily to new computer technology. Furthermore, 24.6% of them indicated that they are starting to use technology in teaching and they are getting more comfortable with it. The remaining 16.7% of the teachers were either aware of the importance of the technology as a learning tool but they preferred to avoid it (8%), or in the process of learning to use it but find it difficult (8.7%). The above positive results were further emphasized when

85.5% of the teachers showed a positive attitude on the Likert Scale towards integrating any form of technology in their lessons if they were given proper instructions for it.

Most of the teachers believed that technology is a fundamental tool to use in their teaching practice (74.64%) and it also helps increase their productivity at work (89.86%). Furthermore, 83.3% of the teachers regarded technology as a tool that facilitates completion of required tasks more quickly. However, 26% of the teachers considered the integration of computer technology as an additional load in their teaching practice. It is important to note that most of the teachers (81%) did not find it uncomfortable to integrate computer technology in the curriculum nor did they find it uncomfortable to type and prepare a test using a computer (83.3%). This general positive attitude is congruent with the above results that most teachers used and applied computer technology in their teaching practice, and this is also further emphasized by the agreement of almost all teachers (99.2%) that learning computer technology is important.

Time constraints

The negative attitude towards technology mostly stemmed from how teachers perceived it as being time consuming. Sixty eight percent of the teachers indicated that the use of computer technology in the classroom requires additional time to be spent on technical problems. Furthermore, 54.35% of the teachers considered that the use of a new software demands extra training that is time consuming for teachers. An obvious discrepancy exists between the previously mentioned results and the teachers' response to statement eight "The use of computer technology requires additional time to plan

learning activities” whereby 71% of the teachers did not find that computer technology requires additional time to plan learning activities nor were they uncomfortable with typing and preparing a test using a computer (83.3%).

Perception

Most of the teachers (96.38%) recognized computer technology as an important tool to use for organizational purposes and were comfortable with using particular software like Excel (64.49%) to organize and compute grades. Similar to teachers’ positive response to statement S₅ concerning the organizational role of technology, 92.75% of the teachers also considered computers as a tool that can be used for instructional purposes which may also increase their productivity at work (89.86%). Most of the respondents were not concerned about the limitation of the role of the teacher in the classroom when using new technology applications (68.8%). However, 23.1% of the teachers were concerned that using and implementing a lesson plan posted on a wiki or any other communication forum might reduce and modify the teacher’s role in the classroom.

Most of the teachers (93.48%) regarded computer technology as a motivating tool for students. This was further highlighted when 74.64% of the teachers agreed that the use of technology as a reinforcement tool motivates students to listen to the instructions given and finish their work on time. Teachers did not only regard computer technology as a motivating tool to students, but 92.75% of the teachers also considered it as a tool that could be used for instructional purposes (drill and practice, remediation).

Research question 2

Do schools convey to teachers the relevance and value of technology to their classrooms throughout professional development?

In an attempt to answer the above research question, data obtained from questionnaires that were distributed to teachers and staff responsible for professional development in schools was analyzed based on the model to evaluate technology professional development for teachers.

After asking teachers whether they read articles published in educational journals concerning the multiple use of technology in education, 39.8% responded that they occasionally read articles while 32.6% rarely did.

Type of professional development

Upon asking the professional development staff about the integration of technology in teaching practices, 50% indicated that teacher's abilities are frequently enhanced by using mentoring or coaching models. About 42% stated that teachers are occasionally helped to gain knowledge about new software or devices by providing them with one-shot workshops. Furthermore, 42% of the staff revealed that train the trainers' model is used frequently in providing teachers with technology integration training.

Duration

Forty one percent of the staff considered that the duration of a professional development session frequently exceeded a single session or a single day, while the other 41%, regarded this surpass as occasionally. Most indicated that rarely do professional development sessions extend for weeks or months (50%). Most of the staff (50%) indicated that follow up sessions are rarely conducted by the professional development team.

Evaluation

The responses of the staff were divided equally between rarely and occasionally when it comes to distribution of evaluation forms to gather information about training the attendees (33.3%). Responses were also divided equally between not at all, rarely and frequently at 25% when it comes to evaluation models being developed by the professional development team.

However, 50% of the staff indicated that several measures (observation, teacher's reflections and artifacts analysis) are frequently taken to assure that the knowledge gained through the sessions are being used by teachers. Thirty three percent of the staff responded that detailed case studies are rarely provided to teachers, while 33% stated that case studies are being provided frequently. Fifty percent of the professional development staff stated that teachers are always provided with opportunities to reflect and share learning experiences with their colleagues.

Frequency of professional development sessions

Most of the staff indicated that professional development sessions are frequently (41.7%) attended and on voluntary basis. These results are not consistent with teachers' response regarding the frequency of attending professional development sessions, since only 19.6% of them attended these sessions frequently and only 13% of teachers frequently attended professional development sessions that targeted the methods available to integrate educational technology into teaching practices. In fact, most of the teachers (43%) indicated that they occasionally attended professional development sessions at their schools and furthermore, 25.3% of the respondents marked that they rarely attended these sessions. The data analysis also revealed that only 38.4% of the teachers occasionally attended professional development sessions regarding the methods available to integrate educational technology into teaching practices while 36.9% rarely attended those sessions. Furthermore, 41% of the respondents indicated that one-shot workshop models are occasionally being done to help teachers gain knowledge about new software or devices.

Content of professional development sessions

In the second section, participants were asked to note the extent of approval and disapproval towards the six statements included. Most of the staff were in favor of interpreting technology integration in the school's mission and vision (50% agreed, 25% strongly agreed). In fact, 58.3% of the staff strongly agreed with the statement that professional development aims to engage teachers by constructing activities that will enable them to use the newly introduced technology in a meaningful context. It is

important to note that 66.7% of the staff agreed that professional development focuses on enabling teachers to use a particular software or device. However, only 32.3 % of the staff believed that professional development focuses on the importance and the role of technology integration into instructions.

Research question 3

Is there a correlation between teachers' personal use of technology and their willingness to integrate computer technology in their teaching practices?

Upon asking teachers about the average number of hours spent per week on their computers for personal use, 29.7% of the teachers indicated that they spend more than three hours but less than six hours per week. Furthermore, 28.9% stated that they spend less than 3 hours, while 16.67% spent six hours or more, but less than eight hours. Only 10.14% spent 10 hours or more on their computers and 14.49% spent less than 1 hour per week on their computer.

A bivariate analysis, using Pearson Chi-Square test was used to examine the association between Question 1 which asked teachers “on average, how many hours per week do you spend on your computer for personal use?” and question two which asked teachers “How often do you integrate computer technology in your teaching activities?” The two categorical variables of interest were the average hours per week that teachers spend on their computer for personal use and the frequency at which teachers integrate technology in their practice. Both variables were cross tabulated, results showed that 70% of those who used their computer less than 1 hour per week had a positive attitude

towards integrating technology in their teaching activities. However these results were not statistically significant (P-value = 0.1) (Refer to Table 4.2). On the other hand 96.38 % of the teachers regarded computer technology as an important tool for informative purposes (internet, CD-ROM, online help) and for communicative purposes (95%) (emails, online conferencing, blogs, sharing desktops) but it seems that they are not using computer personally as shown in results above

Table 4.2

Correlation between Q₁ and Q₂

Q1	Q2			Total
	Negative	Neutral	Positive	
< 1 hour	4	2	14	20
	20.00	10.00	70.00	100.00
<3 hours	9	12	19	40
	22.50	30.00	47.50	100.00
>3 hrs but <6 hrs	8	19	14	41
	19.51	46.34	34.15	100.00
>6 hrs but <8 hrs	2	8	13	23
	8.70	34.78	56.52	100.00
>10 hrs	2	4	8	14
	14.29	28.57	57.14	100.00
Total	25	45	68	138
	18.12	32.61	49.28	100.00

Pearson chi2 (8)= 11.5351 Pr= 0.173

Cross check statements

Cross check statements were cross tabulated to make sure that teacher's responses were consistent across the different elements of the questionnaire. The two statements that described teachers' comfort towards adopting and implementing new educational trends, and using computer technology in the curriculum were cross checked and the results showed that 94.4% who had a positive attitude towards adopting and implementing new educational trends had a positive attitude towards integrating technology into the curriculum, while 66.6% of those who had a negative attitude towards adopting and implementing new educational trends had a positive attitude towards integrating technology in the curriculum. These results were statistically significant and show some inconsistencies with the responses of some of the teachers ($P\text{-value}=0.00$) (Refer to Table 4.3 below). The two other statements that described whether software and educational websites limit the teacher's role in the classroom, and whether using and implementing a lesson plan posted on a communication forum reduce and modifies teachers' role in the classroom were also cross checked and found to be consistent in a significant way ($P\text{-value}=0.00$) (Refer to Table 4.4 below). The two statements that expressed whether computer technology can motivate students to listen to instructions were cross checked and were also significantly consistent ($P\text{-value}=0.034$) (Refer to Table 4.5 below).

Table 4.3

Tabulation of the cross checked statements S_{13} and S_{24}

	S_{24}			
S_{13}	Negative	Neutral	Positive	Total
Negative	5	3	16	24
	20.83	12.50	66.67	100.00
Neutral	7	6	11	24
	29.17	25.00	45.83	100.00
Positive	3	2	85	90
	3.33	2.22	94.44	100.00
Total	15	11	112	138
	10.87	7.97	81.16	100.00
<i>Pearson chi2 (4)= 33.6356 Pr= 0.000</i>				

Table 4.4

Tabulation of the cross checked statements S_{19} and S_{23}

S_{19}	S_{23}			Total
	Negative	Neutral	Positive	
Negative	14	6	3	23
	60.87	26.09	13.04	100.00
Neutral	4	11	5	20
	20.00	55.00	25.00	100.00
Positive	14	21	60	95
	14.74	22.11	63.16	100.00
Total	32	38	68	138
	23.19	27.54	49.28	100.00
<i>Pearson chi2 (4)= 35.8457 Pr= 0.000</i>				

Table 4.5

Tabulation of the cross checked statements S_6 and S_{17}

S_6	S_{17}			Total
	Negative	Neutral	Positive	
Negative	2	2	4	8
	25.00	25.00	50.00	100.00
Neutral	0	1	0	1
	00.00	100.00	0.00	100.00
Positive	6	24	99	129
	4.65	18.60	76.74	100.00
Total	8	27	103	138
	5.80	19.57	74.64	100.00
<i>Pearson chi2 (4)= 10.4010 Pr= 0.034</i>				

Interviews

The five semi-structured interviews conducted will not be categorized nor coded but rather, the data gathered from these interviews will be incorporated as quotations that will validate the data gathered from the attitude scales and questionnaires. The complete transcript of the interviews is added to the thesis' appendix (Refer to Appendix D). In order to increase our understanding of both the interviews and the selected sample of the interviewee, the following table was constructed:

Table 4.6

Characteristics of the interviewee

Interviewee	Characteristic of the school	Years of experience	Subject taught
#1	Caters for middle and low socio-economic status students	1	Homeroom Teacher
#2	Caters for middle socio-economic status students	10	Homeroom Teacher
#3	Caters for high socio-economic status students	4	Arabic
#4	Caters for middle socio-economic status students	9	Art
#5	Caters for low socio-economic status students	14	English

Interviewee # 1, 2 and 4 acknowledged the important role of technology in the teaching and learning process. All interviewee agreed on the role of technology in students' daily life, thus using technology as a communication tool that will enable teachers to overcome the gap between both generations was a common agreement

among the five teachers. Interviewee # 1, 3 and 4 correlated this positive attitude towards the role of technology in teaching with their studies at university.

The interviewees' positive attitude towards integrating technology in education was also complemented by a positive perception of its usefulness as an organizational, instructional and motivational tool. In fact, Interviewee # 1, 2, 3 and 4 mentioned more than once the importance of technology in motivating students. Interviewee # 2 and 4 highlighted the role of technology as an informative tool; however, they clearly stated their personal preference towards books and written resources rather than searching engines. Furthermore, interviewees' preference to communicate through traditional methods rather than using computers was also evident. Interviewee # 1 and 3 clearly mentioned that although they consider computers as effective communication tools, they still prefer to communicate using traditional methods.

Technical problems (such as slow internet connection) and time constraints were the major concerns mentioned by all interviewee. Interviewee # one, four and five mentioned that time restraints are imposed by both the Lebanese curriculum and the official tests that don't emphasize the use of technology in teaching and learning. As for interviewee # 2, 4 and 5 stated that technical problems and especially internet connection in Lebanon are major barriers for the use of technology in education.

When asked about professional development, four out of five interviewees mentioned that workshops attended are not on voluntary basis. These teachers mentioned that they are required to attend workshops that are directly related to the

subject they are teaching. As for attending technology workshops it's not usually required but rather it's a supplementary professional development chance. In fact, all five interviewees mentioned that learning about technology in Lebanon depends on teachers' personal effort.

The need to have both workshops that focus on the importance of technology integration in instructions and workshops that focus on technical issues was evident throughout the interviews. A common agreement concerning the need for incorporating more workshops tackling the supportive role of technology in teaching emerged among all interviewees. All five interviewees discussed the importance of dealing with teachers' fear from technology. Interviewee # 4 mentioned that schools should strive for a balance between workshops that aim to develop teachers' technical skills and workshops that intend to develop teachers' attitude and perception towards the role of technology.

When asked about their personal use of computers, all interviewees mentioned that they personally use technology in their daily life for informative (conducting research, searching for activities or pictures) and communication (talking to friends) purposes. Furthermore, four out of five interviewee mentioned that e-mails are not used to communicate with parents but rather to communicate with friends and family members. In fact, interviewee # four mentioned that parents-teacher conference is the only method used to communicate with parents.

The above mentioned analysis investigated the three research questions of interest. In the below discussion section, the data will be further examined to have an understanding of its significance and will be compared to findings in literature.

CHAPTER FIVE

Discussion

After analyzing the data in the previous chapter, a brief discussion will be done in order to interpret the significance of this data to our research. Each research question will be discussed thoroughly by supporting the data gathered from the attitude scale and the questionnaire with the information gathered from the interviews. To truly understand the data, the need for a correlation between the findings of this research and previously published literature is needed. Thus, throughout this chapter a comparison and referral to literature will be used.

Research question 1

The effect of teachers' attitude and perceptions towards the role of technology on their abilities to purposefully integrate technology in their teaching practices.

The data obtained to answer the first research question was gathered from the interviews in addition to the 6 questions and 24 statements embedded in the attitude scale distributed to teachers. To facilitate the discussion process of the results, the data will be discussed based on the following themes: attitude, time restraints and perception.

Attitude

A positive attitude towards technology integration emerged from the data gathered from the attitude scales. This positive attitude towards technology was highlighted also by the high percentage of teachers (85.5%) who showed a positive

attitude towards integrating technology in their teaching when given proper instructions. Furthermore, the analyses of participants' answers in Q₆ revealed a positive attitude towards computers. Teachers are aware of its importance and its role in education and they are trying to use it as an instructional tool that increases their productivity at work and facilitates the completion of required tasks in a quicker way. Learning computer technology is considered by almost all teachers (99.2%) as highly important in education.

In fact, this idea was also highlighted in the interviews conducted with few teachers selected from the respondents' population. The interviewee mentioned the importance of technology as a mean to communicate with children and thus overcome the gap between the two generations (teachers and children). As stated by interviewee # 2:

. . . Technology didn't only help me in my teaching but it also helped me to communicate and get closer to the kids I'm teaching because I feel that we have valleys and big differences between us and them. This is their language and you know if you want to approach a certain population you need to speak their language.

This idea was also mentioned by interviewee # 1 and four who acknowledged the important role that technology plays in our students' daily life. A common agreement emerged among the interviewee that students depend on technology in their lives and thus as teachers we should use this tool to communicate with them, arise their interest and motivate them.

Based on the data gathered, we can infer that most of the teachers who participated in the study had a positive attitude towards computer technology integration and its role in education. In order to understand the origin of this positive attitude we need to go back and analyze the characteristics of the participants and refer to literature. Thirty one percent of the participants have either an MA or an MBA and 30.4 % have a teaching diploma. These results portray the presence of highly educated teachers in our private schools in Lebanon. Teachers who have enrolled in MA, MBA or Teaching Diploma programs are exposed to technology at university. Most Masters programs in Lebanon offer technology courses for graduate students which help them to discover the role of technology in education and thus acquire a positive attitude towards technology integration. In fact, this idea was highly evident in interviews. Four out of the five interviewee mentioned that they learned about the importance of technology as an instructional tool during their study at the university. These are some of the words used by the interviewee to highlight the role of the university in changing their attitude towards technology.

. . . . It all depends on her background, her technology background in the university during my university years I used to depend a lot on technology, PowerPoint, research, Excel, Word and other programs but once I began working it decreased a bit because of the school where I have been working, they didn't provide us with technology tools. The curriculum is not based on technology. (Interviewee # 1)

I don't know if the course I took in my Masters' degree about multimedia and technology helped me a lot regarding this issue too. It validated so many ideas I

had on the technology and the use of technology in my classroom, it motivated me . . . (Interviewee # 3)

I learned about the importance of technology in Art through my university years. In graphic design we use computers to do all the projects required, it was part of our studies. (Interviewee # 4)

The findings obtained in this thesis comply with a considerable number of published articles in literature. The correlation between academic achievement and teachers' computer self-efficacy was investigated by several researchers in the field. Most of the published work stated that education students' exposure to technology throughout their studies and pre-service trainings positively affected their computer self-efficacy and thus their willingness to integrate and adopt new technologies (Baker & Christies, 2005; Milman & Molebash, 2008; Koç, 2005; Rice et al., 2011; Davis & Roblyer, 2005). Furthermore, coinciding with the results obtained in this thesis, Koh and Frick (2009) mentioned that integrating educational technology courses in universities and pre-service programs will improve education students' computer self-efficacy and thus their attitude towards technology. In fact, a positive correlation between teachers' computer self-efficacy and their willingness to purposively integrate technology in the teaching and learning process was noticed in several studies conducted by some leaders in the field such as Johnson et al., (2006); Franklin and Molebash (2007); Muller et al., (2008) and Ertmer and Ottenbreit-Leftwich (2010).

Before we conclude this section, we need to emphasize that although the data gathered indicated a positive attitude among most of the teachers, the percentage of

teachers using technology in their teaching is not that high. Although 99.2% of the participants answered that technology is important in teaching only 49.3% marked that they integrate technology. Among the participants who marked that they integrate technology, 15.2% stated that they always use computers as part of their teaching practices and 34.1% frequently integrate technology in their teaching. However, 18% marked that they do not use technology in their teaching practices, among which 13% indicated that they rarely use computers in teaching as for 5% mentioned that they never used computer in their teaching.

Interpreting this discrepancy among the high percentage of teachers with positive attitude and the moderate use of technology integration in the classrooms can be due to first order barriers that may prohibit purposeful integration of technology in instructions. In fact, in order to interpret this discrepancy we need to go back to literature discussed in the second chapter concerning first order barriers. Time restraint, lack of hardware and resources, lack of technical support and teaching for official tests were the major first order barriers discussed by several researchers such as Ertmer and Ottenbreit- Leftwich, (2010); Ertmer, (2005); Staples et al., (2005); Bauer and Kenton, (2005); Wachira and Keengwe, (2011); and Wozney et al., (2006). These barriers highlighted through literature were also evident after analyzing the data gathered from the attitude scales.

Sixty eight percent of the teachers indicated that the use of computer technology in the classroom requires additional time to be spent on technical problems as well as training to use newly introduced programs. These results concerning the time cost of

integrating technology in teaching are consistent with the results published by Liu et al., (2008) and Maddux and Lamont (2006) who implied that teachers are racing against time to fulfill their jobs and achieve the standards set by the curriculum. This idea was also emphasized in the interviews where most teachers mentioned that when dealing with technology a second plan should be always prepared not to lose valuable teaching time due to technical problems that might arise in the last second. For example interviewee # 5 mentioned that “Even if I want to use the overhead projector, sometimes things will go wrong so I need to go and ask my colleagues for help, I believe we’re losing teaching time because of the technical problems”. Furthermore, interviewee # 4 stated “We follow the Lebanese programs, so we have a lot of objectives to achieve and let’s be honest; technology is not part of them. So it all depends on the teacher’s personal effort and interest.”

The results of this study imply that teachers believe that technology integration is time consuming due to two reasons: First extra effort is needed to learn new programs and skills and second, technical problems might arise while teaching and thus valuable teaching time is lost which will negatively affect teachers’ ability to cover all the standards set by the curriculum. The previously mentioned ideas provide an explanation for the discrepancy between teachers’ response on S₁₆ and S₈. Although 68% of the respondents indicated that the use of computer technology in the classroom requires additional time to be spent on technical problems (S₈) most teachers (71%) did not find that computer technology requires additional time to plan learning activity (S₁₆). Teachers do not find that planning an activity that contains technology integration is time consuming but rather implementing this activity in class is difficult due to the time

restraints caused by the technical problems and the set of standards set by the curriculum. Furthermore, throughout the interviews several statements mentioned by the interviewee revealed that technology is not part of the Lebanese curriculum thus schools that cater for the Lebanese Baccalaureate don't emphasize its use in teaching practices. For example interviewee # 1 mentioned that "In the school where I have been working, they didn't provide us with technology. The curriculum is not based on technology". Furthermore interviewee # 5 mentioned that:

In this school they don't care much about technology. We follow the Lebanese program, so using technology in our lessons is not that important, it's not a must. As you know we have a heavy load so we try to remove as much as we can from this heavy load.

In fact, technology is not considered as an element of the Lebanese curriculum or the official exams and since schools in Lebanon evaluate their teachers on students' results in these exams; teachers consider themselves pressured (due to time) to teach only the skills tested in official exams. The previously mentioned idea was evident in the research articles published by Osta (2008) and Lowther et al. (2008) who stated that teachers prioritize the subjects to be taught and the skills to be tackled based on the official exams.

Based on the literature published in the technology integration field, the previously mentioned first order barriers can be easily dealt with by increasing teachers' planning time, developing the IT departments by providing financial and human resources and updating the curriculum (Ertmer, 2005; Lowther et al., 2008). Thus, the need for further research concerning limiting and controlling the effect of first order barriers in private schools in Lebanon arises.

Perception

Most teachers recognized computer technology as an important tool for organizational purposes (64.9%), instructional purposes (92.75%) and as a motivational tool for students (93.48%). The analysis of participants' answers in statements 1, 5, 7 and 22 of the attitude scale revealed how teachers perceived computer technology as a useful tool that increases their productivity at work, support their instructions in class, help them organize their work and grades and finally motivate their students. These results that portray teachers' positive perception of technology usefulness and role in education were also evident throughout the interviews conducted. All interviewee emphasized the positive role of technology in improving their teaching practices. For example interviewee # 3 stated “. . . We used Photostory 3, it was fun for both of us, the kids were really engaged and as an audience they were very quiet and cooperative.” Furthermore, interviewee # four mentioned that “Students just enjoy using programs such as Photoshop in Art. They become so attentive and motivated to work and it's also nice for me to just move my class and go to the computer lab once in a while.” As for interviewee # 1, she stated that teachers are unable to provide a rich curriculum to their students because they don't have computers in their classrooms. Computers are great informative tools that help teachers enrich students' knowledge by providing them with extra resources and a great driving force that allows a teacher to take a lesson into new directions. Furthermore, when interviewee # 2 was asked about her belief whether integrating technology affects students' motivation she confirmed the role of technology to review and practice the knowledge acquired in class “I usually provide my students

with a list of websites that they can work at their own leisure time it will motivate them to review and practice what we did in class.”

Before we conclude our discussion for the first research question it is highly important to note the discrepancy between teachers’ positive perception towards the role of technology and the moderate percentage of teachers who use technology in their teaching. Although most participants had a positive perception for the usefulness and the role of technology only 49.3% marked that they integrate technology in their teaching practices. In fact, these results agree with the results published by Collettere et al., (2003); Sinclair, (2009) and Belland, (2009) who argued that teachers’ perception of technology usefulness is overly emphasized especially when the teacher has limited knowledge and little exposure to technology. Based on the data gathered from the attitude scale and the interviews we can infer that although teachers perceived the importance of the role of technology they were still resistant to integrate it. This idea was discussed in the research article published by Belland (2009) who argued that resistance is due to the modification of personal habits. However, we should also note that the effect of teachers’ perception of technology usefulness has been a debatable topic in literature. Some researchers (such as Kumar et al., 2008; Chau & Hu, 2002; Rovai & Childress, 2003; and Subramanian, 2007) suggested that teachers who perceived the importance of the role of technology and its usefulness in education showed a greater usage of computer. Thus, the results gathered from this research helped the readers to re-examine the inconsistent findings.

Research question 2

Do schools convey to teachers the relevance and value of technology to their classrooms throughout professional development?

Duration

Only 41% of the staff considered that the duration of professional development sessions frequently exceeded a single session or a single day. Furthermore, most of the staff (50%) indicated that follow up sessions are rarely conducted by the professional development team. These results in addition to the results gathered from the respondents' answers for question # 10 and question # 11 (P.D questionnaire) infer that schools mostly rely on single session workshops rather than extended workshops that aim to follow up teachers' implementation for the newly introduced concepts, skills and knowledge. These practices are not consistent with the duration component in the Evaluative Model of Teachers' Professional Development in technology used by several researchers such as Rosean et al., (2009); Lawless and Pellegrino (2007) and Keengwe et al., (2009). In fact, several researchers such as Brinkerhoff (2006), Fullan (2007) and Kumar et al., (2008) mentioned that lengthy duration is one of the important characteristics of high quality professional development. Based on these results, we may infer that some private schools in Beirut rely mostly on one-shot workshops rather than lengthy workshops; which is not recommended through professional development literature.

Evaluation

The staff responses were divided equally between rarely and occasionally when it comes to distribution of evaluation forms to gather information about training the attendees. These results infer that the schools do not provide teachers with opportunities to evaluate their professional learning experiences. These practices contradict with the evaluation component in The Evaluative Model of Teachers' Professional Development in Technology. The results obtained disagree with the characteristics of effective professional development discussed by Virgen-Heim et al., (2002); Wozney et al., (2006) and Brinkerhoff, (2006). In fact, the previously mentioned researchers highly emphasized the importance of enabling teachers to evaluate their professional development experience which will help them to develop awareness of the characteristics that should be present in rich professional development experiences.

However, it is important to note that 50% of the professional development staff stated that teachers are always provided with opportunities to reflect and share learning experiences with their colleagues. Furthermore, 33% of the staff stated that case studies are being provided frequently. These results portray that professional development teams are providing teachers with opportunities to reflect and share newly acquired knowledge which is supported by literature. Several researchers such as Wozney et al., (2006); Vannatta and Fordham (2004) and Keengwe et al., (2009) discussed the importance of providing teachers with such opportunities which will increase their motivation by providing an incentive and highlight the importance of technology integration into the teaching and learning process. Thus, we may conclude that the private schools who participated in this study implement one aspect of the evaluation

component of the Evaluation Model of Teachers' Professional Development in Technology while they disregard another aspect. This idea was also evident in the statements mentioned by two interviewees.

I think professional development people should ask teachers what they really want to learn before they provide us with these workshops. It will be useful to ask for teachers' feedback before and after a workshop and based on that they should decide on a professional development plan. (Interviewee # 5)

It would be a great idea if schools ask teachers to mention what they would really want to learn in these sessions. It will be useful to ask teachers to define what they really want to learn and to evaluate the workshops they are attending.

It would be useful, no? (Interviewee # 4)

Interpreting the previously mentioned results is interesting; although schools do not ask teachers to evaluate professional development sessions attended, they do provide these teachers with opportunities to reflect and share learning experiences with their colleagues.

Frequency of professional development sessions

Based on the quantitative data analysis 41.7 % of professional development staff marked that teachers frequently attend professional development sessions. These results contradict with the results gathered from the attitude scale distributed to teachers who work in the same schools. In response to question # 3 (from the attitude scale) only 19.6% of the teachers marked that they frequently attend professional development sessions. Furthermore, only 13% of all teachers marked that they attend professional development sessions regarding the methods available to integrate educational

technology in teaching while 58.3% of the staff strongly agreed with the statement that professional development aims to engage teachers by constructing activities that will enable them to use the newly introduced technology in a meaningful context. The contradiction between the results gathered from teachers (through the attitude scale) and professional development staff (through the questionnaire) may reveal the miscommunication and the lack of a common vision between schools' administrations and teachers about the role and the importance of professional development in schools.

Before proceeding to the next section, a quick glance at literature discussed in chapter two is needed to interpret the results mentioned in the previous paragraph. Several researchers such as (Kumar et al., 2008; Franklin & Molebash, 2007; Fullan, 2007; Peterson & Bond, 2004; Schlitz et al., 2009; Keller et al., 2004) stated that the amount of technology training received by teachers is highly correlated to their abilities to integrate technology into their classrooms. The data gathered in this thesis, portrays the discrepancy between the recommendations set by literature and the practices in the schools which participated in this study. Based on these results, we may infer that some of the private schools in Beirut do not provide their staff with frequent professional development opportunities; which is not recommended by the literature in this field.

Content of professional development sessions

It is highly important to note that 66.7% of the staff agreed that professional development focuses on enabling teachers to use a particular software or device while only 32% of the staff agreed that professional development focuses on the importance and the role of technology integration into instructions. This considerably high

difference in percentage reveals that professional development teams focus more on providing teachers with the basic skills needed to use a particular device or software rather than developing their attitude and perception towards the role of technology. This idea was also evident through the interviews. In fact, four out of five interviewees mentioned the need to have more workshops that tackle teachers' fear from technology and its role in the classroom. For example, interviewee # 1 mentioned that "Professional development staff should reassure teachers that it's not going to overshadow the teacher . . .". Furthermore, interviewee # 2 stated that:

Professional development should explain to teachers the importance of technology in the classroom. As I previously mentioned. I was lucky that I had a colleague who is into technology so she made it easy for me to learn the importance of technology. We shouldn't worry about the time, the money or the fear that it might replace the teacher because some say it will replace the teacher in the class and remove the human contact. So it is important and teachers should be aware of its importance before its application.

. . . Showing us really how the use of technology in our classes will be fun for the kids and a change for us. So I feel like we have something primitive going on like if you need to copy/paste to edit a picture to resize something or to upload a document.... I feel we need to see it more in a concrete way especially in Arabic and in our classes (Interviewee # 3)

Workshops are really important especially for me in Art. But, sometimes I lose my Saturdays to attend workshops but I don't really learn what I'm looking for. For example, instead of teaching us how to do technical things on Photoshop

teach us how to integrate it in our curriculum, how can we use it for educational goals and not only technical stuff although they are important (Interviewee # 4)

In order to understand the importance of these results, we need to go back to literature. According to Franklin (2007); Lawless and Pellegrino (2007); Davis and Roblyer (2005) and Brinkerhoff (2006) schools should always aim to incorporate both kinds of professional development in order to prepare teachers for purposeful technology integration. Thus, professional development teams need to convey to teachers the importance, the value and the role of technology in enhancing the teaching and learning process in addition to teaching them all the technical skills needed to use a particular software and device. According to Pickens (as cited in Yang & Tsai, 2010) the failure to provide teachers with both kinds of professional development will result in teachers' failure to adapt and implement the newly learned pedagogical knowledge and technical skills.

Based on the literature and the results gathered from this thesis we can suggest that some private schools in Beirut are not preparing teachers with the skills needed to become a long life technology learners but rather they are mostly focusing on teaching specific technical skills needed to use computer in classrooms. Thus, the need for further in depth queries arises in order to develop a framework or an action plan that will help schools to install in teachers the importance of technology in teaching. In fact, further research regarding the focus of professional development on the role of technology integration is highly recommended.

Research question 3

Is there a correlation between teachers' personal use of technology and their willingness to integrate computer technology in their teaching practices?

Pearson chi-square test was used to examine the association between teachers' personal use of technology (first question in the attitude scale) and their willingness to integrate technology in their teaching practices (second question in the attitude scale). The results obtained showed that 70% of the teachers who used their computer less than one hour per week had a positive attitude towards integrating technology in their teaching activities. Thus, teachers' personal use of computers as a cognitive and communicative tool is not considered as a predictor for their willingness and ability to integrate technology. When it comes to teachers' ability and willingness to integrate technology, no difference was revealed between the respondents that use computer for less than one hour per week and the respondents that use computers more than one hour per week. These results are consistent with the results published by Maddux and Lamont (2006) and Franklin (2007) that revealed that teachers' personal use of technology does not predict teachers' attitude towards technology and their abilities to purposively integrate technology in their teaching practices. Maddux and Lamont (2006) and Franklin (2007) revealed that teachers' personal use of technology does not predict teachers' attitude towards technology and their abilities to purposively integrate it. Maddux and Lamont (2006) argued that the quality of professional development provided for teachers and access to resources rather than personal use of computer are considered as predictors to teachers' ability to integrate technology. Furthermore, in his research, Franklin (2007) found no correlation between teachers' personal use of

technology and their ability to efficiently enhance students' learning by integrating technology.

It is important to note that the results found in this research disagreed with several research published in literature such as Wozney et al., (2006); Wachira and Keengwe (2011); Fer (2004); Guha (2003) and Virgen Heim et al., (2002). In fact, the previously mentioned research articles noted the presence of a positive correlation between teachers' personal use of technology and their willingness and ability to integrate computer technology in their teaching.

A crosstabulation for the two variables discussed in this section revealed a P value that equals to 0.1. This value that exceeds 0.05 infers that the results obtained were not statistically significant. This may be due to the sample size that didn't exceed 138 participants. In fact, although the questionnaires were distributed in five different private schools in Beirut, the response rate was low in some schools. For example the response rate in the school that caters for low socio-economic status students did not exceed 10%. Furthermore, asking the name and the contact information of the participants for further in-depth queries affected the teachers' answers. Teachers felt the need to have a positive attitude towards technology due to their fear that the results will be shared with the school administration. This feeling was prevailing among the five schools that participated in the data collection although the confidentiality of both the data gathered and the participants was emphasized in the covering letters attached to the questionnaires. Verbal re-assurance was also used by the researcher during the data collection phase in order to help respondents avoid emotional stress. This fear was also

evident during interviews since some teachers asked for reassurance about confidentiality. Some participants were afraid that the transcript of the interviews will be shared with the administration. Continuous reassurance that the identity of the participants and the names of the schools will not appear in the thesis was needed.

Due to the previously mentioned reasons, future research should be done in order to understand and measure the attitude of the teachers who were willing and able to integrate technology into their practices although they barely use (less than three hours) computers for their personal use. Anonymous questionnaires with detailed questions should be developed to shed light on this particular research question especially that this topic has been a controversial topic in literature. These questionnaires should be distributed in other private schools that also reflect the socioeconomic diversity of private schools in Beirut.

Furthermore, it is important to highlight that 96.38% regarded computer technology as an important tool for informative and communicative purposes but only 26.8% answered that they use computer for more than six hours per week for personal use such as communication and research purposes. These results suggest that although respondents perceive computers as personal cognitive and communicative tools, they do not heavily use them. This idea was also highlighted in the interviews conducted with five teachers. As one teacher said in an interview “I’m going to be honest, it is easier to communicate with someone face to face rather than through e-mail, it’s less time consuming” (Interviewee # 3). Although teachers consider computers as effective communication tools, they still prefer to communicate with more traditional methods. In

fact, this might be due to the slow and bad internet connection that we have in Lebanon. This idea was evident through the comments or the notes written by some respondents next to the statement # 20 and #16 in the attitude scale distributed to teachers. These respondents mentioned that they believe that technology integration requires additional time stems from the technical problems they face with internet in Lebanon. These comments portray some of the teachers' frustration from the slow and limited internet connection in Lebanon. This idea was mentioned also in three out of the five interviews conducted. Teachers felt that although search engines are extremely helpful for teachers some still prefer to use books to gather information in order to overcome the technical problems. For example, interviewee # 2 mentioned that:

. . . . It's very good to have everything at the tip of your fingers . . . but let's not also forget the technical problems that we might face when we're sometimes using the internet like limited or slow internet connection or other things that may come at the last minute.

Before concluding this section and proceeding to the last part in this chapter, it's recommended to go back to literature in order to compare the results gathered in this research with articles published in this field. Unreliability of technology and technical problems are considered one of the first order barriers that hinder technology integration in classrooms (Wachira & Keengwe, 2011; Wozney et al., 2006; Ertmer, 2005; Ertmer & Ottenbreit- Leftwich, 2010). Unfortunately none of these previously mentioned studies were conducted in Lebanon, thus the published literature concerning first order barriers for technology integration do not portray accurately the technical problems faced by the Lebanese teachers. However, based on the comparison between the results

obtained in this study and the literature published in this field, we may conclude that first order barriers mentioned by teachers who participated in this study are not exclusive to Lebanese teachers.

Cross check statements

The cross tabulation of the cross check statements (S_{13} & S_{24} ; S_{19} & S_{23} ; S_6 & S_{17}) revealed that the P value was lower than 0.05 in all 3. Thus, the results were consistent in statistically significant way. Based on these results, we can infer that respondents were not attentive while answering the attitude scale. For example, 66% of the respondents who portrayed a negative attitude in S_{13} portrayed a positive attitude in S_{24} . These results indicate a low level of engagement or a misunderstanding of these two statements. However, the cross tabulation of S_{19} & S_{23} and S_6 & S_{17} did not show such a high percentage of inconsistency. In fact, it is highly valuable to determine whether teachers read all the statement carefully before writing their answers which will increase the researcher's trust in the results published at the end of this research.

At the end of this chapter, we may conclude that in some cases the results gathered from the attitude scales, questionnaires and interviews agreed with previously published literature while in few other cases, it disagreed with most of the research published in the technology integration field. In fact, the discrepancy between the results published in literature and the results obtained from this research may be due to cultural and educational system differences. Thus, the need for further research concerning technology integration in private schools in Lebanon arises.

CHAPTER SIX

Conclusion

After discussing the data in the previous chapter, a brief conclusion will be done to wrap up this thesis. This chapter will start with a concise summary of the three research questions' findings. A brief description of the limitations of the study will follow. Finally, a brief wrap up conclusion will be used to highlight the contribution of this study to the field of technology integration in Lebanon.

Summary of the findings

Based on the data gathered from the attitude scale, we can infer that most of the teachers who participated in the study had a positive attitude towards computer technology integration and its role in education. The origin of this positive attitude, which stemmed from teachers' academic achievement and preparation, was determined by referring first to the interviews conducted, second by analyzing the characteristics of the participants and finally by reviewing the literature conducted in this field.

This positive attitude towards technology was coupled with a moderate use of technology integration in the classroom. In order to interpret and analyze this discrepancy, the researcher referred back to literature discussed in the second chapter concerning first order barriers. The barriers mentioned through literature (such as Wachira & Keengwe, 2011; Wozney et al., 2006; Ertmer & Ottenbreit- Leftwich, 2010) were evident in the data obtained from this thesis. In fact, insufficient time and resources, catering for official exams and inadequate technical support (Ertmer, 2005;

Staples et al., 2005; Wozney et al., 2006) were evident after analyzing the data gathered from literature review, attitude scales and interviews. Teachers' belief that technology integration is time consuming stemmed first from the extra effort needed to learn new programs and skills and second, from the loss of valuable teaching time due to unexpected technical problems. The consequences of losing valuable teaching time were related to teachers' inability to cover all the standards set by the official exams and the Lebanese Curriculum.

Inadequate technical support and technical problems such as slow internet connection (elaborated in the third research question) were also mentioned by teachers. These barriers were associated with teachers' moderate use of computers as communication and research tools. Interpreting respondents' positive perception towards computers as personal cognitive or communicative tools and their moderate use suggested that technical problems and slow internet connection in Lebanon are responsible for teachers' frustration. This previously mentioned idea was also highlighted by the five interviews conducted and the literature published in this field. In fact, Wachira and Keengwe, (2011); Wozney et al., (2006); Ertmer, (2005); and Ertmer and Ottenbreit- Leftwich, (2010) thoroughly discussed unreliability of technology and technical problems as first order barriers that can hinder the process of technology integration.

Before concluding the first research question, we can infer that although teachers perceived the importance of the role of technology they were still resistant to integrate it. These results agree with the results published by Collette et al., (2003); Sinclair,

(2009) and Belland, (2009) who argued that teachers' perception of technology usefulness is overly emphasized especially when the teacher has limited knowledge and little exposure to technology.

After summarizing the findings of the first research question, the need to briefly discuss the results of the second research question emerged. Based on the data gathered from the questionnaires and the attitude scales, we can infer that schools mostly rely on single session workshops rather than extended workshops that aim to follow up teachers' implementation for the newly introduced concepts, skills and knowledge. Relying mostly on one-shot workshops rather than lengthy workshops is not recommended through professional development literature who emphasized the importance of lengthy duration workshops in high quality professional development (Rosean et al., 2009; Lawless and Pellegrino 2007; and Keengwe et al., 2009).

Interpreting the data gathered from the literature review, questionnaires, attitude scales and interviews provided the researcher with an insight on the evaluation process implemented by some of the private schools in Beirut. The results suggested that schools do not provide teachers with opportunities to evaluate their professional learning experiences which contradict with the evaluation component in The Evaluative Model of Teachers' Professional Development in Technology discussed by Virgen-Heim et al., (2002); Wozney et al., (2006) and Brinkerhoff, (2006). However, it's important to note that the results suggested that although these schools who participated in this study disregarded one aspect of the evaluation component of the Evaluation Model of Teachers' Professional Development in Technology; they implemented the

second aspect. Even if these schools do not ask teachers to evaluate professional development sessions attended, they do provide them with opportunities to reflect and share learning experiences with their colleagues.

Investigating the frequency of professional development sessions offered by the schools who participated in the study was confusing. The results gathered from professional development staff contradicted with the results gathered from the attitude scale distributed to teachers who work in the same schools. Schools reported that teachers frequently attend professional development workshops; however when asked, teachers reported that they occasionally attend these workshops. This discrepancy portrays the miss-communication and the lack of common vision between schools' administrations and teachers concerning the role and the importance of professional development in schools.

After describing the findings related to three out of the four components of The Evaluative Model of Teachers' Professional Development in Technology, we are going to discuss briefly the fourth component: Content of professional development sessions. The data gathered from the questionnaires and the interviews, revealed that professional development teams focus more on providing teachers with basic skills needed to use a particular device or software rather than developing their attitude and perception towards the role of technology. To interpret these results, literature published in this field of interest was used. Based on the results gathered from this thesis it was suggested that some private schools in Beirut are not preparing teachers with the skills

needed to become long life technology learners but rather they are mostly focusing on teaching specific technical skills needed to use computer in classrooms.

A concise summary of the findings of the third research question is needed to complete the first section of this chapter. Pearson chi-square test was used to examine the association between teachers' personal use of technology and their willingness to integrate technology in their teaching practices. The results gathered from the attitude scales suggest that teachers' personal use of computers as cognitive and communicative tools is not considered as a predictor for their willingness and ability to integrate technology. These results that are consistent with studies published by Maddux and Lamont (2006) and Franklin (2007) disagree with several research published in literature such as Wozney et al., (2006); Wachira and Keengwe (2011); Fer (2004); Guha (2003) and Virgen Heim et al., (2002). However, it is important to note that the P value obtained from the cross tabulation of the two variables (teachers' personal use of technology and teachers' willingness to integrate technology in their classrooms) exceeded 0.05; thus, the results obtained in this section can not be considered as statistically significant.

Limitations of the study

The participants in this study included teachers and staff enrolled in five private schools located in Beirut. The participants constitute a purposive sample which was chosen due to its availability. Although the schools chosen reflect the socioeconomic diversity of private schools in Beirut, the response rate differed among schools which might have affected the results. For example the response rate in the school that caters

for low socio-economic status students was 10%; however, the response rate in the school that caters for high socio-economic status students exceeded 80%.

The sample size can be considered another limitation. Although questionnaires were distributed in five different private schools in Beirut, the number of participants did not exceed 138. This response rate is due to the language barrier. As mentioned by two middle socio-economic schools' principals, some teachers (such as language, social studies and specialty teachers) are unable to answer the questionnaire in English. In fact, one of the principals asked the researcher for translated copies of the questionnaires in order to overcome the language barrier. Teachers that were excluded due to the language barrier might have given different results than the ones obtained from English speaking teachers.

Asking the name and the contact information of the participants for further in-depth queries (interviews) might have affected some teachers' answers. Although the confidentiality of both the data gathered and the participants was emphasized in the covering letters attached to the attitude scales, some teachers felt the need to have a positive attitude towards technology due to their fear that the results will be shared with the school administration. During the data collection process, the need to use verbal re-assurance emerged to avoid respondents' emotional stress. This fear was also evident throughout the interviews; although continuous re-assurance concerning the anonymity of the interviewee and the anonymity of the schools who participated in this study the interviewee were still nervous about the interview transcripts that are included in the thesis.

The presence of only one question that investigated the number of hours reserved per week for classroom technology integration is also considered a limitation to this study. More questions should have been formulated to gather as much information as possible in order to answer the third research question. However, it is important to note that the attitude scale and the questionnaire were formalized to be short and not to take much time. During the piloting process, the attitude scale was summarized in order not to take more than 10 minutes of teachers' valuable time.

Brief conclusion

Integrating technology in education is still considered as an emerging trend in Lebanese schools. Technology is not yet perceived as a mean to actively engage students in the learning process and achieve the standards or the goals set by the curriculum; but rather it is still perceived as a set of additional activities that will motivate students. Comparing the results gathered through this research with some of the studies published in this field portrays the gap between technology integration in some of our private schools in Beirut and other schools in the West. To achieve the standards set by the west and thus acquire technology advancement in education, private and public schools in Lebanon must invest more time, money and human resources in the educational technology field.

Based on the data gathered in this thesis, we may conclude that effective technology integration can be achieved by demoting the effect of first order and second order barriers. Ertmer (2005) noted that "first-order barriers can be significant obstacles

to achieving technology integration, yet the relative strength of second-order barriers may reduce or magnify their effect” (p.37). The effect of first order barriers can be reduced by increasing teachers’ planning time, providing adequate technical support and updating the curriculum to embrace technology integration in education. Second order barriers can be dealt with by incorporating in our professional development sessions both technical skills and pedagogical knowledge about technology in education. It is highly useful to introduce teachers to some technical tips; however, highlighting the importance and the role of technology in education will help schools to overcome second order barriers. While discussing methods to overcome second order barriers, it is important to emphasize the role of universities in building teachers’ computer self efficacy.

Using technology tools in the classroom should be complemented and combined with an appropriate teaching theory. This teaching theory should foster differentiated instructions and student centered learning. Kumar et al., (2008) mentioned that teachers should aim to integrate technology into the program to support students’ self development. In fact, the teacher should be convinced that students should be actively engaged in their learning process by constructing their own knowledge for her to promote effective technology use in the classroom. The mission and the vision of the school should embrace the use of technology as a mean to enrich students’ learning experience in order to promote this positive attitude to individual classrooms. As stated by Rice et al., (2011) “technology as part of a learning theory is more than a tool; it becomes the framework for the methodology” (p.11).

The findings of this research enable readers to have a deeper insight about technology integration in private schools in Beirut. Studies published throughout the literature mainly investigated teachers' perception towards innovative practices, the correlation between teachers' teaching philosophy and their willingness to integrate technology and teachers' attitude towards its role in the classroom. However, these studies were conducted in the West thus the need to investigate technology integration in Lebanon emerged. The findings of this research provided administrators, professional development teams, university professors and teachers with an opportunity to reflect on the process of technology integration in Lebanon. Exploring how teachers' perceptions or beliefs about technology affect their abilities to integrate computer use in their teaching practices will enable educational teams to construct strategies that will help our schools to embark towards 21st century schools.

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Appendix A

Attitude Scale

You are kindly invited to participate in a research project conducted for the purpose of gathering information about teachers' attitude towards technology. The data collected will be used as part of the thesis for a Master's Degree.

Title of the Research Project: The Effect of Teachers' Attitudes and Perceptions on their Ability to Integrate Technology

Name of the Researcher: Lama Mo'dad

Contact Information of the Researcher: lama.modad@hotmail.com

Degree: Masters of Arts in Education (in progress)

Name of Faculty Advisor at LAU: Dr. Rima Bahous

Description of the research

The aim of this study is to determine the effect of teachers' attitudes and perceptions on their ability to integrate technology in their teaching practices.

If you accept to participate in this study, you will be required to fill out the attached questionnaire. The data gathered will be analyzed and incorporated in the thesis. The questions you are kindly required to answer will help in understanding your attitude and perception towards integrating technology in teaching.

The name of the participant and his/her email address are crucial for further interaction and for further in-depth queries, should this be required. The name and contact information will not be shared with the school administration.

It is important to note that no payments will be made to volunteering participants. You can terminate your participation at any stage prior to submitting the completed questionnaire. However, if you choose to submit the questionnaire it will be taken for granted that I have your permission to use any information pertaining to my research.

Lama Mo'dad,

This questionnaire is made up of 2 sections. Please answer ALL the questions included. Circle the most appropriate response when answering the closed-ended questions. Upon the completion of the questionnaire, please return it to the facilitator.

Instructions: Please write your name and e-mail address and then circle the answer that describes your age, gender and education level

Name: _____

Email address: _____

Age:

21-24

25-29

30-34

35-39

40-44

45-49

50-54

55+

Gender:

Male

Female

Education:

BA/ BS

MA/ MBA

Teaching Diploma

Others (please specify)_____

Instructions: Please read each question and then circle the letter which best express your perceptions.

1. On average, how many hours per week do you spend on your computer for personal use (excluding your work for school)?

A- Less than 1 hour

B- Less than 3 hours

C- More than 3 hours, but less than 6 hours

D- 6 hours or more, but less than 8 hours

E- 10 hours or more

2. How often do you integrate computer technology in your teaching activities?

A- Not at all

B- Rarely

C- Occasionally

D- Frequently

E- Always

3. How frequently do you attend professional development sessions in/or outside your school?

A- Not at all

B- Rarely

C- Occasionally

D- Frequently

E- Always

4. How frequently do you attend professional development sessions regarding the methods available to integrate educational technology into teaching practices?

- A- Not at all
- B- Rarely
- C- Occasionally
- D- Frequently
- E- Always

5. Do you read articles published in educational journals concerning the multiple use of technology in education?

- A- Not at all
- B- Rarely
- C- Occasionally
- D- Frequently
- E- Always

6. Which stage describes best where you are in the process of integrating computer technology in your teaching practices?

- A- Awareness
I am aware of the importance of technology as a learning tool; however I prefer to avoid it
- B- Learning
I am trying to learn how to use computer technology but find it difficult
- C- Use and implementation
I am starting to use technology in teaching and getting more comfortable with it.
- D- Application
I am able to use various computer applications as an instructional tool.
- E- Creative Adaptation
I am able to adapt easily to new computer technology.

Instructions: Please read each statement and place a mark in the appropriate column.

SD = Strongly Disagree, D = Disagree, U = Undecided, A= Agree, SA= Strongly Agree

	SD	D	U	A	SA
Computer technology can be used for:					
1. Instructional purposes (e.g., drill and practice, remediation).					
2. Communicative purposes (e.g., e-mail, on-line conferencing, blogs, sharing desktops).					
3. Evaluative purposes (e.g., digital portfolios, computer based tests).					
4. Informative purposes (e.g., Internet, CD-ROM, Online help).					
5. Organizational purposes (e.g., Spreadsheets, record keeping, data base).					
6. Motivating students (e.g., fun educational website, games).					
7. Increasing your productivity at work.					

	SD	D	U	A	SA
8. The use of computer technology requires additional time to plan learning activities.					
9. Workshops and trainings should provide teachers with instructional applications on integrating educational technology.					
10. Learning how to use computer technology is important					
11. Computer technology is considered a motivating tool that allows students to become actively engaged in learning.					
12. Computer technology facilitates completion of required tasks more quickly.					
13. Adopting and implementing new educational trends makes me uncomfortable.					
14. I am able to integrate any form of computer technology in my lessons if given proper instructions first.					
15. I believe that computer technology is fundamental in my teaching practices.					

Instructions: Please read each statement and place a mark in the appropriate column. SD = Strongly Disagree, D = Disagree, U = Undecided, A= Agree, SA= Strongly Agree.

	SD	D	U	A	SA
16. The use of computer technology in the classroom requires additional time to be spent on technical problems.					
17. The use of computer technology as a reinforcement tool motivates students to listen to the instructions given and finish their work on time.					
18. The use of new software demands extra training that is time consuming for teachers.					
19. The use of new software, educational websites or other technology applications limits the teacher's role in the classroom.					
20. Integrating computer technology in the teaching process is considered an additional load for teachers.					
21. Typing and preparing a test using a computer makes me uncomfortable.					
22. Using particular software (e.g., Excel) to organize and compute grades makes me more comfortable.					
23. Using and implementing a lesson plan posted on a wiki or any other communication forum reduce and modifies teachers' role in the classroom.					
24. Integrating computer technology into the curriculum makes me uncomfortable.					

Thank you for your time

Appendix B

Questionnaire

You are kindly invited to participate in a research project conducted for the purpose of gathering information about teachers' attitude towards technology. The data collected will be used as part of the thesis for a Master's Degree.

Title of the Research Project: The Effect of Teachers' Attitudes and Perceptions on their Ability to Integrate Technology

Name of the Researcher: Lama Mo'dad

Contact Information of the Researcher: lama.modad@hotmail.com

Degree: Masters of Arts in Education (in progress)

Name of Faculty Advisor at LAU: Dr. Rima Bahous

Description of the research

The aim of this study is to determine the effect of teachers' attitudes and perceptions on their ability to integrate technology in their teaching practices.

If you accept to participate in this study, you will be required to fill out the attached questionnaire. The data gathered will be analyzed and incorporated in the thesis. The questions you are kindly required to answer will help in understanding your attitude and perception towards integrating technology in teaching.

The name of the participant and his/her email address are crucial for further interaction and for further in-depth queries, should this be required. The name and contact information will not be shared with the school administration.

It is important to note that no payments will be made to volunteering participants. You can terminate your participation at any stage prior to submitting the completed questionnaire. However, if you choose to submit the questionnaire it will be taken for granted that I have your permission to use any information pertaining to my research.

Lama Mo'dad,

4. Are follow up sessions conducted by the professional development team?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
5. Do you distribute evaluation forms which gather information about the training to the attendees?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
6. Are evaluation models which evaluate the sessions developed by the professional development team at school used?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
7. Are several measures (i.e. observations, teachers' reflections, and artifacts analysis) taken to assure that the knowledge gained through professional development sessions is being used by teachers?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
8. Do you provide teachers with detailed case studies that enable them to gain hands-on experience?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
9. Do you provide teachers with opportunities to reflect and share learning experiences with their colleagues?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally
10. Do you enhance teachers' abilities to integrate technology into their practices by using mentoring or coaching models?
 A- Not at all D- Frequently
 B- Rarely E- Always
 C- Occasionally

11. Do you help teachers gain knowledge about new software or devices by providing them with one-shot workshops model (single workshop sessions or single day training)?

- A- Not at all
B- Rarely
C- Occasionally
D- Frequently
E- Always

12. Do you use train- the- trainers model (train selected teachers that will be able to train their colleagues later on) to provide teachers with technology integration training?

- A- Not at all
B- Rarely
C- Occasionally
D- Frequently
E- Always

Instructions: Please read each statement and then mark the column, which best shows how you feel.

SD = Strongly Disagree, D= Disagree, U= Undecided, A= Agree, SA= Strongly Agree

	SD	D	U	A	SA
13. The importance of technology integration should be interpreted in the school's mission and vision					
14. Professional development aims to engage teachers by constructing activities that will enable them to use the newly introduced technology in a meaningful context					
15. Professional development focuses on enabling teachers to use a particular software or device					
16. Professional development focuses on the importance and the role of technology integration into instructions					
17. Professional development aims to help teachers learn about technology (i.e. what software is available? What technology to use?)					
18. Professional development aims to provide teachers with various methods to achieve a purposeful integration					

Thank you for your time

Appendix C

Interview Questions

I. Interviewee's Biographic Data

1. Can you briefly describe your background as a teacher?
2. How many years have you been teaching?

II. Interviewee's perception concerning the role of technology

1. Can you describe the role that technology should play in the curriculum?
2. Can you provide an example of successful computer use?

III. Professional development provided by schools

1. Can you provide an example of a technology workshop you attended?
2. Can you describe the process you use to implement techniques newly introduced to you through a workshop?
3. In what specific areas you feel that professional development is needed in order to have successful technology integration?

IV. Personal use of technology

1. How much do you depend on technology in your daily life?
2. How do you communicate with colleagues in your school or in other schools?
3. Do you prefer to use books in order to enrich your repertoire of activities or online websites?

Appendix D

Interviewee # 1

Interviewee's Biographic Data

I'm a KG 2 teacher; it's my first year at a school that caters for middle and low socio-economic status students. I did my training for a full year at a school that caters for high socio-economic status students and I am working now at the school that caters for middle and low socio-economic status students as I said before.

Interviewee's perception concerning the role of technology

1. The technology mainly it should be..... ehhhh.... Let's not say the dominant role in teaching it should be coupled with the lesson it should enrich the lesson and it should be used as a tool to help students learn more and interact more during the lessons. Ehh, but what mainly it should not turn the student into a passive one because when he is only receiving the information without interacting, it looks like he is only watching TV. He should interact with the information and this should be coupled also with hands on activities with materials and things that for example in the early childhood education we need manipulative we need lots of things that he can use his senses to enrich the lesson ye3neh..... much more. It shouldn't be only the role of the technology. The teacher should be a mediator; the teacher should be between the two.
2. For example the power point and the overhead projector, when you project it in the classroom, it's really useful when you are teaching math skills or even reading skills. Yeah..... it enriches, sometimes some kids they don't like to read a book, it should not overshadow the use of the real book but sometimes it can be a way to make the child more comfortable to acquaint his needs. If a child likes to read throughout a computer it's not a problem as long as he is benefiting from it.

Professional development provided by schools

1. Unfortunately I didn't.... (giggling)

Ok, does the school usually provide you with workshops?

Sometimes they provide us with workshops in other schools, but it's not about technology, it's about special education or literacy.

Do you usually attend workshop on voluntary basis?

It's not a voluntary, sometimes you have to, I attended one workshop eh hh... but it was about special education. But other workshops were on voluntary basis but I didn't have the time to attend them.

2. I won't be able to describe since I didn't attend any workshop about technology
3. Eno, professional development staff should reassure teachers that it's not going to overshadow the teacher and the teacher should not feel that she's not well prepared to use the technology. Hala2 it depends on her background, her technology background in the university.... eh... What she studied. Bass the teacher should use it in order for her to ... it helps her and facilitate her role as a teacher sometimes instead of reading for example in the elementary or secondary level, instead of reading the text from a book unless the students listen, the teacher can simply project it by using the overhead, in this way the students can use their many senses in order to understand the lesson and it should not be as a rigid, eh... It's not a rigid way of teaching because it's not a robotic process and this because mainly teachers should not be afraid of using the technology. She should not be afraid that it will take her role as a teacher.

Do you think that teachers are not motivated to use technology most of the times?

Most of the times, they aren't.... eh.... Bass once they will try it, they will be addicted to it especially if they have the technology in their classrooms, in hands.

So we need to break the first barrier, the fear barrier (Comment)

Exactly, of course but they should not force teachers to do so or give her lots of homework because she's already overwhelmed with the whole program so you don't want her to feel that she's forced to do so because she will hate it all her life.

Personal use of technology

1. Hala2.... During my university years I used to depend a lot on technology, PowerPoint, research, excel, word and other programs but once I began working it decreased a bit because of the school where I have been working; they didn't provide us with technology tools. The curriculum is not based on technology. We don't have the tools, we don't have the overhead projector.... Eh... we don't have a computer in the classroom. Sometimes you need the computer on the spot. You need to search for a word, for something you need to show a picture so this can hinder you in providing a rich curriculum to our students. So that was a disappointment for me, I'm used to it during my training years. It was more available and I thought that wherever I will go I will use it the same

way. I will be teaching using technology because I feel more comfortable using them especially on the spot. Sometimes a kid might ask you a question, I am not a dictionary, ya3neh.... sometimes you need to search it, sometimes you need to show them a picture and this can open the eyes of the students to different things in the lesson, it makes them feel more interested in the lesson.

Okay, do you usually reserve the computer lab in order to make use of the equipments and thus integrate technology into your lesson?

We have a P.C. lab but we don't use it that often because I don't know enough websites that students can log on to. We usually need accounts to log in so usually it's a quick activity that will fit in the program. So this is not available. But we have movie time, it's more for pleasure and that's it. It's not as much as I thought I will use it because I love to use technology, I don't have a problem as long as I have this I can use it right away.

2. Mainly we don't have the e-mail system. Ehhh.... Ya3neh we communicate throughout phones, messages, answer machines if there was something happening in the school or if they want to ask us not to come that specific day. For example, if the principal wants to pass a message, she can contact us directly on the phone, Although we don't have an e-mail system, but I'm used to it especially that I'm an LAU graduate. I'm used to it, everything goes through e-mails.

Do you usually use it to communicate with parents?

Let's say that the background of the parents of the majority of the students in this particular environment that I am in, they aren't exposed to technology or the e-mail system.

Thank you for your time.

You're welcome and good luck.

Interviewee # 2

Interviewee's Biographic Data

I am an AUB graduate since 2001. I taught for 10 years, among which I spent 8 years in this school that caters for middle socio-economic status students. Then I traveled and got married before coming back to Lebanon. I thought English abroad for 2 years.

Interviewee's perception concerning the role of technology

- 1- Technology is extremely vital and important in everyday life. Today we have a very strong contact with technology in our everyday life; we have to be up to the level with that. In my curriculum I use technology as an inspiration for ideas to see, as on line games, as educational programs in mathematics and teaching phonics. I use videos and especially you tube for explaining abstracts that are hard to present in class like metamorphosis for example.
- 2- An example of a successful computer use is... I use websites, I use powerpoint and slideshow. It can be something as simple as using the projector in the computer lab to just edit or read something together with the kids.

Do you believe that technology can be used to achieve a whole goal or objective in your curriculum?

Technology by itself is not enough to rely on, the teacher needs to be there as well for the human contact and the human touch.

Professional development provided by schools

- 1- I didn't attend so many workshops, but I've attended a workshop on how to create a wiki for the teacher. Someday I might do that. I've also attended a workshop on how to create Photostories. That's exciting for students especially when you give them something like that at the end of the year.
- 2- First I try to take notes, then I try to implement it directly as the opportunity arises in my classroom. I might ask a colleague how to do specific things, I am lucky that I have a colleague that is experienced in IT. She is a great help.
- 3- Professional development should explain to teachers the importance of technology in the classroom. As I previously mentioned, I was lucky that I had a colleague who is into technology so she made it easy for me to learn the importance of technology. We shouldn't worry about the time, the money or the fear that it might take because some say that technology replaces teachers in the class and remove the human contact. So it is important and teachers should be aware of its importance before its application.

So do you think that professional development sessions should tackle the fears of teachers?

Yes, absolutely. First, we need to tackle the fears of teachers from technology and then we should worry about the technical side that can be solved easily. A teacher who fears technology in her room, she will not develop professionally at all, she will not be following the world in its development. It will help her to create an inspiration to her students and motivation as well when she integrate technology in

her room. Even if she shows a small movie in her class, students will perceive it as a whole new world.

Personal use of technology

- 1- I definitely depend on e-mails to communicate with my friends. We do not use e-mails to communicate with our boss or our colleagues yet. I believe that we should use e-mails because it will make things easier, but I don't think our school is ready yet. I depend on technology to prepare my power point presentation, to communicate with my old colleagues abroad as I told you I was teaching for two years abroad. I depend on technology through my cell phone too!
- 2- I think I've already mentioned the answer in the question above.
- 3- I don't prefer to use books and I don't prefer to use technology. I believe that technology is a useful resource because it's very good to have everything at the tip of your fingers but at the same time.....uh.... sometimes it gets your life complicated. When I'm looking for something specific, when I search the internet I might find so many websites that are too complicated that I need to summarize but a book that is specific to the subject that I am researching will directly give me what I am looking for. It's a two sided sword, so technology is not the answer but it makes the answer much easier to obtain. But let's not also forget the technical problems that we might face when we're sometimes using the internet like limited or slow internet connection or other things that may come at the last minute.

Would you like to add anything else about technology integration into instructions?

I personally would like to advance myself more in that field. It's an extremely vital lesson these days, technology inside any classroom is a kind of.....uhh... a river that leads to the ocean of educational knowledge. It's definitely a pathway.

Do you think using technology will affect students' motivation?

Definitely, I usually provide them with a list of websites that they can work on at their own leisure time. But of course, not all of them have access to internet at their homes. It will motivate them to review and practice what we did in class. But unfortunately as I told you, not all of them use these websites.

.....Uhh...frankly I believe that I am creative enough but I still need to work on myself so I'm satisfied but I still feel that I can be better and I would like to attend more workshops and receive more help.

Do you usually attend workshops on voluntary basis?

Voluntary basis because we are not asked to attend workshops about technology specifically; but I like to choose technology workshops to learn more about that subject. Usually we are asked to attend workshops about literacy or differentiation but not technology. It's all about inner motivation because I believe that technology is very helpful for a teacher.

Thank you for your time.
You're welcome.

Interviewee # 3

Interviewee's Biographic Data

I have been working at a school that cater for high socioeconomic status students for four years now and I teach Arabic for early years, KG₂, grade 1 and grade 2. I changed career from business management to teaching four years ago and now I am holding my masters in education and international teaching. This is my fifth year in teaching.

Interviewee's perception concerning the role of technology

- 3- When we talk about curriculum and technology generally this work outside the art language as I mentioned I teach Arabic so in our curriculum... Arabic curriculum...eh...there is no ...place for integrating technology in our curriculum thus it's a personal effort for the teachers to integrate it and depend on some media to teach and use a variety of techniques for teaching the kids Arabic.

Do you believe that technology can be used to achieve a whole goal or objective in your curriculum?

No, that's not enough. First of all not all Arabic teachers are aware of the media and technology that can be used in teaching Arabic. Second of all it's like a big taboo for them, when we say technology it's like a big monster coming to eat them so it's really personal effort besides the big push and motivation of the school. As you know in this particular school they push for communication with parents so using technology is a must. For instance, if you want to keep the parents posted of our news you need to use the wiki that we have. Or if you want to put the weekly homework, pictures or any work the students are doing in our classroom you need to use wikis and news flashes. So this is one way we are using the technology in our classes, another way personally I use it because we teach in differentiation so I use it for PowerPoint presentation and recording Arabic stories for the kids; it's more engaging for them and interactive.

Do you think that creating your own story is time consuming?

It is time consuming because as I mentioned it's a personal effort and because the teacher is in charged to do that.... you don't have sessions in the computer lab with your kids during Arabic classes. It is time consuming but it's rewarding at the same time because the kids will enjoy seeing their work posted on the school website and yes we use so many programs like Photoshop.....ehhh..... the names are far from my head now. But we use them to be creative.

Technology by itself is not enough to rely on; the teacher needs to be there as well for the human contact and the human touch.

- 4- Uhhh, last year we started in our first graders using some sort of technology with them. We recorded their voices because they made a little play and we wanted to put their voices on the pictures using Photostory 3. It was fun for both of us, the kids were really engaged and as an audience they were very quiet and cooperative. So that was one example we did with kids.
Among the other examples that I just mentioned as a teacher, however we don't include the kids very much. Maybe in the near future we're gonna you know use it for the presentation.

We use technology in term of teaching, we use the LCD projector and the DOC camera as a mean of teaching and for us as teachers but not as an interactive way for the kids....not yet.

Professional development provided by schools

- 1- Because I teach Arabic.... You know my focus on the workshops would be rather linguistic rather than technology so I didn't really attend any technology workshop...yet.
- 2- **Although you didn't attend any workshop, are you able to describe to us how you were able to implement the Photostory 3 software?**
I am a person that likes to read and ask a lot so I depend on what I read and then I go bugging the IT people at our school. I read and then I apply and by trial and error I just find my way through technology. Usually I like technology; I like new things, challenging programs and software. By the way, it's not a taboo for me because I think all the programs nowadays are like users friendly, so really if you just go to help and read a bit, you will find your way. I don't know if the course I took in my Masters' degree about multimedia and technology helped me a lot regarding this issue too. It validated so many ideas I had on technology and its use in my classroom, it motivated me... and that was last summer. It helped me a lot, it was

really interesting especially that we had the chance to create a movie. It pushed me more to know about what's going on around us.

So, do you think the course you took in your masters changed your idea about technology integration in education?

Yes, because when you mention the term technology, anything could be considered as technology, like any device you use in a creative way could be called technology. It's not just a computer that you sit in front of or a program or software that you just installed. It's the way used to implement things. So yes it helped a lot.

- 3- As I mentioned especially with Language Arts' teachers it's still a taboo and by that I mean like something that you don't know and you're scared of. When I had this intensive course with a professional professor that had its own experience in the field, I personally discovered that it doesn't take much to include technology in your daily life. I mean instead of asking people around us on how to use certain software or certain computer skill, you can just go to help and start reading. I think it's still a myth especially when technology is going crazily advanced in our day that we feel that it's a crazy thing and we cannot go there. The school role is really important; they encourage us to attend workshops and seminars related to teaching and Arabic drama. I think it's really cool if they can also encourage us to attend or you know formulate a certain seminar in school. Showing us really how the use of technology in our classes is fun for the kids and a change for us, will be much easier in so many aspects. So I feel like we have something primitive going on like if you need to copy/paste, edit or resize something rather than having something that is more complex and sophisticated. I feel that we need to go and make a little play or to shoot a little video. I feel we need to see it more in a concrete way especially in Arabic and in our classes.

Personal use of technology

- 1- To start with I don't have a BB, I don't carry my technology everywhere I go because I'm one of those old fashion so I'm choosy with my technology. My mobile is only to receive my messages and my calls. But I use my laptop at home, I go to Google and search for certain topics I am interested in, help my kids with some projects and check my e-mail. I also have a daily access to technology here in school. Ehhhh...i also like to take pictures and edit them. The school is using e-portfolios so I'm using my imagination and creativity to create something with the kids' product and work to create something that is very interesting for parents and kids. So here is another push from the school going towards the e-portfolio instead of the hard copy.
- 2- In the Arabic team, we don't use e-mails to communicate. We are lucky that we have an Arabic room so we see each other and we talk face to face. Frankly, I don't communicate with colleagues outside my school. I rarely see them in workshops so

I don't use any communication forums other than the school's e-mail. I'm going to be honest, it is easier to communicate with someone face to face rather than through e-mail, it's less time consuming. You know in Lebanon how slow the connection is, so as I said it's easier to talk to the person directly.

- 3- That's a tricky question, because I am a visual person and I prefer having a book, a hard copy in my hands when I'm reading for pleasure. But for the practicality being a teacher, using a website is much easier and less time consuming. You know.... Ehh... it saves my time. For example, instead of losing my breaks searching in the library, with a click I can go to all the places I need.

Do you think we have enough websites for Arabic?

Unfortunately not that I know of..... I don't think so, no. We have simple programs that will help us to teach Arabic as a Second Language for very young students. It's like a sort of activities, extra activities in Arabic but real teaching programs do not exist. Or I'm not aware of.

So you consider them as additional or supplementary activities?

We can not rely on them. This also should be a personal effort on the teacher, because as I mentioned we don't have in our daily schedule lab hours for Arabic. So we need to go through the reservation procedure and so on.

Would you like to add anything else about technology integration into instructions?

I think being aware of some of the technologies that can be used in teaching; will not only help me in my planning but it is also helping me to communicate with the kids I am teaching because I feel that we have valleys and big differences between "us" and "them". This is their language and you know if you want to approach a certain population you need to speak their language. I think it's a must for every teacher and every mother to have a big idea about technology and what the kids are using. I believe that if you don't speak their technology language, you are increasing the gap between you and them. So every teacher should know about technology even if they don't have the time or the money to invest in technology and have it in their daily lives.

Thank you for your time.

Interviewee # 4

Interviewee's Biographic Data

I am an art teacher at a school that caters for middle socio-economic students. I have been teaching art for quite sometimes; for 9 years. I really like art, I like to teach kids

about new techniques and new artists and so on. I am a graduated of LAU, I was majoring in Graphic Design. After I started working in a school, I discovered the need to get a teaching diploma so I went back to LAU and I took all the courses required for teaching diploma.

Interviewee's perception concerning the role of technology

- 5- Technology should be a tool that helps applying the curriculum in Art. I don't think that technology.....ehhhh....you can not totally depend on it or plan your curriculum according to it. I prefer that students in Art use more hands on materials to make that connection of feeling. Because when you feel the material you are working on it's totally different from looking at it on a screen.
- 6- There are certain things that can be done using computer, maybe for those who are working on brochures or pictures using computer would be helpful. I learned about the importance of technology in Art through my university years in Graphic Design, we used computers to do all the projects required; it was part of our studies. An example of successful computer use..... ehhhh.... I remember giving the students a project about comparing the process of drawing on a paper and drawing using a computer program. They had to color and draw the painting on a paper and then they were asked to draw the same picture on a computer using the colors and the textures the computer provides for you. You may want to use a specific color or shade that the computer doesn't provide for you. So that was an exercise for the students to experiment Art using computers.

Do you think using technology will affect students' motivation?

From my experience, I can say that students were more excited to work on computers. As you know, in Art all the work is hands on so yeah they were excited to work on something new. Students just enjoy using programs such as Photoshop in Art. They become so attentive and motivated to work and it's also nice for me to just leave the Art room and go to the computer lab every while.

Professional development provided by schools

- 1- Well it's limited. I mean it's like....ehhhhh.... at the beginning of the year at the school we have workshops where we are given a limited idea about a certain program or a computer tool. It's not something very detailed; the rest is up to the teacher to know about it.

So, it all depends on the teacher's willingness to expand her learning?

If you have more time to learn individually on the programs you can really benefit a lot. It goes back to the teacher. It all depends on her motivation. Let's not forget that sometimes you don't have time to use technology with the students. You have a list of standards that you need to cover at the end of each year. We follow the Lebanese programs, so we have a lot of objectives to achieve and let's be honest; technology

is not part of them, so it all depends on the teacher's personal effort and interest. Teachers should take a personal initiative to teach a certain computer program or software in Art.

2- I just start by discovering the different functions of that program on my own. So it's like trial and error more or less because I don't have someone next to me or someone to guide me. I don't know..... like someone to support me.

3- Workshops are really important especially for me in Art. But sometimes I lose my Saturdays to attend workshops but I don't really learn what I'm looking for. For example instead of teaching us how to do technical things on Photoshop teach us how to integrate it in our curriculum, how can we use it for educational goals and not only technical stuff, although they are important. I believe we need to have a balance between technical instructions and the importance of the program learned to the teaching process.

When we are attending workshops we are not really learning some facts or statistical research about the importance of this software or program to our teaching objectives. We should know the value of this program to our teaching. Teachers are still afraid of new educational software and program because they can not be sure whether this new program will be useful. They simply don't know the advantages and the disadvantages of it. We should be notified about statistics, numbers and..... researches done on these programs. Let's not forget that using technology in class is time consuming. So the time we are spending as teachers to learn about these programs and then teach them to our students is time consuming. So we really don't want to lose all this time to learn about a new program before we are positive of its effect on students' learning.

It would be a great idea if schools ask teachers to mention what they would really want to learn in these sessions. It will be useful to ask teachers to define what they really want to learn and to evaluate the workshops they are attending. It would be useful, no?

Do you usually attend workshop on voluntary basis?

No workshops are not voluntary basis. The administration will specify for us the workshops that we should attend. They go and search for available workshops and then they ask us to attend the ones they believe are most suitable for us.

Personal use of technology

1- Personally I use the computer as most of the people to check my e-mail and search for certain ideas and activities although I still prefer to use books over websites because it's easier for me. Sometimes we can't be sure that the information we are getting from the website is credible since we can't identify the authors and the

source. Sometimes I do get weird information from websites so I do question the resource. Throughout my teaching years I used a lot of activities that I have taken from books, they are great resources.

Whether I depend on technology..... eh... I do use my laptop a lot but I am not the kind of person that carries her laptop with her wherever she goes. I can manage without my computer.

- 2- I don't use e-mails to communicate with my colleagues. Frankly I believe that e-mail communication in schools has its positive and negative effects. Sometimes you need an instant answer so you can't wait for your colleague to open her e-mail at the end of the day so I prefer to go personally and talk to the person face to face.

Do you usually use e-mails or the school's website to communicate with parents?

As an Art teacher, I don't communicate with parents much. But I can tell you that my colleagues do not communicate with parents by e-mails or by posting information on the website. Most of the parents do not use e-mails and they definitely don't check our website on a regular basis. Parent –teachers conferences are the only way we use in this school to communicate with parents. We prefer to talk to parents face to face because as you know human interaction will be helpful most of the time

- 3- I already answered this question previously.

Would you like to add anything else about technology integration into instructions?

Technology is very helpful but at the same time, I don't like to depend much on it. A small mistake or any technical problem can occur and then you will be totally lost. It is very helpful and it will make things easier but if any technical mistake happens you will be paralyzed. All your work will stop. The physical presence of the teacher in the class is decreasing, I don't know in the long run of time how it will change. Would it change positively or negatively? We really don't know much.

Thank you for your time.

You're most welcome, I hope that the information I said is helpful.

Interviewee # 5

Interviewee's Biographic Data

I graduated from AUB and my major is sociology. I teach English. I taught for 8 years in 2 schools that cater for middle socioeconomic students, then 7 years ago I started teaching in this school that caters for low socio-economic students. So overall I have been teaching for 15 years overall.

Interviewee's perception concerning the role of technology

- 7- Technology is essential in the classroom. It is very useful, but as you know we don't use it a lot here. Unfortunately, we don't apply it in the classroom. We have a portable overhead projector that we can use it but carrying it from one place to another is not that easy for a teacher. Even if I want to use the overhead projector, sometimes things will go wrong so I need to go and ask my colleagues for help, I believe we're losing teaching time because of the technical problems. I know technicalities are not of a big deal but dealing with all these problems is too much for a teacher.

Do you believe that technology can be used to achieve a whole goal or objective in your curriculum?

No we can't rely only on technology like internet and educational software to teach a whole concept. Technology can help the teacher to motivate students to learn but we can't use only technology to teach an objective. We need activities, references and the most important thing is teacher's explanation to teach a new concept to students.

- 8- What do you mean? Do you mean if I use things like audiocassettes and games? Uh... We use educational games and audiocassettes for the accent. So students can hear the correct accent which is good for them. We do that in the computer lab and not in class. So when they have computer, they can play educational games and listen to the stories taped on audiocassettes.

Professional development provided by schools

1. I didn't attend any workshop about technology, but in one of the workshops I attended in the British council they were talking about the audiocassettes and the games they have on their websites. On this website they have stories, games and songs in English, it's really nice for the students, it has everything for vocabulary, for spelling. If I am going to attend a workshop it won't be about technology but it will be about language. In this school, they don't care much about technology. We follow the Lebanese program, so using technology in our lessons is not that important, it's not a must. As you know we have a heavy load so we try to remove as much as we can from this heavy load. Uh... the computer teacher is the one that attends workshops and training sessions about technology but not us, the language or math and science teachers.

Do you attend these workshops on voluntary basis?

No we have to attend the workshops required by the school. But, I like to go to these workshops, they are very interesting.

2. As I told you, once I learned about these games and videocassettes I tried to use them with my students. Unfortunately I can't use them in my class so we are using them in computer class. I told the computer teacher about this website and I always remind her to use this website with my students. We don't have the means to apply technology in our classes but once I learned something new about technology I tried to use it as much as I can. But in this school we are looking forward towards using technology in our classes. For the time being we only use computers in the computer lab.
3. Professional development sessions we are attending are not enough. We are learning bits and pieces in these workshops. I think professional development people should ask teachers what they really want to learn before they provide us with these workshops. It will be useful to ask for teachers' feedback before and after a workshop and based on that they should decide on a professional development plan. They are just doing informative workshops. I'm talking about workshops in general and not technology integration workshops since I don't know much about them.

Personal use of technology

1. At home, I use technology on a daily basis. I use internet to search for exams and worksheets. I use the internet to get new activities, I do not totally depend on technology in my life but I do use it because it will make things easier. It's mainly for research. For communication, I prefer to communicate through phone and face to face rather than using e-mail or facebook. It will be easier to communicate if you talk to the person directly because you won't have that much misunderstanding.

Do you use technology to communicate with parents?

Our school caters for low socioeconomic status students so our parents are not technology literate. They do not use computers, even our students don't have computers at homes. So definitely we do not communicate with parents using technology. I know that in other schools they do, but unfortunately in our school they don't.

2. As I told you before we don't have computers in our classes or in teachers' room so we can't use e-mails to communicate. We usually talk to each other in the hallways or during recess. Not all teachers have computers at home so you can't rely on the fact that they will check their e-mail daily at home. So the best way to communicate is through face to face interaction. I don't communicate with colleagues outside the school. If I need to call one of my old colleagues I use the

phone. Usually these phone calls are not related to work or teaching issues. They are mostly personal phone calls.

3. I don't care. Sometimes I use books and other times I use websites. If I am preparing my lesson here at school, of course I will use books since I can't use computers. But if I am preparing my lessons at home, I do use the internet to get some ideas and activities. I believe that books and computers are both useful resources.

Do you think using technology will affect students' motivation?

Of course, they become more attentive. You notice that they will talk less and they become more focused on the activity and what is going on in the classroom. So, yes it's definitely more motivating.

Would you like to add anything else about technology integration into instructions?

I hope that they will get us more computers and equipments to be able to use technology in our classes. They said that soon enough they will have more computers and overhead projectors available for us; I hope that this will occur soon enough.

Thank you for your time,
You are welcome.