



**A Study on Educational Technology in Dubai
Challenges and Suggested Solutions**

دراسة حول التقنيات التعليمية في دبي
التحديات والحلول المقترحة

By

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Abstract

The purpose of this paper is to discuss how education in UAE is better with the presence of technology, how advanced is it now? How it can be better?

Worldwide some barriers may arise before integrating high technologies into today's classroom. A couple of the most famous barriers are the cost of software, hardware and the availability of training for teachers, but The UAE government has the financial resources to implement technology at schools and the Ministry of Education in the UAE is striving to keep up with educational standards adopted all over the world. And once H.H. Sheikh Mohammed bin Rashed Al-Maktoom said “Education, Education, Education..” while presenting Dubai Strategic Plan 2015 stating that it’s one of his most strategic goals in the UAE development.

In line with this trend to integrate information and communication technologies (ICTs) in education, UAE has embraced to use technologies in all educational levels to facilitate learning and teaching, and increase access to learning opportunities.

I conducted a survey to examine how education in UAE is better with the implementation of technology from the perspective of both teachers and students from grade 7 to 12 in Dubai’s schools and how it can be even better.

The methodology was both qualitative and quantitative as I have done primary research on education technology in other countries and attended an International conference about Information and Communication Technology in Education to have an idea about the current status of educational technology worldwide. Later on, questionnaires were sent out to both Dubai's students and teachers about technology in education in UAE, 508 valid responses were received and analyzed.

New findings within this research show that teachers and students feel that education was improved with the use of technology in education at Dubai's schools. Teachers and students have the required technological skills and the acceptance to integrate new technologies in education that can add value. Teachers need professional training on how to improve education by technology as well as students need access to different technologies in schools.

ملخص

الغرض من هذه الرسالة هو مناقشة فضل استخدام التقنيات في قطاع التعليم في دولة الإمارات العربية المتحدة ، ومدى تطور التقنيات التعليمية حالياً، وكيفية تطويرها للأفضل؟

هناك بعض المعوقات التي واجهت دمج التقنيات الحديثة في الفصول الدراسية في جميع أنحاء العالم، وأكثر المعوقات تأثيراً كانت تكلفة الأجهزة والبرمجيات وتوفير التدريب اللازم للمعلمين، لكن حكومة دولة الإمارات العربية المتحدة لديها الموارد المالية اللازمة لتطبيق التقنيات الحديثة في المدارس، كما أن وزارة التربية والتعليم في دولة الإمارات العربية المتحدة تسعى جاهداً إلى مواكبة المعايير التعليمية الحديثة المطبقة عالمياً، كما شدد صاحب السمو الشيخ محمد بن راشد آل مكتوم على أهمية تطوير قطاع التعليم بقوله "التعليم، التعليم، التعليم.." عند إعلانه عن خطة دبي الاستراتيجية لعام 2015 مؤكداً على أن التعليم هو أحد أهم الأهداف الاستراتيجية المستقبلية في دولة الإمارات العربية المتحدة.

ثورة التقنيات التعليمية شكلت عاملاً قوياً للتغيير في المدارس في جميع أنحاء العالم، وتماشياً مع هذا الاتجاه لدمج تقنيات المعلومات والاتصالات في التعليم تبنت دولة الإمارات العربية المتحدة استخدام هذه التقنيات في جميع مستويات التعليم لتيسير طرق التعلم والتعلم، وزيادة الفرص التعليمية لمختلف شرائح المجتمع.

في هذه الرسالة أجريت دراسة ميدانية لدراسة فوائد استخدام التقنيات التعليمية حالياً في تطور التعليم في دولة الإمارات العربية المتحدة وكيفية الاستفادة من التقنيات المتواجدة لتحقيق فوائد أكبر من منظور كل من المعلمين والطلاب في المرحلة الإعدادية والثانوية في مدارس إمارة دبي.

كانت منهجية الدراسة نوعية وكمية، كما قمت بالاطلاع على التقنيات التعليمية في البلدان الأخرى، وحضرت مؤتمر دولي حول استخدام تقنيات المعلومات والاتصالات في التعليم للتعرف على التقنيات الحديثة التي أثبتت نجاحاً في قطاع التعليم في مختلف دول العالم، بعد ذلك قمت بإجراء دراستي الميدانية التي كانت عبارة عن استبيانات ورقية وزعت على المعلمين والطلاب في مدارس إمارة دبي، وحصلت منها على عدد 508 استبيان معبأ بالكامل قمت بتحليلها كما سيرد لاحقاً في هذه الرسالة.

توصلت من خلال هذه الدراسة إلى نتائج ودلالات جديدة منها أن المدرسين والطلاب المشاركين في هذه الدراسة يشعرون بالأثر الإيجابي لاستخدام التقنيات الحديثة في التعليم في مدارس إمارة دبي، كما أن المدرسين والطلاب لديهم المهارات المطلوبة لاستخدام هذه التقنيات، وهم على استعداد تام لقبول تقنيات جديدة أثبتت نتائج إيجابية في دول أخرى في مجال التعليم والتعلم، إلا أننا بحاجة إلى توفير فرص تدريب مهنية للمعلمين تساعد على استخدام التقنيات الحديثة في مجال التعليم، كما أن المدارس يجب أن تشجع الطلاب على استخدام التقنيات الحديثة في التعليم وذلك بتوفير الأجهزة والبرمجيات اللازمة والسماح للطلاب باستخدامها للأغراض التعليمية.

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Chapter 1

Introduction

1.1 An Overview of Educational Technology

Educational technology can be defined in many ways. The common idea of Educational technology is computers, but in my opinion it exceeds only stand alone computers to combine different applications and tools such as cell phones, iPads, digital cameras, internet applications, online wikis, blogs, social networking websites and many other means that can be with or without using a computer.

1.2 Educational Technology in Dubai School

Dubai is changing- from the economy, the environment to medicine and education, there are new ideas navigating. And in this new world, one thing is transforming everything- globalization. It seems that globalization has changed the way things are done, accompanying in what is now known as global society. As such, it is important to gain new knowledge, skills and character in order to perform, survive and thrive in this new world. In a time of YouTube, Facebook and iPad, it is evident that new technologies are useful in helping individuals be equipped in this new global society. Technology is changing everything, even in education. Technology makes it possible to students to learn in ways beyond the traditional classrooms.

The use of technology in the instructional setting is not a new idea, but advances in computer and other hardware technologies have made it possible to embed instructional technology in education. Schools at level are installing technology in the classroom that allows the instructor to access software tools, the Internet, and audio and video resources from an integrated, centrally-controlled system. Hence, it is essential to recognize the impact of technology on how students are learning in the classroom through technology.

Educational technology improves learning and prepares students for today's and tomorrow's workplace, which supports the need to expand the use of these technologies in education. This technology use is required to enhance the opportunities of today's students and provide them with the tools for learning and competing in a global workplace (Butzin, 2001).

While teachers may not always use technology in the classroom, they express interest in technology use. However, they also report barriers to this use, such as a lack of time and a lack of ability to integrate technology effectively in the classroom (Pierson, 2001). Literature findings regarding reasons for teachers' lack of technology use in the classroom are inconsistent. Therefore, it is important to understand, from the teachers' perspective, why they are not using technology in the classroom. Study results do, however, support the conclusion that effective teacher training is required to help educators learn how to use technology in the classroom (Kingsley, 2007).

The infusion of numerous applications of technology on education only indicates the vast use of technology in everyday lives. In this age, it is something that is welcomed and appropriate but its effect will only be seen many years from now.

1.3 Thesis Objectives

This research is intended to investigate the following:

1. Describe how education in Dubai is improved with the use of educational technology and how it can still be improved.
2. Discuss what can be added to the education technology in the Dubai, and what will be the value.

Additionally, the following will be investigated:

1. The differences in views expressed by the teachers, and students with respect to:
 - The extent of availability of educational technology.
 - The extent of using educational technology in the classroom.
 - Obstacles which hinder the full utilization of educational technology.
2. The differences in views between the teachers and students regarding:
 - The significance of using educational technology.
 - Evaluation of educational technology available.

1.4 Significance of the study

The problem is significant since there is a lack in using technology at Dubai's schools' classrooms which prohibits students from receiving the benefits of this technology use. Technology in the classroom has the potential to increase positive student outcomes and it is essential to provide today's students with optimal opportunities. Thus, this study's findings will provide information on overcoming this problem, by revealing reasons why teachers and thus students do not use technology and what needs to be done to change this outcome. Study results are needed for the design and implementation of future technology training and support programs for Dubai teachers. Findings will also help guide future research.

1.5 Statement of the problem

Dubai Government has invested a great amount of money to provide centers and workshops to advance educational technology in an effort to train teachers hopefully to improve the technology use for the teaching-learning process in Dubai schools. This is because Dubai government realized that the integration of technology may be considered an essential factor when attempting to enhance the teaching-learning processes of future educators. Attitudes and perceptions toward integration of technology impact the level of technology use in classroom instructions.

This study attempted to explore how education in Dubai is improved with the presence of technology as perceived by the teachers and students. It will also try to find out the perceptions of students and teachers on what can be added to the educational technology in Dubai in an effort to identify the possible added value of using technology in the classroom.

1.6 Research questions

Four research questions on the education technology questions in the Dubai were derived from the areas identified above:

1. How education in Dubai is better with the presence of technology?
2. What can be added to education technology in the Dubai, and what will be the value?
3. Will Dubai's teachers and students accept new educational technology tools?

4. What are the barriers in integrating better educational technology in Dubai?

1.7 Statement of hypothesis

The major hypothesis was that there will be overall improvement in education at both government and private schools from grade 7 to 12 in Dubai, based on the students and teachers surveys regarding technology education.

1.8 Thesis structure

The next chapter will study the literature and other similar or related studies done in other countries and in Dubai as well, I will talk about the technologies used successfully in education worldwide empowered with references and studies from all over the world, then I will talk about the barriers faced educational technology projects worldwide. The 3rd chapter will talk about Education in Dubai, steps taken to develop the educational system and efforts done so far to integrate technology in education, and the barriers that faced the growth of educational technology. This will be followed by my research methodology, results analysis, findings and conclusion.

Chapter 2

Literature Review

Review of the previous studies related to this research can be organized into the following topics: available technologies for the integration in education worldwide, successful integration of technologies in education, barriers faced worldwide educational technology integration, and some proposed worldwide suggestions; a summary and comments. The following is a summary of findings associated with these topics.

2.1 Available Technologies for Integration in Education Worldwide

There is a wide range of technologies available for the integration in education worldwide such as:

2.1.1 Electronic Mail and Chat technology

Electronic mail and chat technologies are two of the oldest and most used internet technologies, they allow one-to-one conversations and file sharing between students, teachers, or between teacher and his students. Moreover chatting tools can be used by the teacher to hold online office hours, revision sessions, or group discussions (Adams & Freeman, 2003).

2.1.2 Video Conferencing System

This technology provides real time interaction with two ways video/audio communication between several parties, which can be utilized well for educational purposes in many ways such as conducting distance lessons and lectures, offering online office hours, inviting guest speakers to the class who is living in different country, working with other team members on team work projects, and any other innovative ideas that students and teachers can come with to use this technology for learning and teaching.

2.1.3 Web 2.0 Technologies

This includes a wide range of technologies which can be used effectively to enhance education, such as: blogs, wikis, network games, and social networking websites which include Facebook, Hi5, Twitter, etc. A recent paper that reviewed the literature for the years 2007 & 2008 found that blogs and wikis are the most widely used technologies to enhance education, followed by podcasts which I will discuss in more details below (Liu & Others 2009).

2.1.4 Blogs

Is an abbreviation for the words Web Logs, it has the same format of a personal webpage but with the ability to publish a topic and get ideas and comments from visitors. Blogs support text, images, audio, and video. So it can be used to form a discussion group between students and teachers, moreover it can be used to submit work and assignments and comment on other students' work.

2.1.5 Wiki

It's a collaborative publishing tool such as the famous online Wikipedia, it uses the concept of "Open Editing" so any website visitors can add to the published content using his normal web browser, it can be used to create huge knowledge base from collaborative work. Moreover, it can encourage knowledge creation and sharing among students (Liu & Others 2009).

2.1.6 Social Networking Websites

Which are being used widely among Dubai schools' students and even teachers on daily basis for personal means, however a lot of studies (i.e. Saunders, 2008; Teclehaimanot & Hickman, 2009; Richards, 2010; Grant, 2008) found that they are being used successfully worldwide as teaching and learning tools; as they can be a good help for distance learning courses, publishing students' work to be accessed by other students, spreading out quizzes or questions for students. In short they offer easier communication and more interaction between students and teachers in the same class or all over the world.

2.1.7 Podcasts:

The word podcast comes from a combination of the 2 words broadcast and (iPod) which is a device to play media files. Podcasting in education means recording lectures as a video or audio file and sharing it over media devices or laptops so students can access the class at anytime and anywhere (Liu & Others 2009).

2.2 Successful Integration of Technologies in Education

Roschelle et al. (2001) have analyzed “the various ways computer technology can be used to improve how and what children learn in the classroom” (p. 2). The researchers note that in the past century considerable progress has been made in discovering how children learn best:

“Learning is most effective when four fundamental characteristics are present: (1) active engagement, (2) participation in groups, (3) frequent interaction and feedback, and (4) connections to real-world contexts”. (p. 5)

With recent advances in networked technologies, students are now able to use the computer as a social and collaborative enterprise.

There are numerous applications of technology used in the academe to encourage learning. These tools help not only the teachers in relaying content and skills to the students but also foster a unique platform for students to facilitate student engagement. Below most successful common tools:

2.2.1 Digital communication

The most common form of technology used at schools is digital communication. This may be done via obtaining information and lesson plan on the Internet, using the Internet to share information (Bolick, Berson, Coutts and Heinecke, 2003). Some also encourage the creation of newsgroups, online discussion boards, and blogs to increase students’ interaction as well as provide them more accessibility.

2.2.2 Internet

Teachers capitalize on the Internet because it is one mode, if not the main mode, of communication in the 21st century. An example which shows how technology assists students learning is through digital archives. Digital archives make it possible for teachers and students to retrieve historical materials from the Internet. As these are primary sources, students are able to get their hands (at least digitally) on pertinent raw materials which can be used for presentation and analysis.

2.2.3 Online instruction or courses

Educational technology, when integrated into the classroom, seems to increase adolescent literacy achievement (Sternberg, Kaplan, & Borck, 2007). Literacy for this age student is in a state of crisis nationwide, with over eight million students in fourth to twelfth grades struggling to read. These students are unable to meet minimum standards for other content subjects as well and are at risk for dropping out of school. Further, students today must be technologically literate to compete in the marketplace. By 2006, half of the states had virtual schools and virtual learning with Internet-based courses for high school students, in which courses are provided online, with benefits for students and teachers.

Teenagers in many countries have what they need to become fully literate with the help of technology practices and applications (Sternberg et al., 2007). This state seeks to ensure that teenagers become proficient in new literacy practices related to information and communication technologies with curriculum that helps to prepare students and their parents to use these new technologies. A pilot study was conducted in Connecticut to determine effects of online instruction for students who drop out of high school; courses were offered to help students complete their GEDs. The students were successful in their online coursework with higher completion rates than were found in the traditional setting, the study showed.

2.2.4 Multimedia presentation

As previously mentioned, multimedia presentation is also an instructional technology. A multi-media presentation integrates video, audio, pictures, text and sometimes even user interactivity, especially when it is viewed on the Internet. Multi-media presentations can include animated media-text, slide shows and even record voice-overs.

Furthermore, they can be transferred on CD/DVDs and into the Internet. Student can collaborate in creating multi-media presentations. Such presentations help students share their knowledge on a topic through a rich media. Furthermore, the proliferation of video software makes it possible for students and teachers to capture digital movies. Teachers can ask their students to create movies on historical time period or an important person in history. Likewise, videos can be used to reflect on the current event or social issues. Documentaries are a good example of making the most of video software tools. It is a good instrument to increase social awareness among students.

2.2.5 Mapping software

Another technological application used in schools is the concept mapping software. As the term suggests, the software is designed to help students in brainstorming, organizing and creating flowcharts and diagrams. Through templates, students can create hierarchical outlines, among other things. Students also use concept mapping software to analyse things, show causation and even compare historical events.

2.2.6 Video conferencing & blogs

Video conferencing and blogs are also technology applications used in schools. Through video conferencing, students are able to grasp the concept of cross-cultural awareness, especially when the videoconferencing involves individuals from other cultures, such as Dubai students engaging with Singaporean students. Although they are on the opposite side of the world, these students are able to interact and learn about each other's culture.

On the other hand, blogs are very common nowadays. In the academe, some teachers create blogs, bringing about discussions with students. Blogs are also used in teaching as it fosters academic interaction between students and teachers beyond the classroom.

2.2.7 Computer-assisted instruction (CAI)

Computer-assisted instruction (CAI) plays a critical role in schools today and is important in the teaching and learning of subjects such as science and mathematics (Leonard, Davis, & Sidler, 2005). Computer simulations are used to teach high-level thinking skills, which improves student achievement levels while increasing student motivation. A meta-analysis of 12 CAI studies from 1985 to 1998 showed that human intervention was more effective than computers for students with special needs, but this did not address the use of CAI as a supplement to teacher instruction for even greater student learning.

The use of CAI to supplement regular teacher instruction in mathematics has been shown to result in significantly higher scores in algebra (Leonard et al., 2005).

2.2.8 Audience Response System (ARS) / Clickers

A number of instructional technology innovations have become increasingly common in classrooms from elementary schools through graduate-level work. When used in educationally advanced ways, interactive classroom technology supports all four centeredness as described above. By promoting the more frequent use of formative assessment resulting in more accurate collection of data regarding student understanding, teachers have a better sense of what students do or do not understand. Connections among concepts can be made more readily. The focus of the classroom shifts from having a teacher lecture to having students engage in dialogue with one another and with the instructor. A sense of classroom community is developed that recognizes and honours the contribution of all students.

Sometimes referred to as audience response systems (ARS), interactive classroom technologies encompass a wide variety of specific hardware technologies. Many university lecture halls are being fitted for wireless communicators called “clickers.” A clicker system generally consists of an IR (infrared) or RF (radio frequency) network to connect a central computer with a number of small handheld devices. The devices, usually smaller than a deck of playing cards, consist of a wireless transmitter and up to ten buttons, depending on the model. To use a clicker system, the instructor activates the clickers, poses a question, and provides time for students to respond. Various forms of presentation software, course management systems, or proprietary display software are used to provide students with the question prompt and reveal aggregated responses.

Students use the handheld devices to submit a response, and responses are tabulated and stored. With many systems, the teacher and students can then quickly view a graph depicting how many students chose which response (Burnstein & Lederman, 2001; Burnstein & Lederman, 2003; Caldwell, 2007; Skiba, 2006). Skiba (2006) describes the benefits of using a clicker system as encouraging responses from all students without fear of being incorrect, rapidly aggregating data involving multiple choice responses, increasing dialogue between student and teacher or among students, and promoting active learning in the classroom. Further, teachers are equipped to provide better feedback regarding student learning. Ribbens (2007) describes similar experiences, citing his use of aggregated student responses to make rapid decisions whether to re-teach or move on to a new topic and the ways in which he facilitated open discussion and collaboration.

Most studies of clicker systems have been in undergraduate or professional school lecture halls. Many of these studies have focused on affective aspects of instruction. For instance, Medina and colleagues (Medina et al., 2008) used clickers in pharmacy classes on two different campuses simultaneously. The instructors faced the challenge of instruction in two locations physically removed from one another. Clicker technology was investigated as a potential way to increase student engagement, particularly in the remote classroom. The authors found that the students in both settings did appreciate the active learning that they attributed to the use of the clicker system, and preferred uses of the clickers that did result in graded assessments.

The instructors reported that they found knowing more about student understanding to be very useful (Medina et al., 2008).

Similar results were found in a study of twelve university courses using clicker technology for the first time (Graham, Tripp, Seawright, & Joeckel, 2007). In this study, students were surveyed with a variety of measures to determine their attitudes and beliefs regarding the use of the audience response system. Students preferred uses of the clickers that led to their own self-assessment and the instructor learning more about the class, as opposed to the clickers being used for grading and attendance purposes. The surveys also revealed that students were concerned about the cost of the clickers and whether they would be worth the cost, considering the amount of use. Some students also indicated that they felt that instructors would use the system as a way to avoid the “busy work” of grading quizzes or to incorporate attendance grades as a way to punish students (Graham et al., 2007).

While these studies highlighted the positive benefits (and some potential concerns) of using audience response systems in large lecture halls, they did not address the issue that is central to formative assessment: did the students participating in the technological innovation learn more? Various other studies have examined clicker technologies by measuring student progress on periodic quizzes and through the use of common final exams. In undergraduate business classes, a quasi-experimental study comparing the immediate feedback of quizzes scored with clickers to traditional quizzes graded and returned the following week showed a significant increase in student achievement (Yourstone, Kraye, & Albaum, 2008). However, it should be noted that the intervention here was not just the use of the clicker technology but also class discussions immediately following quiz scoring. The relative contributions of students seeing how they compare to their peers and discussion about misconceptions and misunderstandings to the increase in student achievement are not clearly understood (Yourstone et al., 2008).

Lasry (2008) also conducted a direct comparison between two undergraduate introductory physics classes at a community college, one using clickers and the other using cardboard flashcards to indicate their responses. He saw no significant difference in the student achievement gains when comparing pre-test and post-test scores. Lasry attributes this absence of a difference in treatment to the ineffectiveness of a technological innovation (Lasry, 2008). However, several aspects of this study present challenges to the conclusions. First of all, the finding of no significant difference is based on a gain score, the calculation of which is not explicitly described. It appears to be based on the overall class averages on pre-tests and post-tests rather than individual paired student difference scores. Second, the intervention in these classes is not just the presence of cardboard flashcards versus electronic clickers; both types of classes utilized a strategy described by Mazur (1997) as “peer instruction.” In peer instruction, direct lecture-based instruction is interspersed with specific task prompts for students. They consider their responses individually then attempt to convince a neighbour, followed by an opportunity to revise their initial responses. After polling the class (show of hands) additional discussion takes place as needed (Mazur, 1997). In Lasry’s (2008) study, this educational technique is the norm. His classes consist of about 40 students, allowing the visual aggregation data in the form of raised hands or flashcards.

By contrast to these findings, Crossgrove and Curran (2008) found a significant difference in the achievement scores of non-majors enrolled in an introductory college biology course using clickers compared to a non-clicker class. Retention of biology content after four months post-instruction was also significantly different compared to classes with no clickers used. A similar but lesser effect was seen in a second year genetics course for majors. More specifically, the increases in student achievement were found to occur across the major cognitive domains of Bloom’s Taxonomy. The authors do also suggest that some of the difference may be due to the active learning strategies that were used in the courses (Crossgrove & Curran, 2008).

2.2.9 Computer games

McDonald and Hannafin (2003) reported on the use of Web-based computer games to meet the demands of high-stakes testing. These authors stated that Virginia has standards of learning with curriculum objectives for each grade level in core subjects and those students must reach targeted grade-level proficiencies. A web-based review tool in the format of popular television game shows was developed by one of the authors to help students in one school. The class that used the program consisted of 22 students with 12 girls and 10 boys. A comparable third-grade class included 21 students in the same school who did not use the software but took the same exam. Two game formats, “Who Wants to Be a Millionaire” and “Jeopardy” were used to teach social studies. This format was familiar and fun, which offered an engaging atmosphere to help students learn. A separate game was created for eight social studies topics and immediate feedback was provided throughout the game.

McDonald and Hannafin (2003) used a mixed-method study to assess students in a third grade class who used the game to review for standardized tests, comparing outcomes with students from a class that used traditional methods to prepare for the test. Students in the Web-based review treatment scored higher on the test than the control group but findings were not statistically significant. The use of educational technology did, however, promote higher-order learning outcomes with increased meaningful dialogue among students. The computer games were able to identify student misconceptions, leading students to develop a deeper understanding of concepts.

2.3 Proposed Worldwide Suggestions

Teachers are expected to be prepared for the revolution in information access brought about by the ICTs for their continuous learning and professional development (College of Education, 2001). Achieving this goal involves exposing teachers to technology-based learning experiences that show the obvious applications of ICT technologies in education (Kearsly & Shneiderman, 1999).

Below are some proposed suggestions that I gathered from various referenced studies worldwide as well as from attending the International Conference on Information Communication Technologies in Education (ICICTE 2009) in Greece.

2.3.1 Provide a strength information and access to online tools

The notion of an Online Learning Community systems (OLC) as a technology supported environment is suggested to provide teachers with opportunities to experience creative use of ICTs in education, as well as enhance interaction and asynchronous online tools, teachers can be engaged in reflective discussions, accessing various information resources, and constructing and disseminating knowledge (Schlager & Schank, 2007).

2.3.2 Increase technology acceptance for learning and educational purposes

Furthermore, engaging in an OLC is suggested to enhance their technological proficiency by integrating ICTs into their learning and facilitate introducing learning technologies in context, not just basic computer literacy (Boling, 2003). More importantly, it would increase technology acceptance for learning and educational purposes which can have a long term effect on teachers on their continuous learning (Yu, 1998; Kenny, 2003).

Points below introduce themes that emerged after reviewing relevant research on the effectiveness of teacher electronic networks and online educational technology:

2.3.2.1 Technology use support

Expand opportunities to learn using ICTs technologies in context (i.e. sending and receiving electronics messages, interacting using synchronous and asynchronous tools, searching the World Wide Web to access reference materials and/or conduct research electronically, view or download online materials, using computer applications to prepare and complete work such as word processor, graphics program, etc. and share those works electronically with others) (Boling, 2003, Hew & Cheung, 2003, Kenny, 2003).

2.3.2.2 Learning Support

- ✓ Increase access to learning opportunities and educational resources.
- ✓ Facilitate sharing of ideas and disseminating of knowledge.
- ✓ Encourage reflective discussions and collaborative learning (Roddy, 1999).

2.3.2.3 Social support

Infuse Sense of Community and connectedness (i.e. feel less isolated, increase the flow of information among learners to promote relationship, receive support and feedback from others, trust others in the course) (Cohen 2000; Dede, 1996). Overcome difficulties of time and space that increase connectedness (Zhao & Rop, 1999).

2.3.3 Training Professionals for Technology Use

There is a need for a collaborative process to help train and support teachers in their use of educational technology (Murphy, Richards, Lewis, & Carman, 2005). Murphy et al. noted that there is a crisis regarding the gap between teacher preparation programs and the need to implement educational technology in the classroom.

2.3.3.1 Definition of Technology for Educators

The term “technology” for educators needs to be redefined (Plair, 2008). This term includes the use of computers, handheld devices, and multimedia equipment (voice recorders, graphic calculators, video projectors, and cameras). Any device with a microchip would be called a technological device. Thus, technology is no longer referring to the use of a keyboard and a central computer. Schools today can no longer avoid the need to use the many technology-related tools available.

2.3.3.2 Importance of training Professionals:

Maher and Jacob (2006) studied 13 teachers enrolled in a program for practicing teachers. Computer conference interactions were recorded and examined along with teacher self-reports of their qualitative experience. Findings were that some teachers benefited from the use of computer-mediated communication with increased reflection and use of alternative cultural perspectives in the classroom. However, problems included lack of time and energy, technological complications, and the preference for face-to-face interactions.

Wang, Ertmer, and Newby (2004) reported on the outcomes of an introductory education technology course at a university designed to help pre-service teachers increase their self-efficiency to integrate technology into the classroom. The study examined outcomes for 280 students in the course. These students were assigned to one of three experimental or one control condition. Pre- and post-surveys were gathered to examine beliefs of self-efficacy after the course. Findings showed that when vicarious learning experiences and goal-setting were present, there was a more powerful effect on self-efficacy for technology integration, compared to conditions with only one of these factors. Thus, both of these factors are necessary to develop optimal confidence in teachers regarding their ability to use technology in their classrooms effectively.

Matzen and Edmunds (2007) presented an evaluation of The Centers for Quality Teaching and Learning, which is a professional development program for teachers to help them develop their ability to use technology in the classroom. The program included 7 days with 50 hours of intensive professional development that connected practices, curriculum, and use of computers. Quantitative and qualitative data were gathered to evaluate teacher outcomes. They found that teachers increased their use of technology and became more constructivists in their orientation. Teachers reported making substantial changes in their instruction practices following this training. Comments from participants included, “I think of myself as a very traditional teacher. I have started to teach and think outside the box.” and “I have changed my instructional practices . . . my role from information server to coach, helper, manager, and advisor” (p. 426).

2.3.3.3 Effective strategies of successful training

Access to computers and related training is no longer a problem; rather, it is teacher beliefs that stand in the way of computer use in the classroom (Park & Ertmer, 2007). Park and Ertmer proposed that problem-based learning is the answer to changing these beliefs. They studied 48 pre-service teachers who enrolled in an educational technology course with this problem-based learning perspective. These authors found that beliefs about technology use did not change due to this course participation. However, the course did result in shifts from teacher-directed to student-centered learning. Thus, the program did not result in expected outcomes. The authors concluded that this may have been due to sampling problems, the instrument used, and the course being too short (8 weeks) to impact teachers' beliefs. Kay (2006) evaluated strategies in the literature that are used to ensure that pre-service teachers receive the training in technology integration they require. The author reviewed 68 articles on the topic and found 10 effective strategies:

- 1) Delivering a single technology course;
- 2) Offering mini-workshops;
- 3) Integrating technology in all courses;
- 4) Modeling how to use technology;
- 5) Using multimedia;
- 6) Collaboration among pre-service teachers,
- 7) Mentor teachers and faculty;
- 8) Practicing technology in the field;
- 9) Focusing on education faculty; focusing on mentor teachers; and
- 10) Improving access to software, hardware, and/or support (p. 383).

An evaluation of these strategies showed that when four or more of the strategies were present, there was a greater effect on teacher use of computers. However, most studies had limitations in methods with poor data collection instruments, small samples or a vague sample with a lack of program descriptions, and a lack of statistical analysis or the use of anecdotal descriptions (Kay, 2006).

2.3.3.4 Effective training must meet the demands in (ICT)

Teachers need related training programs to meet the demands in information and communication technology (ICT); (Markauskaite, 2007). Good practices in ICT training programs for teachers must help them to:

- “· become competent personal users of ICT
- use ICT as a tool
- master a range of educational paradigms that use ICT
- use ICT for teaching
- understand social aspects of ICT’s use in education
- master a range of assessments that use ICT
- understand ICT policy dimensions in teaching and learning.”

Recent focus in pre-service training has gone from a general personal ICT-related capabilities perspective to the teaching of educational aspects of ICT use and the integrated use of ICT for pre-service training. Remaining issues in this training include the nature and level of general ICT capabilities and the importance of understanding these in the development of instruction competences.

This information is important for the development of ICT training programs; general cognitive and technological capabilities to perform problem-solving tasks did not interrelate. Helping trainees to integrate these capabilities in a broader problem-solving framework would help them interconnect personal experience and understanding of ICT literacy.

2.3.3.5 Barriers face professional use of technology

The Ministry of Education and Youth (2004) seek to make technology more present in primary and secondary classrooms, but this goal has not been reached. There are many barriers to reaching this objective, but for the most part, traditional teachers are failing to gain technological fluency, which hinders their use of technology. Thus, professional development programs are needed, and these must restructure how teachers gain educational technology knowledge.

Teachers must acquire this knowledge in a manner that complements and assists with the teaching of curriculum standards. Plair (2008) suggested that teachers need a “knowledge broker” to serve as an intermediary between the teacher and the changes in technological innovations. This knowledge broker would provide new levels of professional development that support traditional forms of development.

Old teachers may be resistant to using technology and they may not view this use as their responsibility (Plair, 2008). Previously, students learned about computers separately from core content curriculum, but the situation has changed and computers are being applied to all content areas. Thus, old teachers need to be aware that computers and technology include more than word processing or certain software packages. TPCK stands for technology, pedagogy, and content knowledge, a theoretical framework for the 21st-century skills required for teaching. To meet this need, technology-related professional development must take place, and even this process is changing. Longer programs have been found to be more effective at helping teachers keep up with the times, and knowledge brokering is introduced.

2.3.3.6 How teacher should act to avoid barriers

There is a need for teachers to participate in a reflective practice instead of a technical rational model (Murphy et al., 2005). With the reflective view, social-constructivist ideas prevail, which allows students to construct meaning with new experiences that use existing knowledge in a building process. The Teacher Inquiry Group also concluded that a new community of learning must be developed which requires that schools determine which teachers are using education technology effectively, in order to solicit their views on what methods are effective. This sharing of experience is important for the training of all teachers.

Teachers must collaborate to enhance the range of each, and new information must be provided to all teachers. Peer computer conferencing for teacher training results in positive and negative effects (Maher & Jacob, 2006). Peer interaction in a collaborative learning community helps support the professional development of teachers, since it increases teachers' peer interactions in face-to-face settings. However, it remains unclear how this process helps with teacher reflection.

2.3.4 Solutions Suggested by ICICTE 2009

The International Conference on Information Communication Technologies in Education - ICICTE that I attended in Greece gathered a group of international community of scholars and practitioners in 2009 to discuss the notion of marketing information abroad, including the third-world countries that have limited expertise and information in educational technology (ICICTE, 2009). The group discussed brokering knowledge to these countries. The group listed five dimensions of knowledge needed for the broker to be able to support users, which included creating knowledge, acquiring knowledge, assimilating knowledge, using knowledge, and disseminating knowledge. The ICICTE applied these roles to the professional development of teachers who require on-the-spot training. Teachers need a knowledge broker to be available when they attempt to introduce new technology lessons to students and they need this support in a timely fashion. The knowledge broker serves as an on-site resource for the teachers and helps to make educational technology a reality for them.

2.4 Summary

In summary, the literature supports the need for integrating educational technology in the classroom and research. Educational technology leads to increased learning and academic performance as well as increased computer literacy and social skills in students of all ages. While differences in computer use among different countries were common in the past, with more developed countries using it, today's educational technology should also be made available to the developing countries. Regardless of the benefits of computers in the classroom, the problem remains that teachers are not using this technology.

Reasons for this lack of use are unclear. While some report the lack of availability and access to computers as the reason for teacher non-use of educational technology, others conclude that teacher beliefs are the problem. Many teachers continue to believe that computers are not an essential component in student instruction and learning. To change these views, professional training of teachers must provide experiences with the potential to alter beliefs.

Since the literature presents inconsistent findings about reasons for the lack of teacher use of computers and technology in the classroom, more information is needed to fully understand this issue. A study is needed to determine whether teacher comfort with computer and technology use is related to their use in the classroom and whether their beliefs about the need for computers and technology to help students is related to computer use. One of the best ways to find out how a teacher feels about an issue is to ask him/her, implying the need for survey research to gather related data. Further, this study must also determine students' views about what they need to increase their use of computers and technology in the classroom, barriers to this use, and what they recommend for a program to help them change beliefs and practices and reach this goal.

Chapter 3

Education Technology in UAE

3.1 Education in UAE

The UAE educational system was established at the beginning of the 1970s, This was a main concern for H.H. Sheikh Zayed Bin Sultan Al-Nahyan, who said : "Youth is the real wealth of the nation." He intended to use the oil income to develop UAE nationals educationally and technically to be capable to serve UAE in its future growth. At that time there were around 28,000 students in UAE. Government was financing any student wishing to complete his higher education to go abroad mainly to UK and US and if possible to other Arab countries.¹

Later on The Ministry of Education and Youth established an education strategy, to be executed over the coming 20 years, to develop the educational system in UAE to be parallel with the latest international standards, focusing particularly in introducing the most recent IT resources for all education levels. ¹

IT education is a key factor for Dubai and for UAE generally. H.H. Sheikh Mohammed bin Rashid Al-Maktoum initiated an IT Education Project (ITEP) in Dubai in the year 2000, which took care of setting up computer labs in all schools, and creating a complete advanced curriculum. He is aiming to create a generation of UAE youth who are aware of technology and capable of serving the UAE needs in technology, as well as to prepare students for the 21st century jobs that requires a lot of technology education.

From the first days of its development, the UAE government realized how important the country's youth to its future development is. The government is always pushing to develop and progress techniques and infrastructure in order to take advantage of the economic growth potential that a qualified workforce represents (Al Maktoum Official Homepage, 2010).

¹ His highness Sheikh Mohammed Bin Rashed AL-Maktoum Official website. 2010: [http://www. Sheikhmohammed.co.ae](http://www.Sheikhmohammed.co.ae)

Lately on the second week of March, 2009, the UAE Ministry of Education organized a twin events "Gulf Educational Supplies & Solutions-GESS" and "Global Education Forum-GEF", the forum focused on four tasks: "technology and class interaction, role of technology in supporting decision makers, importance of technology and its relation to the basic educational facilities, and technology in identifying different approaches and methods in the teaching process" (Global Education Forum, 2009).

Abdullah AlAmiri, advisor to the minister of education, said "A good chunk of the education budget will go into integrating latest educational technologies in schools" This is because in the UAE the role of technology and its benefit in changing education are recognized as important.

So the technology revolution around the world resulted in huge changes in how do we live, play, work, and how do we learn as well. So we should adapt to these changes with least mental and physical stress. To facilitate this we should train the public to work with new technologies capably.

This change should happen not only to create more motivating or interesting learning environment, it should happen because there are major changes in the world that force us to change, and change fast for the sake of our economic future survival.

As we have seen lately that the international economy and ours are related which means that if a crisis happened in one fraction of the world it can have an impact for many fractions who are thousands kilometres away.

The systematic educational system specifically started in the country in 1972. Since that time, education has been developed and expanded to provide highly standardized services from the primary level to the university. Most governmental and private schools, colleges and universities are separated according to gender with a strong focus on computer literacy and on English language teaching in higher education to equip young Emirates with the necessary skills (Ministry of Education, 2003).

Arabic is the official language for learning and communication in the country. However, teaching in English is becoming the language for learning in most colleges and universities to meet the demands of the open and competitive market in the country. Thus, the education system takes the main mission to prepare youth with skills and knowledge to function effectively in the today's marketplace.

Information and communication technologies are considered important to be integrated in the education system. They have been promoted as a platform that provides opportunities for learning and training as well as support interaction and exchanging of knowledge. Learning supported by technologies is suggested to bring people of different gender, place, and background without consideration of time and not depended on time or place. Therefore, educational institutions strive to embrace pioneering strategies to integrate ICTs technologies in education.

3.2 Integration of Technology in the Education

In line with the current trends to integrate information and communication technologies (ICTs) in education, UAE emphasizes the need to use technologies in all educational levels. This emphasis comes in response to the needs to facilitated learning and teaching, and increase access to learning opportunities.

3.2.1 Procedures & programmes design by ministry of education of UAE

“We stay abreast of new technological developments and innovative learning systems so as to give our students the skills and attributes they need to succeed in a global work environment. We strive to develop who are prepared for the future, ready for the changing needs of the workplace and trained for a life ongoing learning and professional success”.

--Nahyan bin Mubarak Al Nahyan, 2004

3.2.1.1 Underline strategies to provide school with latest instructional technologies

The Vision 2020 program is one of the reform projects launched by the Ministry of Education in 1998-1999 to improve education in the country. The project underlined strategies to provide schools with the latest instructional technologies and educational resources to promote self-learning with the latest instructional technologies and educational resources to promote self-learning and continues education programs (Ministry of Education and Youth, 2004).

3.2.1.2 Providing schools with the latest ICT

The IT Education Project (ITEP) was also established in 2000 to complement the efforts for providing schools with the latest ICT through installing computer labs in all schools in Dubai and Abu Dhabi as a first stage to be implemented eventually in all other emirates. The project provided all participating schools with high-speed Internet connections and video conferencing facilities. In order to support teachers, the ITEP project established IT Academies for teacher training. Moreover, the project established an online community for learners and educators in the regions to share knowledge, and an online market for offering products from the world leading IT companies (IT Portal, 2003).

In additional to that, technology in all colleges and universities in UAE is rapidly becoming a way of life for learners and educators. Classrooms are equipped with various technologies (i.e. computers, projectors, smart boards) and wireless internet coverage giving instant access to the Internet and the World Wide Web.

This access to the Internet provided the base for the development of e-learning. Thus, teachers and learners in the UAE now possess laptops and use them regularly to meet the learning goals and development modes of e-learning (Raj & Bukey, 2002). E-learning in the literature is defined “as the use of Internet technologies to deliver a broad array of solutions that enhance learning and training” (Rosenberg, 2001).

3.3 E-learning in the UAE

E-learning is gaining momentum in the UAE ... “The major demands that urge us to bring in e-Learning programs are shortage in faculty and staff, the cultural background of male and female students, and the need to continue education”

--Abdullah Karam, 2002

E-learning has become a major priority in the UAE. The launch of the Dubai Electronic Government in 2001 caused a huge change in the steps directed toward e-learning. Although the intention of the E-government is mainly to facilitate government works, it facilitates various e-learning projects in the country such as Dubai Internet City and its Knowledge Village (Karam, 2002).

This rapid development of the country in the business and the IT industry increased the demand for innovative leaders with skills, knowledge and experiences who demonstrated leadership, confidence, and excellent communication. The education system has been required to meet the needs of a fast development society. Educational institutions, in response, are encouraged to embrace e-learning programs to provide more flexibility for learning in the country.

3.4 Barriers in the Integration of Technology in the Education Sector

3.4.1 Lack of understanding for technology

The problem, however, is that although e-learning can provide tremendous benefits, educators, students, and learning organizations need to understand this technology to use it well (Karam, 2002). Moreover, although the Internet continues to expand rapidly, most electronic communication networks are used effectively by only a relatively small proportion of educators (Wells & Anderson, 1997).

3.4.2 Teachers need more prepare and train on benefits of ICT in learning

Research on the use of ICTs in learning has been conducted and continues to be investigated. One of the most prominent areas of research has been on the use of the electronic learning networks and the online learning communities in teacher learning and preparation (i.e. Beirnacka, & Puvirajah, 2003; Brook & Oliver, 2002; Narnett, 2001; Hoadley, Roschelle, & Nason, 1999; Brown, Ellery & Campione, 1998; Schlager, Schank, 1997; Pennell & Firestone, 1996).

On the other hand, traditional teachers gain limited experience of the use of information and communication technologies and online learning networks for learning and interaction (Becker, 1999; Zhao & Rop, 2001). They posted electronic responses only because it was a course requirement (Thomas, Clift, & Sagurmoto, 1996; Rovai, 2002). The instructors' message had the highest priority, whereas their peers' messages had relatively low priority. Reflective exchanges typically occurred between faculty and students were not shared with peers, which might reinforce student teachers' perceptions that learning only comes through individual reflection rather than extended social discourse with others (Thomas, Clift, & Sagurmoto, 1996).

3.4.3 Teachers unable to get the maximum benefit of ICT

Technology used by teachers in the United Arab Emirates is not better. In a study that included 829 in-service teachers from different schools around the country, Alghazo (2004) explained that very few teachers use the Internet for collecting information and communicating with others. His study revealed that although teachers in UAE do have positive attitudes toward computer technologies; they lack the understanding of the use of the information and communication technologies (ICTs) in education (Alghazo, 2004). Teachers in UAE use computer technologies mainly for presentation, typing works sheets, and recordings student's grades. The frequency of ICTs use in these types of work—probably during their preparation programs —explains the reason for integrating ICTs in this type of work as opposed to others (Alghazo, 2004).

3.4.4 Teachers using ICT in unprofessional way

However, the claims about the power of e-learning and electronic learning networks for teachers raise even more questions when considering the findings of a recent survey completed in the US (Orr &Heaton 2007). The survey aimed to examine the level of internet usage among West Virginia teachers as a professional and instructional tool. The survey showed majority of high usage responses of internet as a personal tool and majority of low usage/don't know responses on using it as instructional tool such as asking students to access online forums/encyclopedias/ dictionaries/online libraries/lecture notes, or asking them to contribute to online blogs and wikis.

The question to be raised here is why do more teachers not benefit from, or use, the ICTs technologies to improve their learning and profession (Zhao, & Rop, 2001). One explanation offered by (Orr &Heaton 2007) is the lack of professional development on the proper use of technology for educational purposes and the limited opportunities that teachers have had to see the use of these technologies in their practice. Technology is mostly introduced as isolated literacy concepts or add-on elements.

Chapter 4

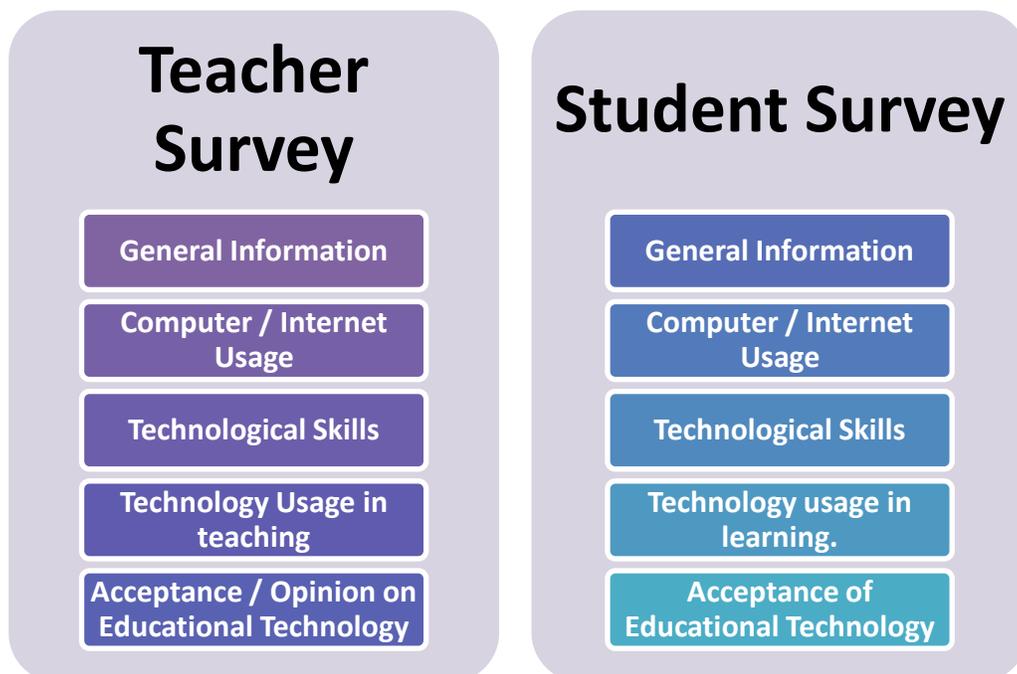
Methodology and Data Analysis

4.1 Methodology

In order to evaluate the ability of improving Education in Dubai by using different educational technology tools I had to conduct a high level research to answer the below research questions:

- Are Dubai Schools' Teachers well prepared for enhancing their usage of Educational Technology tools and techniques?
- To what Extent do teachers use educational technology currently?
- Do students prefer/accept using new technologies as learning tools?
- What are the barriers of enhancing Educational Technology?

To answer the above questions I prepared two different surveys directed for teachers and students each one divided into several different sections as described below:



The students' survey questions were distributed to some of Dubai's public and private schools and I managed to get the actual response of 402 students, as well as teachers' survey questions were distributed to some public and private schools in Dubai, Which resulted with actual responses of 106 teachers. Each survey consisted of 14 questions to be discussed for relevance in the next section.

4.2 Teachers' survey

The teachers' survey consists of 14 questions (Question 1 – Question 14) divided into four sections: General Information, computers or internet usage, technology skills, technology usage in classroom, and teachers' opinion on educational technology.

4.2.1 General Information

This section has two questions (Questions 1-2) to get more information on the type of responses that we are getting (School sector and grades teaching).

4.2.2 Teachers' Computers/Internet Usage

This section has two questions (Questions 3-4) to measure the average of teachers' computers or internet usage at home and school, as well as to measure the percentage of teachers who don't have computer / access to internet at home and schools.

From the result of this section's statistics I will have a clear idea on teachers' usage amount of computers or internet as well as I will find if they have access to the primary educational technology tools (computers and internet) at home and school.

4.2.3 Teachers' Technology Skills

This section has two questions (Questions 5-6) that attempt to gauge the teachers' skills in technology tools that can be used in education, to oversee how well they are prepared to use these technologies for teaching purposes. The measurement in this section depends on teachers' self-rating as I would like to know how teachers rate their overall skills in using technology, and how well do they use different technologies that can be integrated in education, such as social networking websites, audio creation software, video creation software, etc.

4.2.4 Technology Usage in Classrooms

The 3rd section of teachers' survey consists of three (Questions 7-9) to evaluate the current usage of technology in education. In question 7 I will identify the Software currently

being used by teachers in education; question 8 will measure the frequency of using these applications in teaching, while question 9 will identify the hardware currently being used by teachers in education.

As a result from this section I will have an idea about the most currently used software and hardware in classrooms and how often are they being used. A software and hardware list ranging from basic to advanced was provided for each question for the teachers to choose from, so I can identify the percentage of Dubai schools' teachers who are using the basic technologies in teaching (e.g. Microsoft office applications, teacher's PC), and the teachers who are using more advanced technologies in teaching (e.g. clickers, social networking websites, blogs).

4.2.5 Teachers' Opinions on Educational Technology

The 4th and last part of teachers' survey has five questions (Questions 10 -14); Question 10 listed top six barriers worldwide in applying the latest educational technology tools in teaching and asked teachers if they feel that this is a real barrier for integrating educational technology in Dubai's schools, as well as teachers can add more barriers from their point of view. This way I can have a ranking to educational technology barriers in Dubai's schools from teachers' point of view as they are a vital element in successful educational technology integration.

Question 11 listed five statements on how educational technology can be a good help for students and asked for teachers' agreement or disagreement with these statements. From the result of this question I will have a clear idea if teachers know the value added to students learning by using educational technology.

Question 12 listed four statements on how educational technology can be a good help for teachers and asked for teachers' agreement or disagreement with the listed statements. From the result of this question I will have a clear idea about teachers' opinions on the importance of educational technology for Dubai's schools and its role in teaching.

Questions 13 and 14 describe two educational technology tools (Social networking websites and Clickers) and check if teachers are willing to experience teaching using these described tools. From the result of questions 13 and 14 I can gauge teachers' acceptance for integrating new technologies in education at Dubai's schools.

Following are teachers' survey questions and answers' statistics.

4.2.6 Questions and Statistics

Question 1

Question		Statistics	
What is the school sector?		Percentage	Count
Answers	Government	68%	72
	Private	32%	34
		Total	106

Table 4.1: Question 1

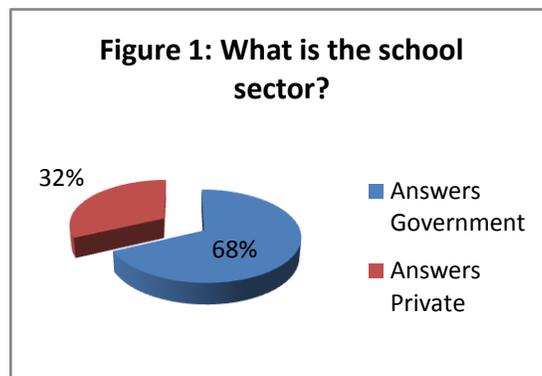


Figure 4.1

Question 2

Question		Statistics	
Which grade/s do you teach?		Percentage	Count
Answers	Grade 7	28%	30
	Grade 8	24%	25
	Grade 9	27%	29
	Grade 10	54%	57
	Grade 11	53%	56
	Grade 12	51%	54
		Total	106

Table 4.2: Question 2

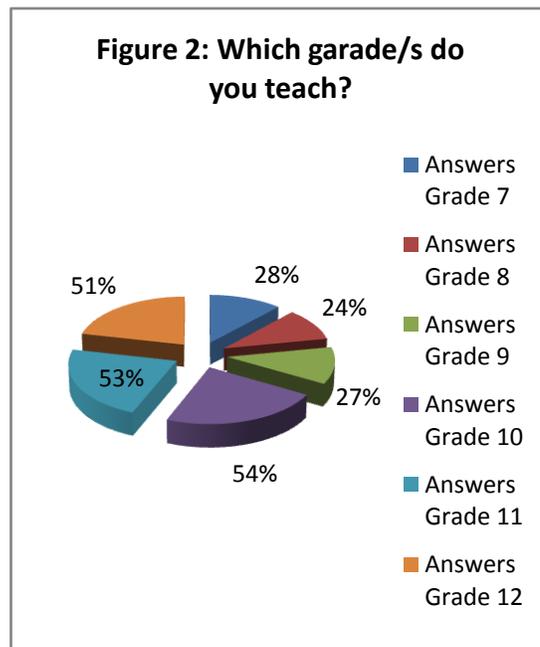


Figure 4.2

Question 3

Question		Statistics	
At home, how long do you use a computer connected to internet weekly?		Percentage	Count
Answers	Less than 3 Hours	9%	10
	3-5 hours	26%	26
	5-10 hours	20%	20
	More than 10 hours	42%	45
	I don't have internet connection at home	2%	3
	I don't have computer at home	1%	2
		Total	106

Table 4.3: Question 3

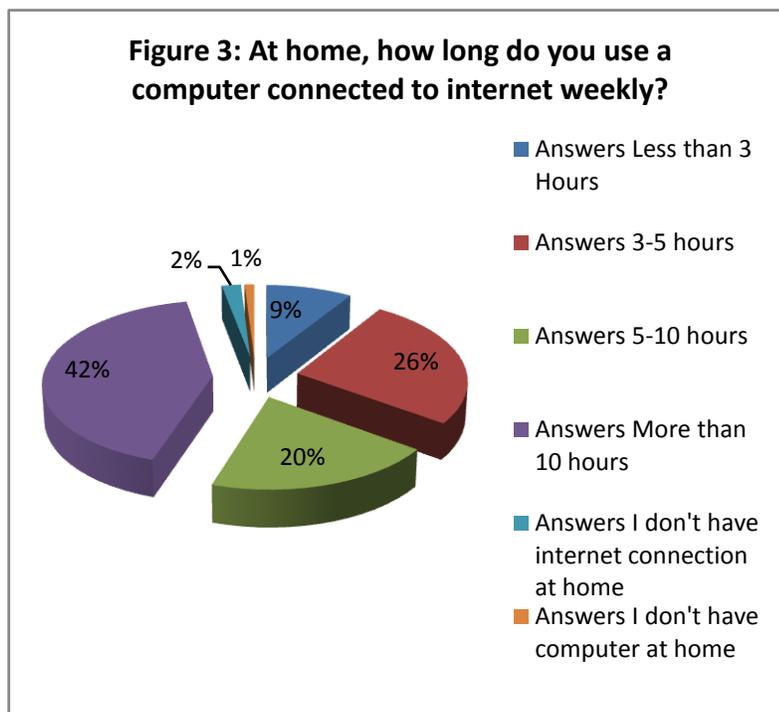


Figure 4.3

Question 4

Question		Statistics	
At school, how long do you use a computer connected to internet?		Percentage	Count
Answers	Less than three hours	25%	27
	3-5 hours	23%	24
	5-10 hours	16%	17
	More than 10 hours	28%	30
	My school doesn't provide internet access for teachers	4%	4
	My school doesn't provide computers for teachers' use	4%	4
		Total	106

Table 4.4: Question 4

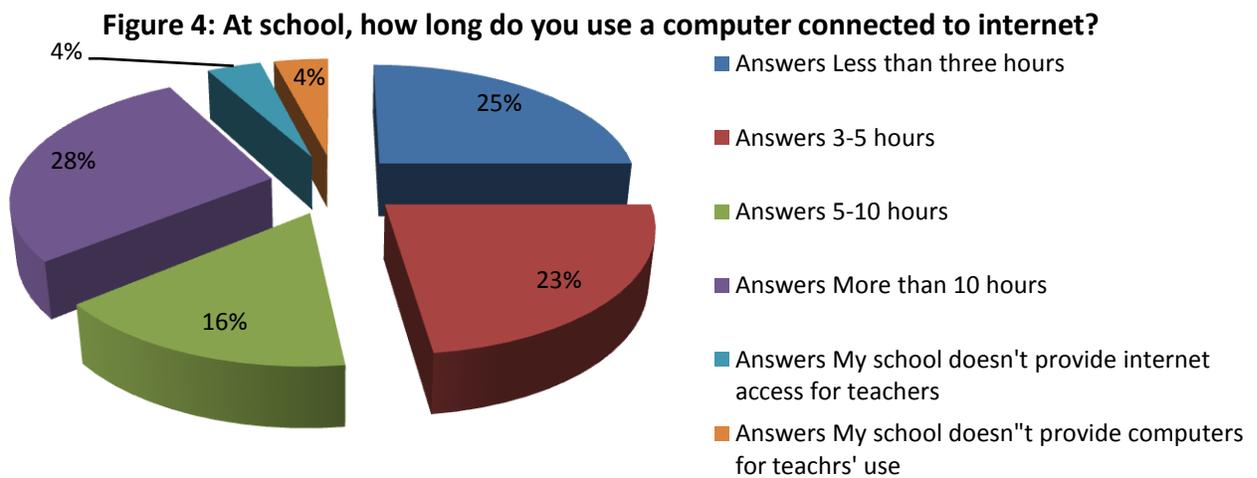


Figure 4.4

Question 5

Question		Statistics	
How do you rate your overall skill in are using technology?		Percentage	Count
Answers	Below basic	0%	0
	Basic	17%	18
	Proficient	58%	61
	Advanced	25%	27
		Total	106

Table 4.5: Question 5

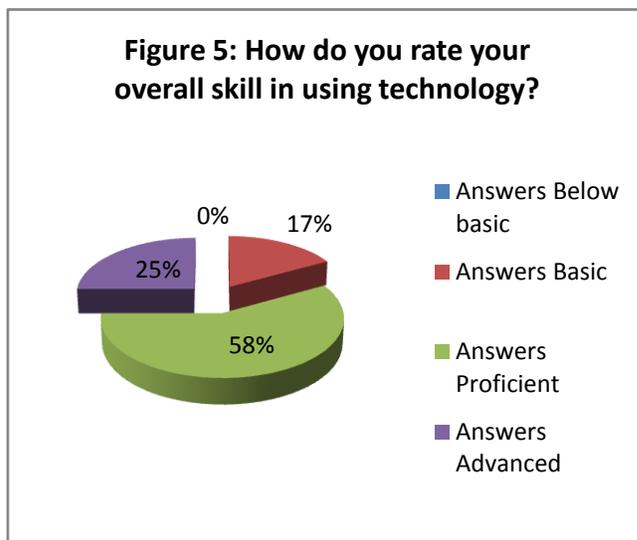


Figure 4.5

Question 6

Question		Statistics				
How well do you use the following applications?		Percentage				Count
		Expertly	Well	With difficulty	Never used it before /I Don't know it	
Answers	Spreadsheets (Excel, etc.)	40%	50%	10%	0%	106
	Presentation Software (PowerPoint, etc.)	65%	31%	3%	1%	106
	Search Engines (Google, Yahoo, etc.)	68%	26%	5%	1%	106
	Graphic Software (Photoshop, Flash, etc.)	14%	41%	28%	17%	106
	Audio-creation software (Audacity, etc.)	10%	31%	24%	35%	106
	Video-creation software (MovieMaker, etc.)	24%	32%	19%	25%	106
	Social networking websites (Facebook, etc.)	22%	30%	20%	27%	106
	Online multi-user computer games	9%	21%	22%	48%	106
	Social bookmarking/tagging (del, icio, etc.)	10%	14%	19%	57%	106
	Screencasting (Jing, Fast Stone Capture, etc.)	6%	19%	20%	55%	106
	Vodcasting (Digital cameras)	20%	31%	19%	30%	106
	Web design applications (Dreamweaver, etc.)	12%	17%	24%	47%	106

Table 4.6: Question 6

Total 106

How well do you use the following applications ?

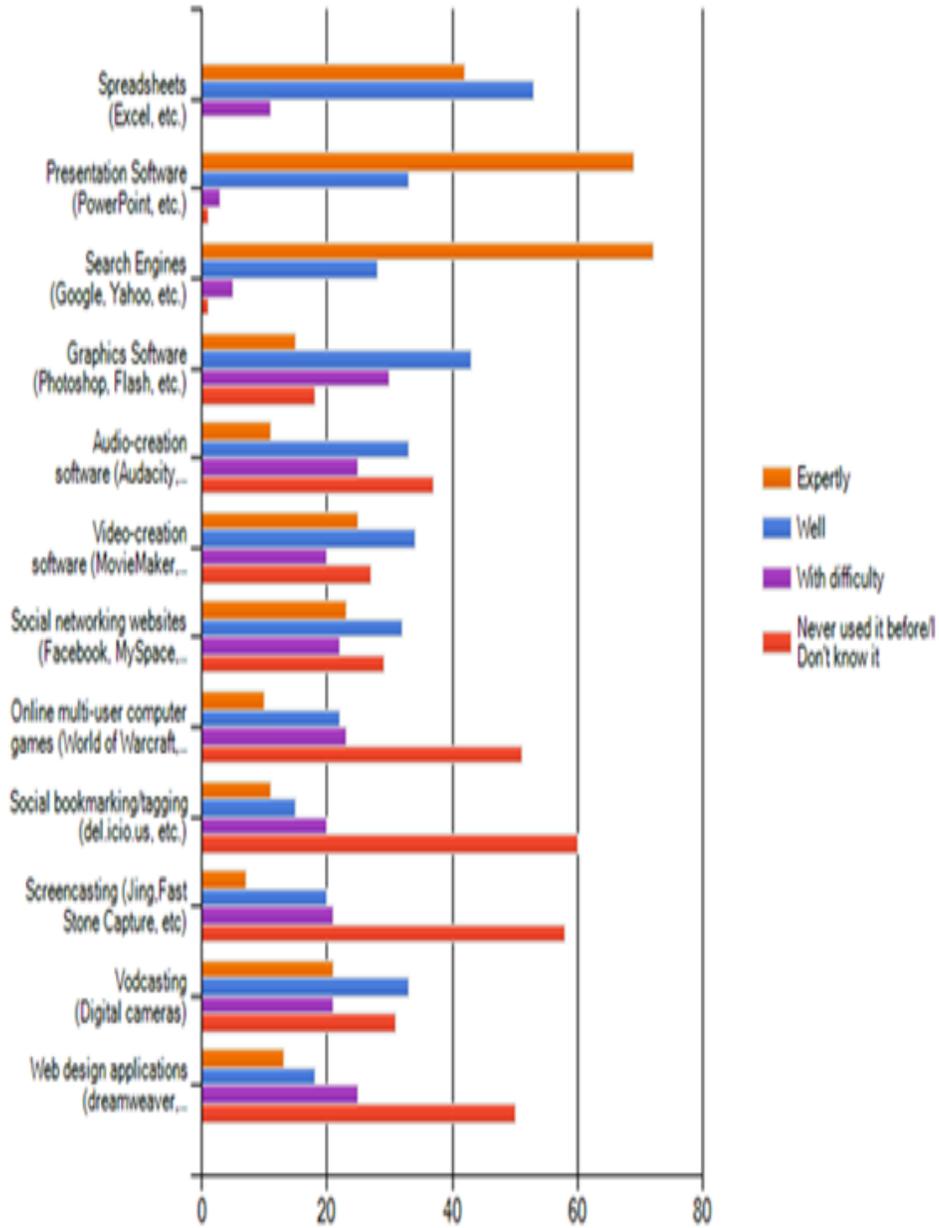


Figure 4.6

Question 7

Question		Statistics	
Please identify which of the following SOFTWARE you CURRENTLY USE in teaching?		Percentage	Count
Answers	Microsoft Office (Word, Excel, PowerPoint)	99%	105
	Wikis	21%	22
	Forums/Blogs	30%	32
	Educational Websites	89%	94
	Chat	9%	9
	Social Networking (Facebook, Twitter, etc.)	24%	25
	Audio & Video	70%	74
	Google Docs Application	41%	44
	WebQuests	12%	13
	Video Games	15%	16
	Nothing from the above	0%	0
		Total	106

Table 4.7: Question 7

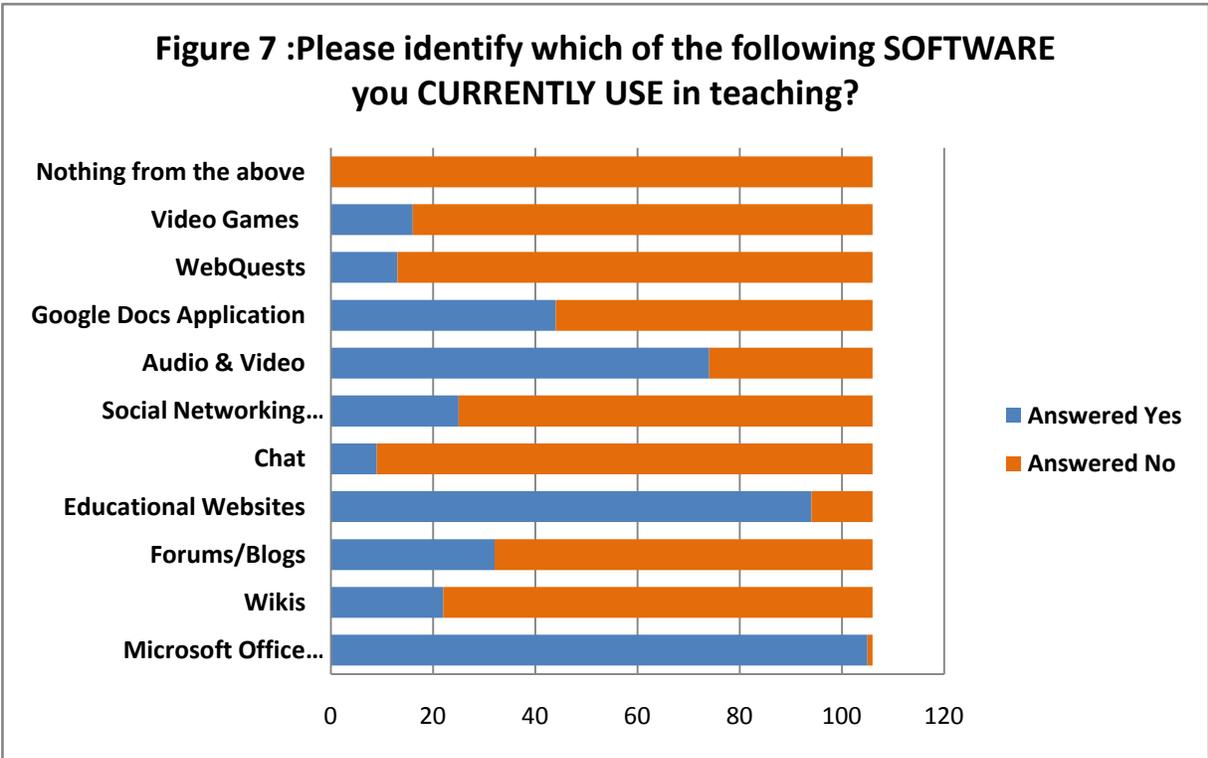


Figure 4.7

Question 8

Question		Statistics						
Approximately how often do you use each of the below applications WITH YOUR STUDENTS IN TEACHING, or you ask them to use it in their assignments?		Percentage						Count
		Daily	More than one in a week	Weekly	Monthly	Once or Twice in a year	Never	
Answers	Spreadsheets (Microsoft Excel, etc.)	7%	18%	17%	18%	19%	21%	106
	Presentation Software (PowerPoint, etc.)	18%	28%	22%	23%	8%	1%	106
	Are using the internet to effectively & Efficiently search for information	50%	29%	22%	10%	4%	5%	106
	Graphical Software (Photoshop, Flash, etc.)	7%	10%	13%	18%	13%	39%	106
	Audio-creation software (Audacity, etc.)	1%	7%	13%	10%	12%	57%	106
	Video Creation Software (Movie maker, etc.)	2%	7%	10%	20%	18%	42%	106
	Social networking websites (Facebook, etc.)	3%	4%	6%	12%	11%	64%	106
	Social bookmarking/tagging (del, icio, etc.)	1%	5%	1%	4%	1%	89%	106
	Vodcasting (Digital cameras)	5%	6%	7%	11%	19%	51%	106
	Web desing applications (Dreamweaver, etc.)	3%	4%	10%	9%	11%	64%	106
	Blogs/Forums	7%	8%	10%	11%	12%	51%	106
	Wikis (Wikipedia, course wiki, etc)	9%	8%	13%	11%	13%	44%	106
	Simulation or educational games	2%	4%	16%	13%	20%	45%	106

Table 4.8: Question 8

Total 106

Approximately how often do you use each of the below applications WITH YOUR STUDENTS IN TEACHING, or you ask them to use it in their assignments ?

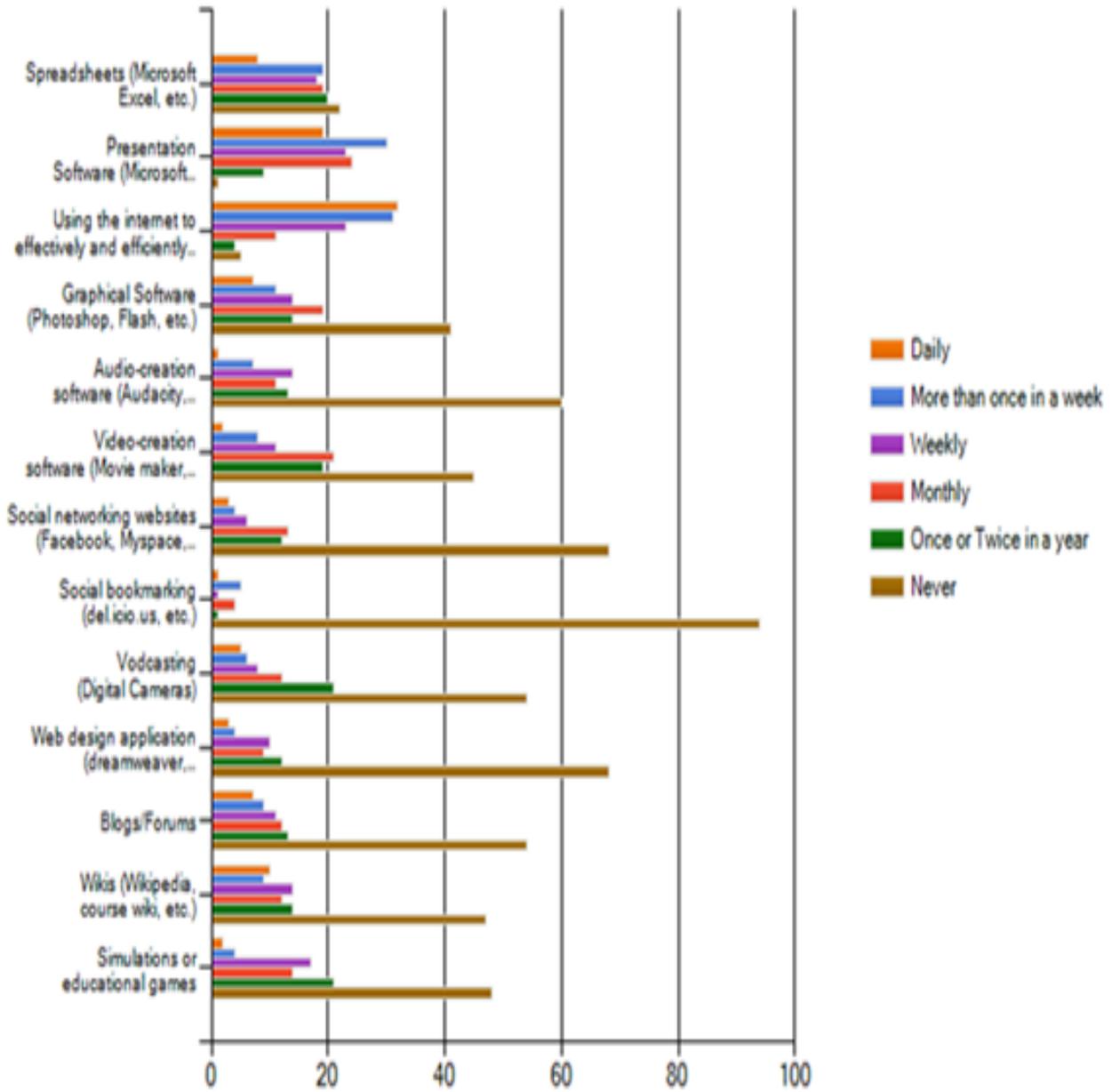


Figure 4.8

Question 9

Question		Statistics	
Please identify which of the following HARDWARE you CURRENTLY USE in the classroom for teaching?		Percentage	Count
Answers	Teacher computer/laptop	83%	88
	Student in class computer/laptop	41%	43
	Computer lab	55%	58
	Overhead projector	84%	89
	DVD player	41%	43
	Smartboards	17%	18
	PDAs or iPods	9%	10
	Cell Phones	10%	11
	Clickers (student response system)	5%	5
	Digital/video cameras	22%	23
	Nothing from the above	4%	4
		Total	106

Table 4.9: Question 9

Figure 9 : Please identify which of the following HARDWARE you CURRENTLY USE in the classroom for teaching?

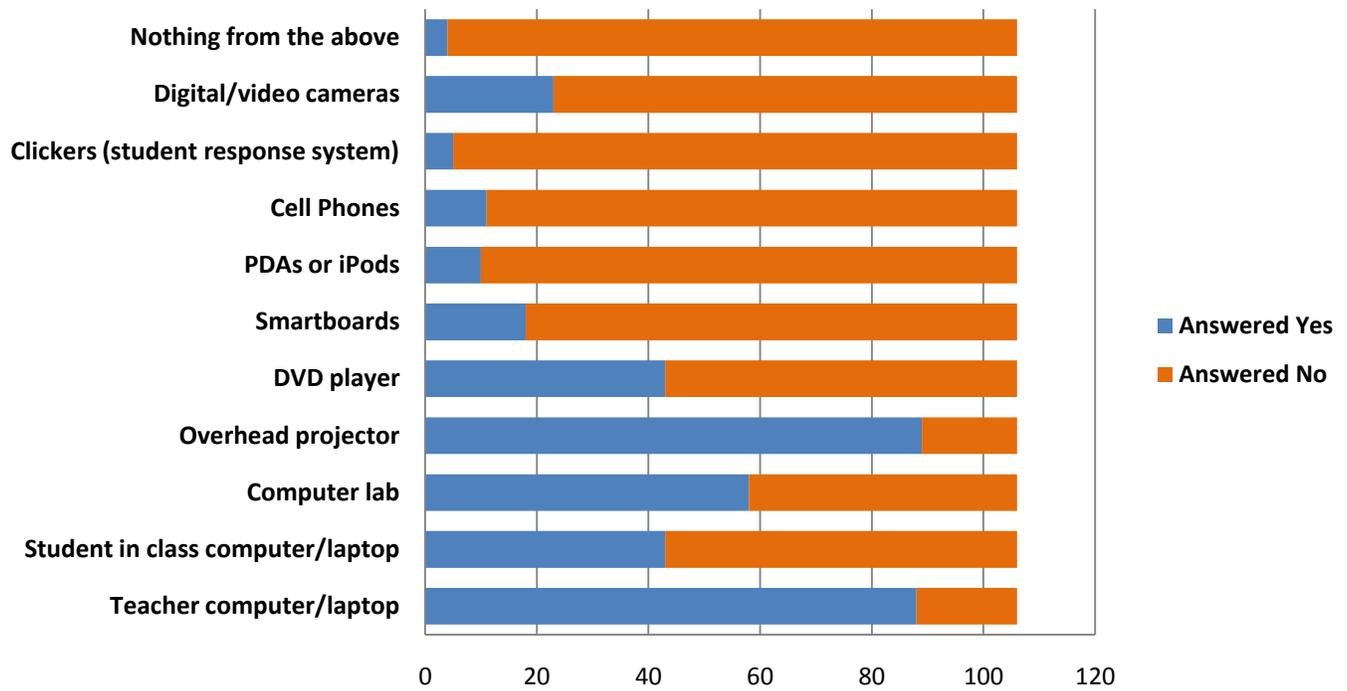


Figure 4.9

Question 10

Question		Statistics	
In your opinion, what are the factors that act as a barrier for using advanced educational technologies in your teaching?		Percentage	Count
Answers	Lack of necessary technologies hardware/software in schools	78%	80
	Lack of professional development & training for teachers	81%	83
	Lack of administrative support	46%	47
	Doubts about technology's usefulness in teaching your courses	29%	30
	Student resistance to technology	18%	12
	Difficulty keeping up with changes in technology	23%	24
	Other		14
		Total	106

Table 4.10: Question 10

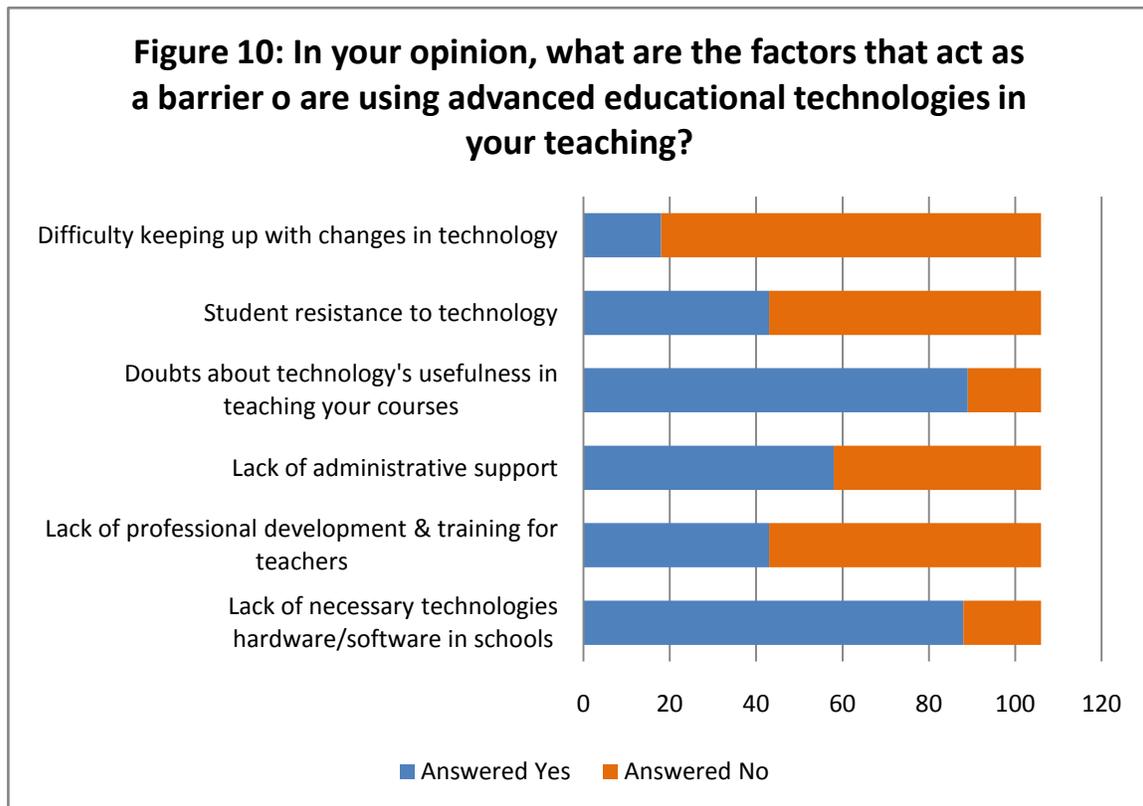


Figure 4.10

In the above question I kept a room for adding additional barriers from teachers' point of view, I got the below reasons considered as barriers to use advanced educational technology tools:

- **Teachers' resistance to technology.**
- **High Cost.**
- **Lack of Ministry Support.**
- **Low budget.**
- **Student's resistance to beneficially use the computers for the sake of education.**

- **Over-loaded curriculum.**

Question 11

Question		Statistics					
Do you agree with the following statements?		Percentage					Count
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
Answers	The student will be more actively engaged in classes that use information technology	57%	34%	7%	0%	1%	106
	Information technology helps students to submit assignments on time	41%	41%	8%	8%	1%	106
	By are using information technology, the teaching in classes will be more student-focused (i.e involves student actively in the learning process)	41%	46%	5%	5%	1%	106
	The advantages gained by are using information technologies in education are more the disadvantages	46%	42%	3%	3%	1%	106
	After Graduation, the IT students used in his courses will prepare him well for university & workplace	68%	25%	1%	1%	1%	106

Table 4.11: Question 11

Total 106

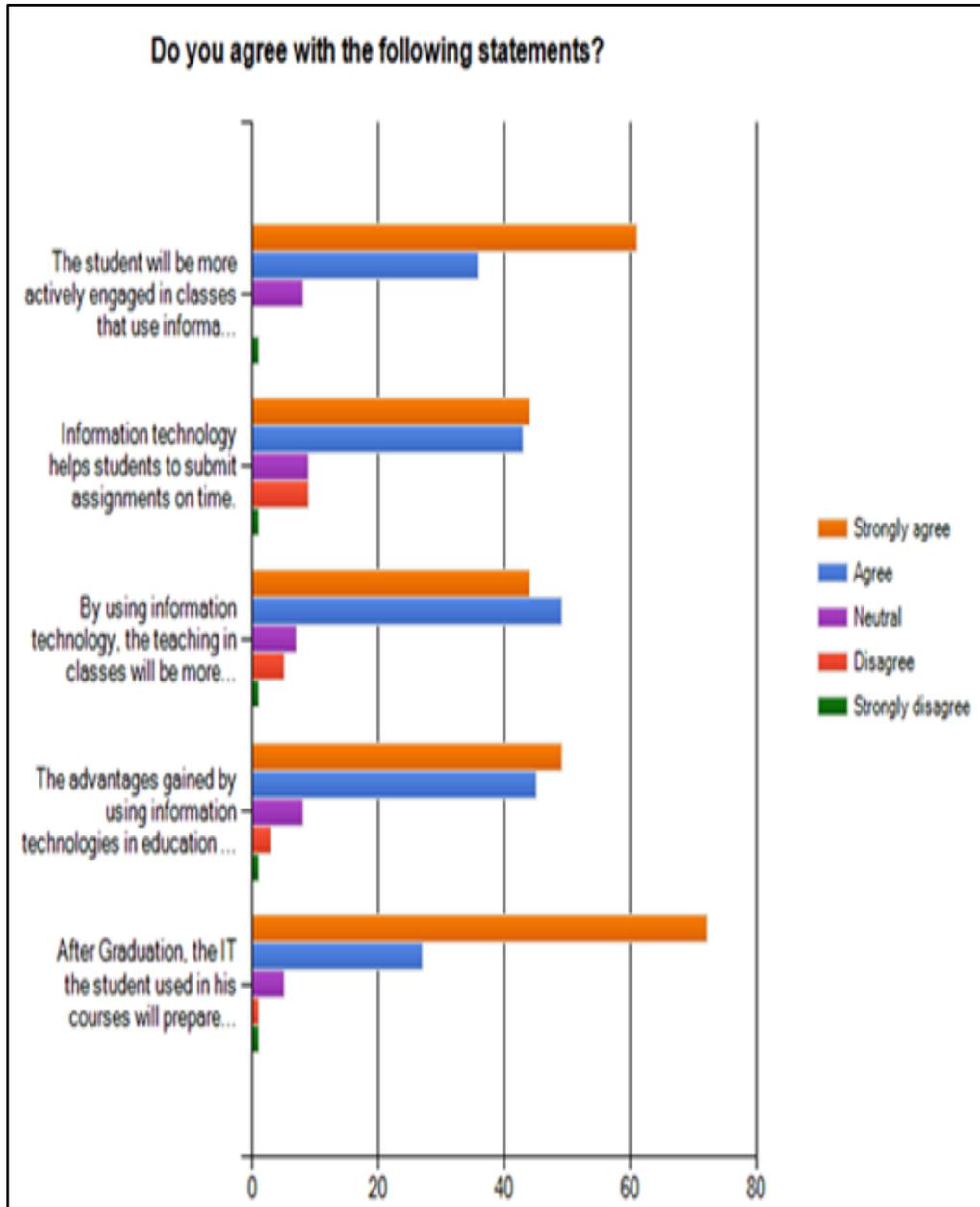


Figure 4.11

Question 12

Question		Statistics					
Do you agree with the following statements?		Percentage					Count
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
Answers	Information technology has become important to teaching nowadays	83%	16%	1%	0%	0%	106
	The quality of my teaching improves if I have enough computers in my classroom for each student	58%	35%	4%	3%	0%	106
	I am a better teacher with technology	60%	30%	7%	3%	0%	106
	I would attend professional development activities to improve my educational technology skills	66%	29%	4%	1%	0%	106

Table 4.12: Question 12

Total 106

Do you agree with the following statements?

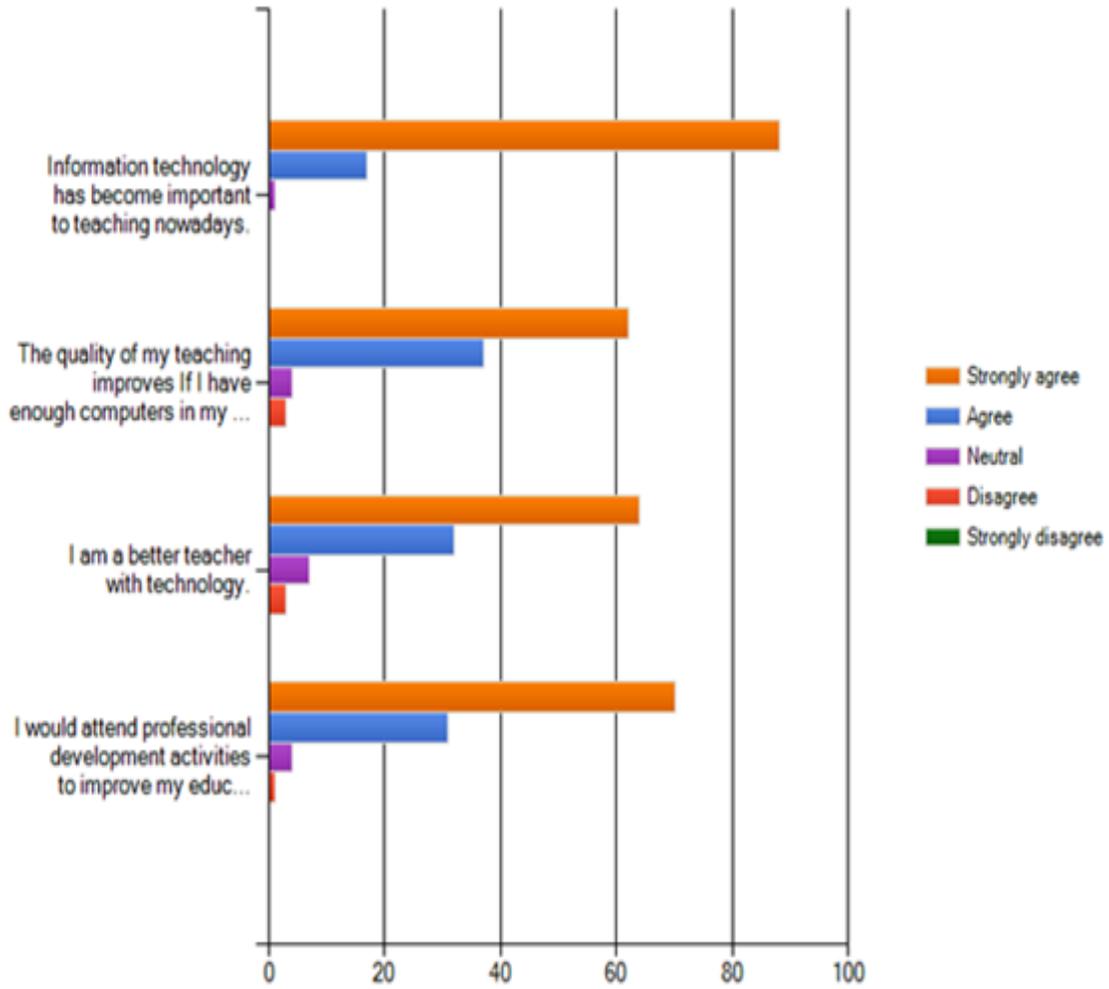


Figure 4.12

Question 13

Question		Statistics	
Social networking websites have become extremely popular among our students today. However a lot of studies worldwide show that they are successful teaching tools. Would you like to experience teaching using social networking websites (Facebook, Twitter, etc.)?		Percentage	Count
Answers	Sure	53%	56
	Why not	20%	21
	Not really	15%	16
	No, Thanks	8%	9
	I'm already are using them in teaching	4%	4
		Total	106

Table 4.13: Question 13

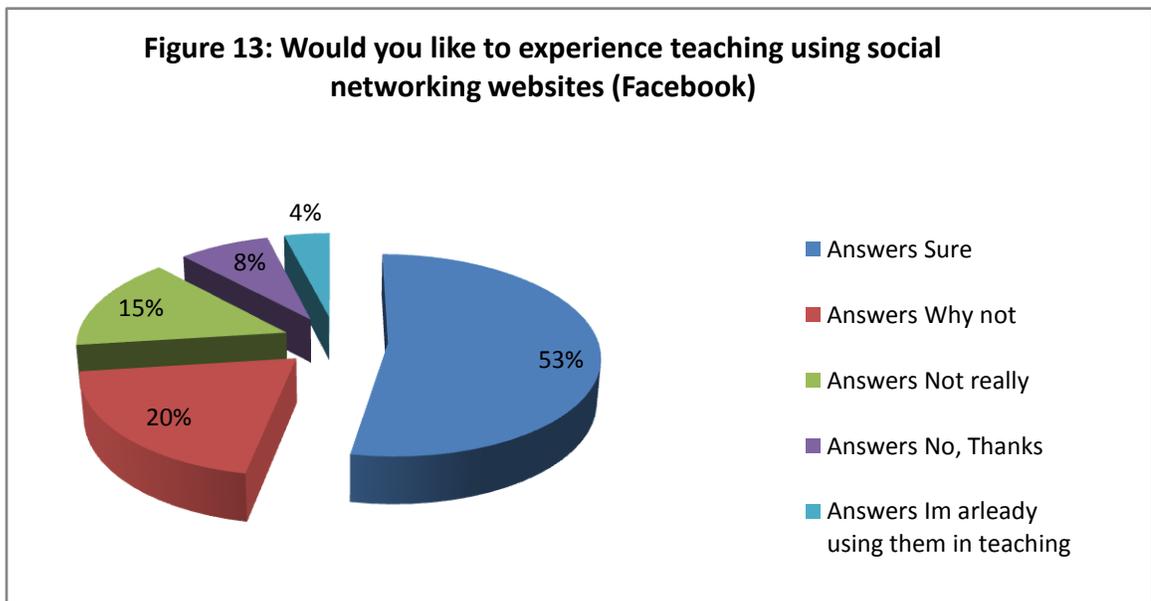


Figure 4.13

Question 14

Question		Statistics	
<p>(Clickers) are an interactive technology that enables teachers to ask questions to students & immediately collect & view the responses of the entire class. Researchers showed that (Clickers) can help increase student engagement in class. To learn more about (Clickers) you may access this file: http://www.cmu.edu/teaching/clickers/pdfs/clickers-pedagogicalvalue.pdf</p> <p>would you like to experience teaching are using (Clickers)?</p>		Percentage	Count
Answers	Sure	60%	64
	Why not	29%	31
	Not really	6%	6
	No, Thanks	1%	1
	I'm already are using them in teaching	4%	4
		Total	106

Table 4.14: Question 14

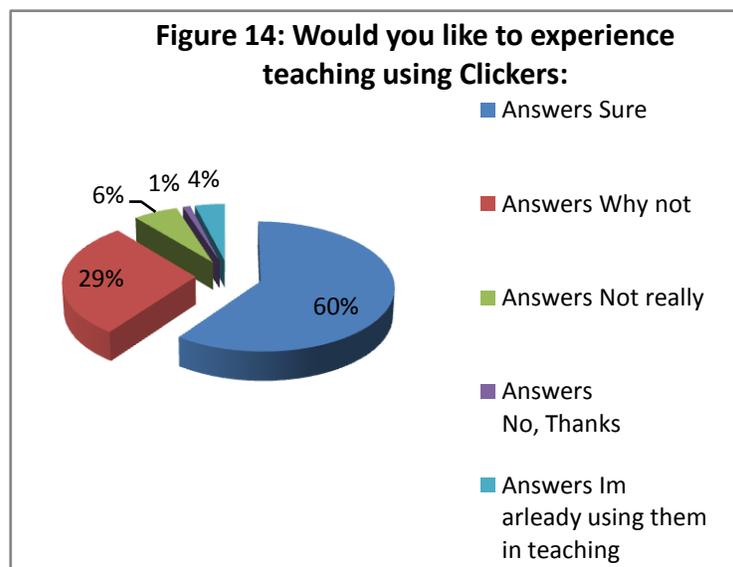


Figure 4.14

4.3 Students survey

The Student survey consists of 14 questions (Question 15 to Question 28) divided into four sections similar to teachers' survey' sections: General Information, computers or internet usage, technology skills, technology usage in learning, and student' opinion on educational technology.

4.3.1 General Information

This survey part has three questions (Questions 15-17) to get general information about participating students to classify the responses (gender, grade, and school sector).

4.3.2 Students' Computer/Internet Usage

This section has two questions (Questions 18-19) aim to gauge the average usage of internet by students at home and school, and the percentage of students who don't have computer and internet at home or school.

From the result of this section's statistics I will get a statistics on students' usage amount of computers or internet as well as I will find if they have the required access to the primary educational technology tools (computers and internet) at home and school.

4.3.3 Students' Technology Skills

The third section of students' survey has five questions (Question 20 – Question 24) directed to measure students' skills in technology in different ways.

Question 20 listed different applications that can be used in education, ranging from basic to advanced and asked students to rate their skills in using each listed application so I will have an idea about overall skills for students in using applications that can be integrated in education to identify if any students' training required before successful integration in education.

In question 21 the students will state if they contributing to the internet content and in which areas, to find out the level of students' interaction with online contents if Dubai schools' teachers start using such technologies in their teaching.

In question 22 I wanted to get a percentage of students using mobiles and specific smart phones (Blackberry, iPhone, Windows Mobile, etc.) that can be a good educational tool. This percentage will let me know the level of technology and accessibility to online contents available for Dubai schools' students.

In question 23 I'm asking those who has mobile phones with web access if they are surfing internet on their phones and for what do they use it. This will help me identify students' skill level in using smart devices to figure out how we can turn these smart devices in students' hands to a useful educational tool

Question 24 will try to specify students' interests on internet. By knowing their interests we can know how to attract them to use internet and all available technologies for learning and education purposes.

4.3.4 Technology Usage in Learning

This section in students' survey consists of two questions (Questions 25-26) raised to measure students' usage of technologies in educational purposes. In question 25 the student will state if he uses any of the listed basic and advanced technologies for his school courses, while in question 26 the students will state if the teacher ask him to do any task using one of the listed basic and advanced technologies. The reason behind listing these two questions is to know what applications students currently use in learning, as well as to differentiate between if students are using educational technology on their own or teachers ask them to use it in completing some tasks. From this differentiation I can know if students are using the technology because it's helpful or because he was forced to use it, another important point is to find if there is a gap between teachers and students so that some students are using educational technology tools in

learning because they know it but teachers don't know it, which will result in a gap between students as well.

4.3.5 Students' Opinion of Educational Technology

This section of students' survey has two questions (Questions 27-28) that will explore students' opinions and acceptance of Educational technology). In question 27 I listed five statements about educational technology benefits to students similar to teachers' survey's question 11's statements and asked about how students agree or disagree with these statements. The results of this question are helpful to understand if students accept and enjoy learning by technology, as well as to compare it with the results of question 11 in teachers' survey to see the difference of opinions between Dubai schools' teachers and students about the benefit of educational technology for students.

In question 28 I suggested to students learning by a new and interesting educational technology tool (Video Games) and asked if they would like to experience learning using this new educational technology tool. From statistics result of this question I will be able to measure students' acceptance of practicing new and technological learning techniques.

Following are students' survey questions and answers' statistics.

4.3.6 Questions and Statistics

Question 15

Question		Statistics	
Are you male or female?		Percentage	Count
Answers	Male	34%	138
	Female	66%	264
		Total	402

Table 4.15: Question 15

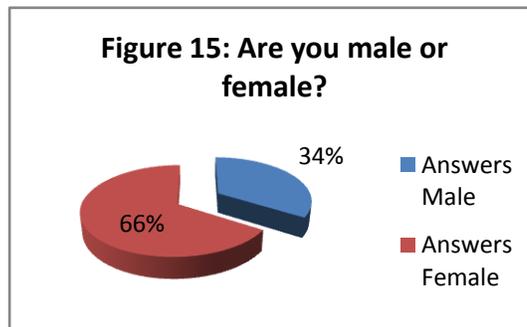


Figure 4.15

Question 16

Question		Statistics	
Which grade/s do you teach?		Percentage	Count
Answers	Grade 7	6%	23
	Grade 8	12%	51
	Grade 9	13%	53
	Grade 10	13%	51
	Grade 11	28%	113
	Grade 12	28%	111

Table 4.16: Question 16

Total 402

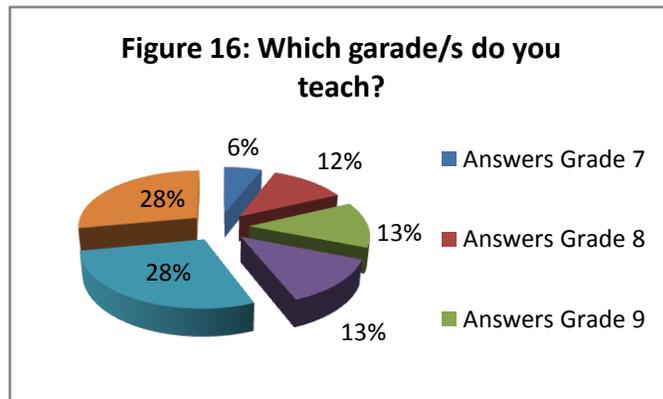


Figure 4.16

Question 17

Question		Statistics	
What is the school sector?		Percentage	Count
Answers	Government	72%	291
	Private	28%	111
		Total	402

Table 4.17: Question 17

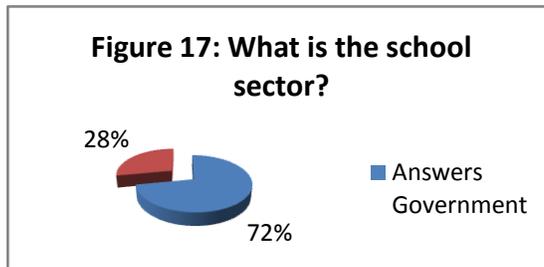


Figure 4.17

Question 18

Question		Statistics	
How often do you use a laptop/PC with internet?		Percentage	Count
Answers	Everyday	64%	257
	2-5 times weekly	26%	106
	Few times monthly	6%	23
	I don't have laptop/PC	4%	16
		Total	402

Table 4.18: Question 18

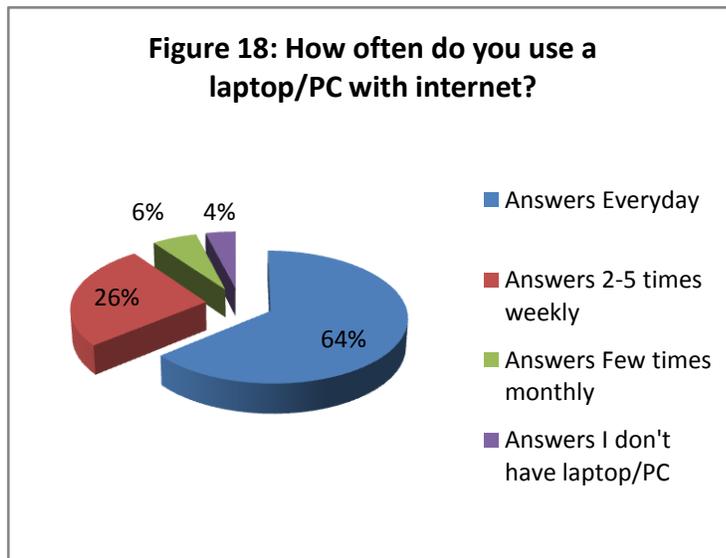


Figure 4.18

Question 19

Question		Statistics	
How often do you access internet from you school?		Percentage	Count
Answers	Everyday	5%	21
	Once a week or more	20%	80
	Once a month or more	5%	20
	Only in computer classes	29%	115
	I can't access internet from school	41%	166
		Total	402

Table 4.19: Question 19

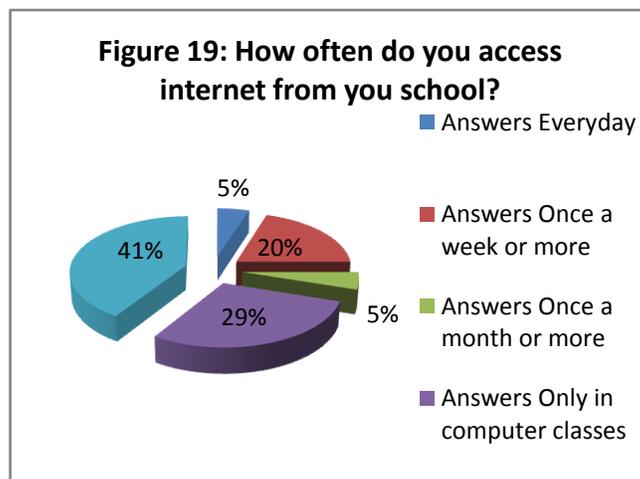


Figure 4.19

Question 20

Question		Statistics				
How well do you use the following applications?		Percentage				Count
		Expertly	Well	With difficulty	Never used it before	
Answers	Spreadsheets (Microsoft Excel, etc.)	15%	43%	21%	21%	402
	Presentation Software (PowerPoint, etc.)	38%	38%	38%	9%	402
	Search Engines (Google, Yahoo, etc.)	67%	22%	22%	7%	402
	Graphic Software (Photoshop, Flash, etc.)	22%	35%	35%	17%	402
	Audio-creation software (Audacity, etc.)	14%	27%	27%	36%	402
	Video-creation software (MovieMaker, etc.)	21%	30%	30%	30%	402
	Social networking websites (Facebook, My Space, Twitter, Linkedin, etc.)	40%	25%	25%	22%	402
	Online multi-user computer games (World of Warcraft, Everquest, etc.)	38%	30%	30%	21%	402
	Social bookmarking/tagging (del, icio, us, etc.)	15%	20%	20%	47%	402
	Screening (Jing, Fast, Stone Capture, etc.)	13%	21%	21%	46%	402
	Vodcasting (Digital cameras)	35%	32%	32%	20%	402
	Web design applications (dreamweaver, etc.)	12%	21%	21%	48%	402

Table 4.20: Question 20

Total 402

How well do you use the following applications?

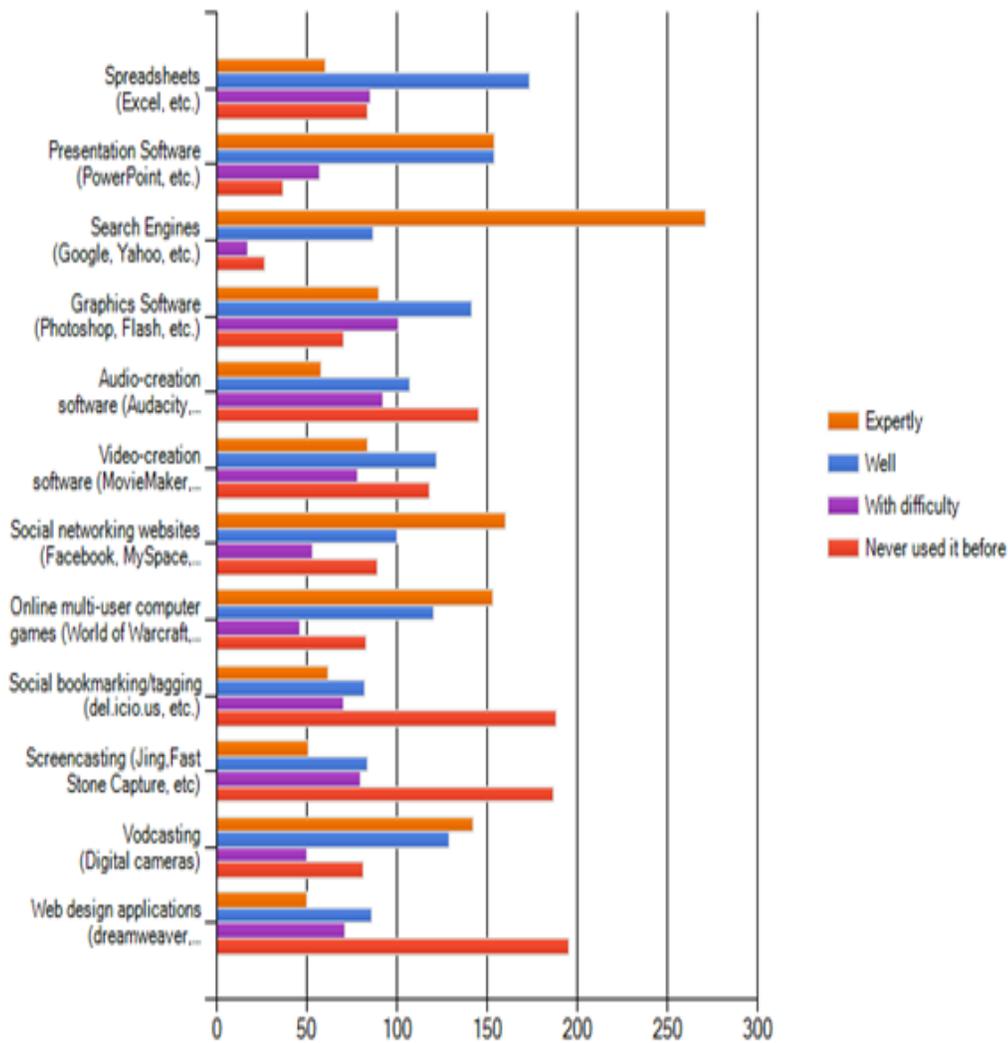


Figure 4.20

Question 21

Question		Statistics						
How often do you contribute content to the following for personal or educational purpose?		Percentage						Count
		Daily	More than once in a week	Weekly	Monthly	Once or Twice in lifetime	Never	
Answers	Wikis (online collaboration tools such as: Wikipedia, course wiki, etc.)	14%	17%	13%	10%	5%	40%	402
	Blogs & forums (online journaling tools)	17%	13%	15%	15%	12%	28%	402
	Video websites (Youtube, etc.)	31%	19%	10%	10%	4%	26%	402
							Total	402

Table 4.21: Question 21

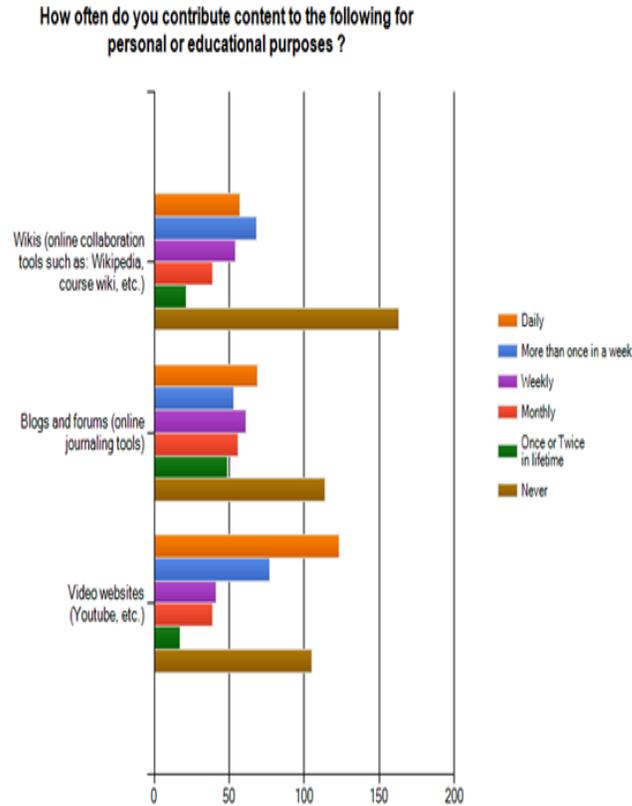


Figure 4.21

Question 22

Question		Statistics	
What mobile phone do you own?		Percentage	Count
Answers	Nokia	40%	162
	iPhone	6%	23
	Blackberry	38%	153
	Windows Mobile Phone	1%	2
	I don't have mobile phone	10%	41
	Other	5%	21
		Total	402

Table 4.22: Question 22

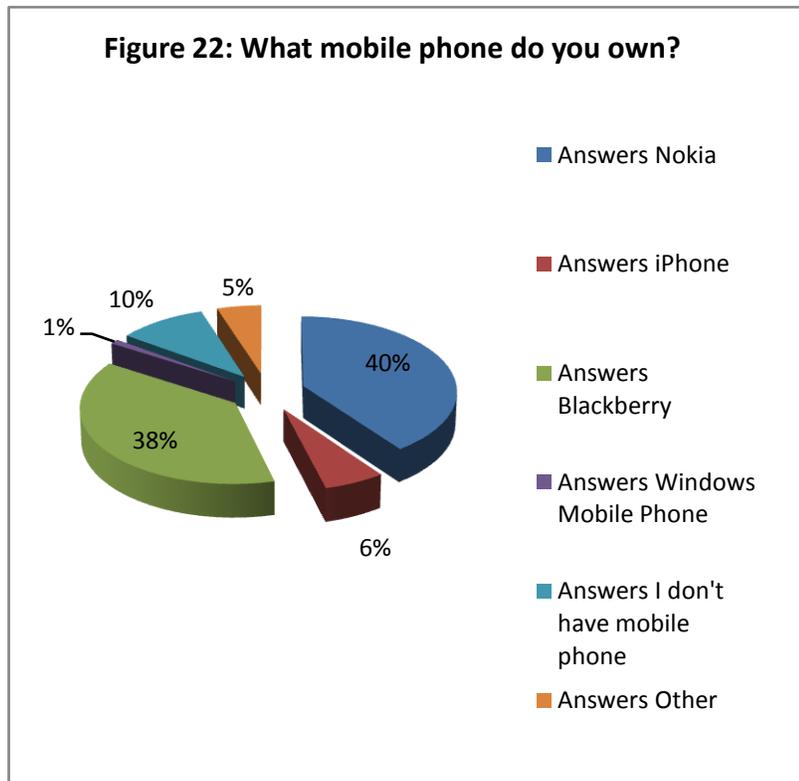


Figure 4.22

Question 23

Question		Statistics	
You surf internet on your phone to visit/do which websites/activities?		Percentage	Count
Answers	Email	52%	209
	Instant messages (MSN Messages, BB Messenger, etc.)	51%	203
	Search Engines (Google, Yahoo, bling, etc.)	49%	196
	Read or contribute to Wikis, Blogs, Forums	18%	73
	Check information (news, weather, sports, specific facts, etc.)	24%	98
	Entertainment (Music, Games, YouTube, etc.)	50%	200
	Use navigation (Find places, Directions, etc.)	14%	57
	Education purposes	15%	62
	My phone connects to internet, but I don't use it	12%	50
	My phone doesn't connect to internet	14%	58
	I don't have mobile phone	10%	38
Total		402	

Table 4.23: Question 23

Figure 23 :You surf internet on your phone to visit/do which websites/activities?

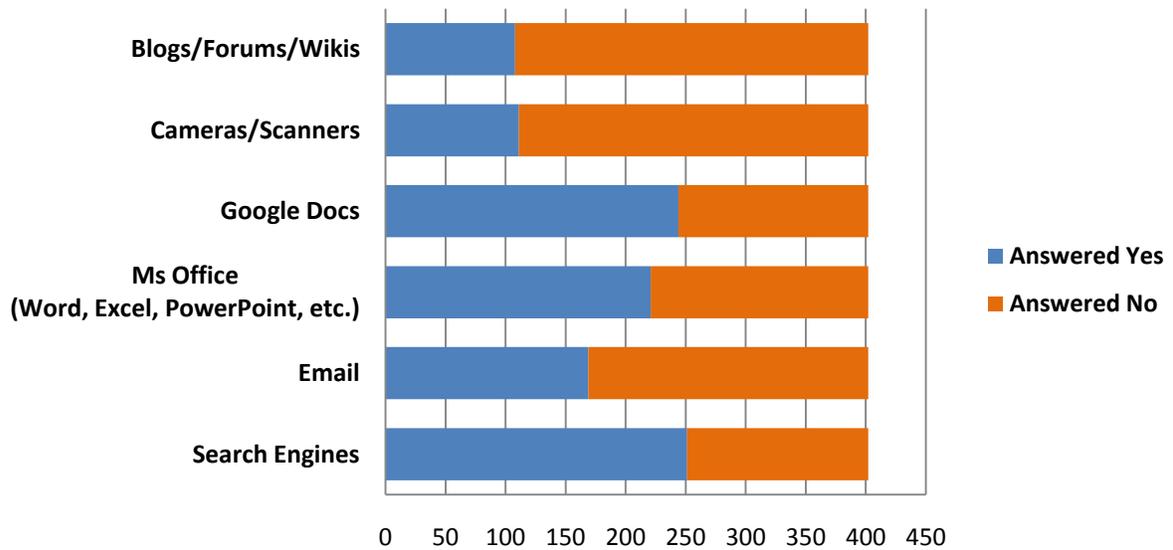


Figure 4.23

Question 24

Question		Statistics	
What types of the online forums/blogs are you member of?		Percentage	Count
Answers	Educational	41%	166
	Sports related	32%	127
	Entertainment	54%	216
	Technological (Cell Phones, Software, etc.)	27%	110
	General Community	40%	161
	Not a member of any forum/blog	16%	64
		Total	402

Table 4.24: Question 24

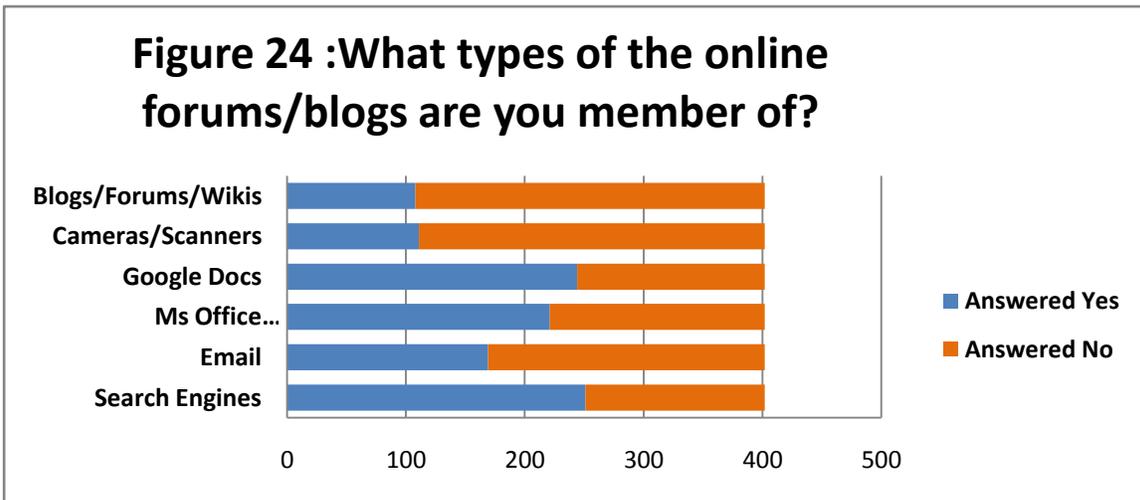


Figure 4.24

Question 25

Question		Statistics	
Are you are using the following for any of your courses?		Percentage	Count
Answers	Spreadsheets (Microsoft Excel, etc.)	43%	173
	Presentation Software (PowerPoint, etc.)	71%	286
	Are using the internet to effectively & Efficiently search for information	83%	334
	Graphical Software (Photoshop, Flash, etc.)	44%	176
	Audio-creation software (Audacity, etc.)	18%	72
	Video Creation Software (Movie maker, etc.)	36%	144
	Social networking websites (Facebook, etc.)	36%	145
	Vodcasting (Digital cameras)	41%	164
	Web design applications (Dreamweaver, etc.)	21%	86
	Blogs/Forums	44%	176
	Wikis (Wikipedia, course wiki, etc)	38%	152
	Simulation or educational games	38%	154
Table 4.25: Question 25		Total	402

Figure 25 :Are you are using the following for any of your courses?

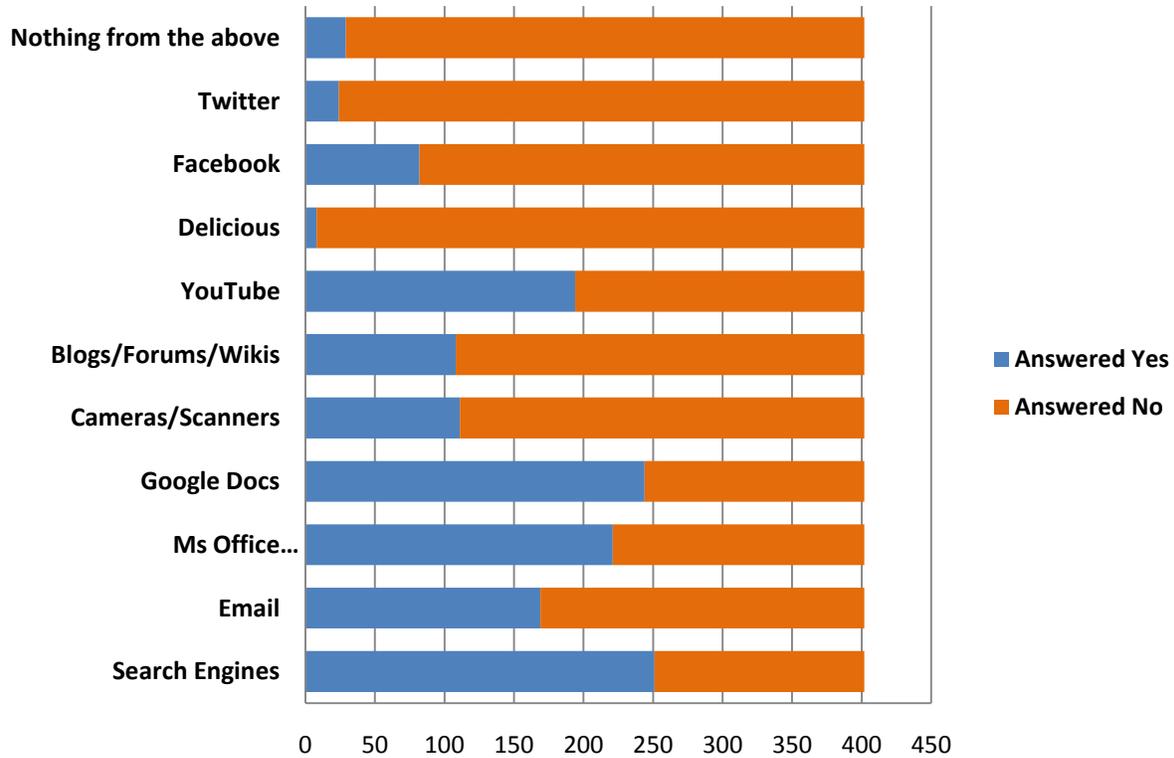


Figure 4.25

Question 26

Question		Statistics	
My instructors ask for assignments that require using the below technologies?		Percentage	Count
Answers	Search Engines	62%	251
	Email	42%	169
	Ms Office (Word, Excel, PowerPoint, etc.)	55%	221
	Google Docs	61%	244
	Cameras/Scanners	28%	111
	Blogs/Forums/Wikis	27%	108
	YouTube	49%	194
	Delicious	2%	8
	Facebook	23%	82
	Twitter	6%	24
	Nothing from the above	7%	29
		Total	402

Table 4.26: Question 26

Figure 26 :My instructors ask for assignments that require using the below technologies?

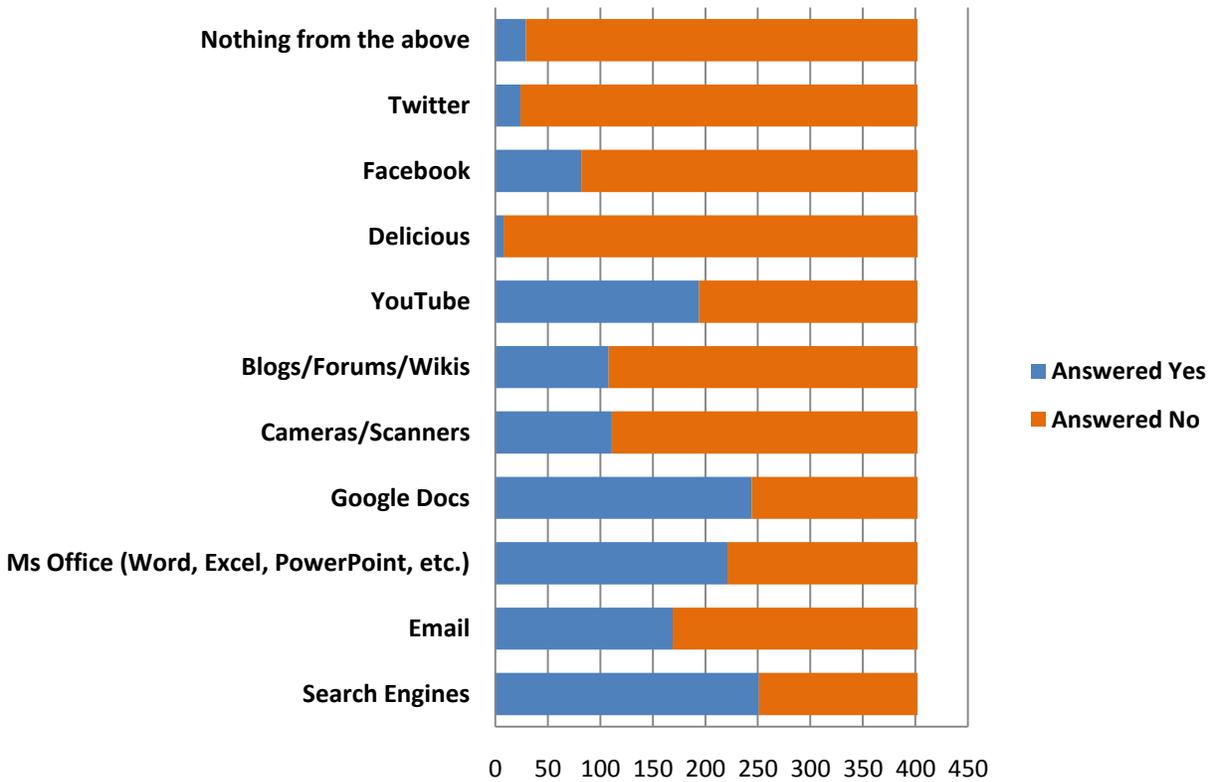


Figure 4.26

Question 27

Question		Statistics					
Do you agree with the following statements?		Percentage					Count
		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	
Answers	The student will be more actively engaged in classes that use information technology	35%	44%	16%	3%	2%	402
	Information technology helps students to complete assignments on time	46%	34%	14%	4%	2%	402
	Because of information technology, the teaching in classes is more student-focused (i.e. involves student actively in the learning process)	32%	41%	17%	8%	3%	402
	The advantages gained by using information technologies in education are more than the disadvantages	25%	40%	28%	4%	3%	402
	After graduation, the IT the student used in his courses will prepare him well for university & workplace	54%	25%	15%	4%	2%	402

Table 4.27: Question 27

Total 402

Do you agree with the following statements?

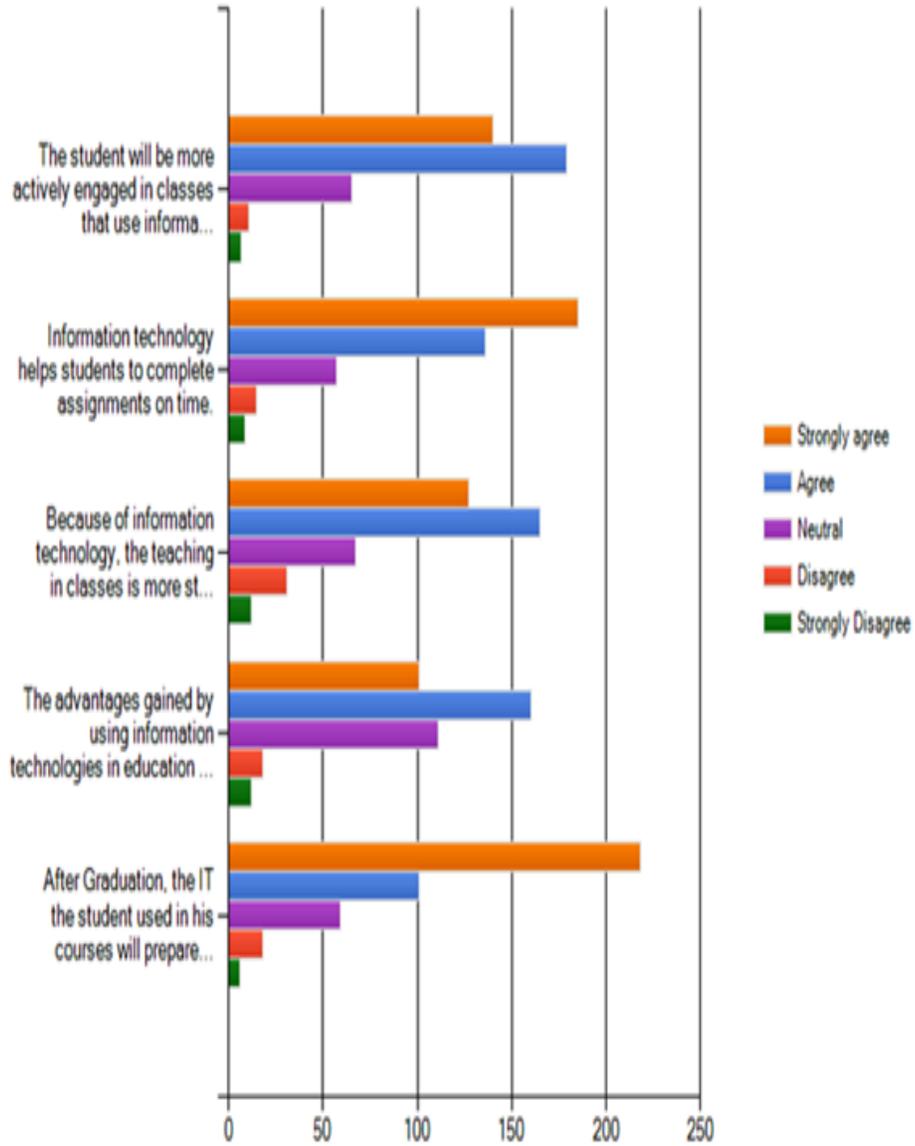


Figure 4.27

Question 28

Question		Statistics	
A lot of studies show that Video Games help you learn better, would you like to experience learning using video games?		Percentage	Count
Answers	Sure	50%	199
	Why not	26%	103
	Not really	17%	70
	No, thanks	7%	30
		Total	402

Table 4.28: Question 28

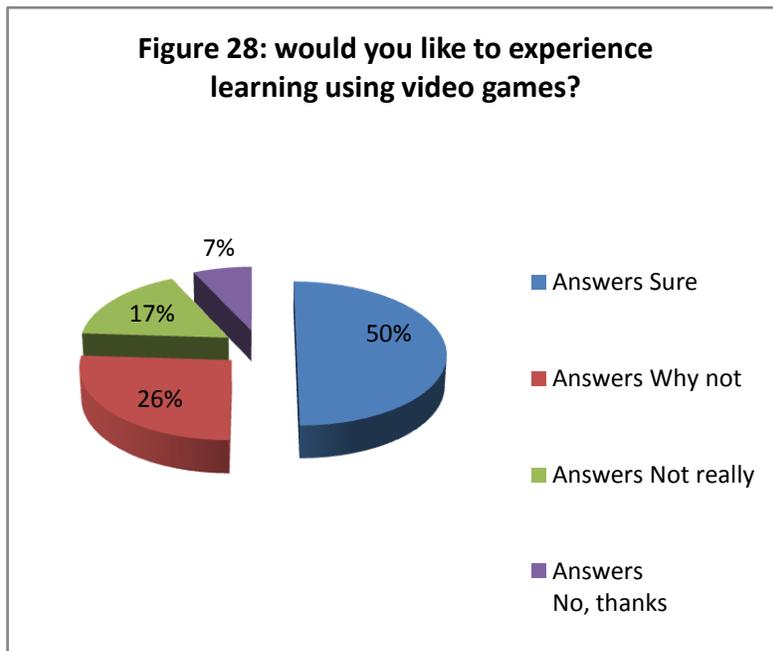


Figure 4.28

4.4 Discussion of Results

In this section I will explore and discuss the results of survey listed in the previous sections of this chapter, to simplify the discussion I will discuss the teachers' and students' survey questions' results in parallel i.e. I will discuss teachers survey's results for a specific section, then I will discuss the students' survey results for the same section and combine both discussions for any possible findings. That will lead us to have a clear idea about the level of skill for both of them and identify the actions required to the essential improvement.

4.4.1 Computers or Internet Usage

From the previous chapter we observed that the highest percentage of teachers is (42%) for using computers or internet at home for more than 10 hours weekly the same applies to students as 64% of the sample are heavy users as well for computers or internet at home. On the other hand we observed that 1% of teachers' sample and 4% of students' sample don't have a computer or internet connection at home. That leads us to the fact that the majority of teachers and students are familiar with using computers and internet.

In schools, the percentages are almost the same for teachers with some differences in the number of hours, generally they have the required computer / internet access in schools, the disappointing result is that students seems to not have enough computer / internet access in schools as we noticed that 70% of students don't have access to computers / internet in school.

4.4.2 Technology Skills

As listed in the previous section I used two different ways in measuring Technology skills for teachers and students, my survey included 2 self-rating questions for teachers and 5 different questions for students, one of them was a self-rating question and the others were directed to get an idea about students relations with technology and how are they using it in their daily life.

In teachers' side we found that 83% of teachers' sample rated themselves as advanced and proficient, while the rest of them rated themselves as basic with 0% rated themselves below basic which means that 100% of teachers are having technology skills with varying levels.

In students' side, while asking about computers application we found that a high percentage (50 – 70%) of students are using the most famous and useful computer applications that can be a successful education tool such as Microsoft Office applications, search engines, graphics and video creation software, online games, social networking websites, and other examples. While the percentage decreases only for web design applications, social bookmarking, and screening applications.

Another interesting finding that I came over is that 86% of students own a cell phone that connects to internet, and around 50% of these mobile phones are smart phones such as Blackberry with the highest percentage (43%), however moving forward to the next question we found that they used these phones heavily for personal and entertainment purposes such as instant messaging, emails, games, and entertainment while a very low percentage of students' samples (15%) are using it for educational purposes as a personal effort.

A theoretically good result appears while exploring students' interests in different genres of blogs online as we found that 41% of students are members of educational blogs which can be a good starting percentage in involving our students in blogs participation for educational purposes.

4.4.3 Technology Usage in Education

Here we came for an important part in our research that will evaluate the current usage of technology in education by teachers and students and compare it to their technology usage for non-education purposes.

From teachers' responses we found that Microsoft Office Applications, educational websites, search engines, audio, and video were used by most of the teachers (70-99%) once or more in their teaching career, while other applications got a percentage below 50% such as wiki, blogs, and social networking websites. If we have a look on how often do they use these applications in teaching we found that they are using it occasionally (not on daily or weekly basis) except for a small percentage around 20% of teachers who stated that they are using it daily/weekly for teaching purposes.

On students' side the percentages were clearly higher in using different technologies for educational purposes as a personal effort (not directed by teachers). For example 62% are using search engines according to their teachers' directions while 83% of them are using search engines for educational purposes according to their personal efforts. The same percentage gap appears for other tools such as social networking websites (Facebook), Wikis, blogs, and other listed tools in questions 25 and 26.

4.4.4 Opinions on Educational Technology

It's important for us to sense teachers' and students' opinions about educational technology and its advantages or disadvantages to oversee their acceptance of any new technological additions to the education style.

On the teachers' side we can see a clear agreement with my statements in questions 11 and 12 that support and welcome using technology in education the percentage of agreements was above 80% and above 90% for most of them while the remaining percentage is divided between neutral, agree, and disagree.

Similar statements with few differences to suit students' point of view were provided for students achieved a bit higher agreement percentages of 85% and above.

Asking teachers (questions 13 & 14) and students (question 28) about their willingness in trying a new educational technology tool showed me a huge interest from both sides with a percentage of 85% for teachers (the average for the 2 questions), and a percentage of 76% for students.

In question 10 I tried to gather teachers' opinions on the factors that act as a barrier for using educational technology tools in their teaching by measuring their agreements on my statements and providing them a room to add their opinions. Their agreement varied between my listed barriers, below are the ranking of barriers according to teachers' agreement:

- Lack for professional development and training for teachers (81%).
- Lack of necessary technologies in schools (78%).
- Lack of administrative support (46%).
- Doubts about technology's usefulness in teaching your courses (29%).
- Difficulty keeping up with changes in technology (23%).
- Student resistance to technology (18%).

Some valuable additions by few teachers were added to the above barriers that I can summarize in the following 4 points:

- Teachers' resistance to technology.
- High cost and low budget.
- Student's resistance to use the computers for education purposes.
- Over-loaded curriculum.

Chapter 5

Conclusion and Recommendations

The aim of this work was to evaluate the current educational technology in Dubai schools and how it's contributing to the educational system, then to investigate a new ways of integrating technology in education that add value to our teaching and learning styles to cope with the rapid changes and advancements around the world.

5.1 Research Summary

In order to start my study, a literature review was conducted which covered a lot of studies from around the world that focused on available technologies for the integration in education worldwide, successful integration of technologies in education, proposed worldwide suggestions, education in UAE, and steps taken to integrate technology in educational system. The literature review showed lots of successful integrations results for different educational technology tools as well as it touched on some barriers for integrating technology in education and concluded that the main barrier for successful integration was that teachers are not using these technologies efficiently. The reasons behind this were moving around lack of availability, lack of training and teacher beliefs in the importance of technology in education.

A study is needed to determine the reasons behind not integrating these technologies in classrooms with another study among a sample of students to determine their compatibility with this integration.

Teachers' and students' surveys were selected as the appropriate research methodology to achieve the dissertation objectives. I defined the research methodology used in conducting my study, followed by data analysis for all survey questions and responses.

Then I explored and discussed the results of the survey in a combined way between teachers and students responses to have a clear view of the areas that need improvement for a successful integration of educational technology.

5.2 Research Limitations

Shortage of newly published work about educational technology in Dubai was a challenge for this dissertation; most of the published work was about educational technology in other countries which made getting the current status of educational technology in Dubai schools not a straight forward task requiring me to visit many schools to inquire about and investigate the level of technology available for teachers and students.

5.3 Conclusion

The research exposed that the majority of teachers and students are ready for better technology integration in education as they believe in positive contributions for technology in the current education styles as well as they have the required skills to use the latest available technologies for best integration with education, however this study found that different barriers are causing a step back from reaching the desired technology integration in education. Following is a summary of this research's main findings:

- The available technologies integrated and being used in Dubai schools are very basic and limited to computers, Microsoft Office applications, and search engines, however this can be a good starting base to more advanced technologies which I could find some of them are being used already by few teachers and students as a self-effort such as Wikis, blogs, and other useful tools.
- Teachers are capable of using new technologies as they have the required skills and enough access to computers / internet at home and school, however they don't invest these capabilities in their teaching tasks neither involve students in educational technology related tasks.

- Students are even more capable technologically than teachers in using new technologies that can be integrated with their learning curriculum such as iPods, smart phones, blogs, wikis, social networking websites, and other useful tools; however they are using these technologies mostly for personal purposes rather than educational purposes. Moreover few students have used these technologies in educational purposes as a personal effort not as teachers' directions, but the question is why don't we invest in these high percentages of knowledge and use it for educational purposes rather than personal or entertainment purposes?
- The acceptance of educational technology was very high among teachers and students, which is not the case in many other studies that I came across in literature review chapter, will ease successful integration for the same without suffering from lack of teachers or students acceptance.
- One of the most important barriers in integrating educational technology in Dubai's schools is the lack of professional development and training for teachers to be able to incorporate their technology skills with available educational technology tools. Another barrier is the lack of necessary technologies in schools, as an example we found that around 70% of students don't have a computer access at schools which will not only impact students' technology skills development but will impact on teachers' attitudes and teaching style as well by not asking students to do any tasks using computers or educational technology tools.

5.4 Recommendations

As this research found that Dubai schools' teachers and students are skilled enough to accept new technologies integrated in education, and most important they are willing to accept this integration, it is highly recommended to:

- Enforce providing computer and internet access for all students at schools; this can be done by having a normal technology room at least in each school that provides the required access for students in their breaks. This room can be used also by teachers to conduct classes on any subject (Physics, Math, etc) using the available educational technology tools in teaching and sharing technology skills with students that can be useful for educational purposes.
- Provide professional training for teachers on different educational technology tools and encourage its usage in teaching rather than personal usage. For example train teachers on how to create Wikis or Blogs so he can ask students to visit his pages and contribute to it. This will build a 24/7 communication and sharing knowledge between students and teachers as most of students can access these pages on the go from their cell phones, the same idea can be done using Facebook, Twitter, and other applications that attracts students to communicate with each other, with their teachers, and even with other students from all over the world.
- Enforce hiring a knowledge broker at each school who will be as on-site resource for teachers and students to introduce new educational technology tools as well as to help in integrating and using these technologies in education.

- Encourage teachers to join online groups and forums to adapt new educational technology techniques from all over the world that can be a value added if integrated in Dubai's schools as technology is fast advancing and needs continuous improvement.

5.5 Future Work

This study can be extended to investigate more data collected from bigger samples moreover analysis can be concentrated more on teachers' development needs as this was the main concern for teachers in integrating educational technology. Also a study can be done yearly to measure yearly progress in education technology infrastructure in Dubai's schools and how it is moving forward to reach the desired results.

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Appendices

- **Teachers' Survey**
- **Students' Survey**