Impact of ICT on teaching and learning in the United Arab Emirates

تأثير تكنولوجيا المعلومات والاتصالات على التعليم والتدريس في دولة الإمارات العربية المتحدة

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by

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Abstract:

The ‘information age’ is described by open computing, the World Wide Web and a various types of users. In the United Arab Emirates, schools have to adapt the changes to realign efficiently with ‘the information age’. For this reason, schools are trying to develop new skills and abilities by reorganizing and restructuring in order to allow such effective transformation.

This study examines the impact of technology (termed as ICT) on teaching and learning in American International School (AISA) in Abu Dhabi. The purpose is to get insight on the consequences of good usage of technology in teaching as well as the contribution of technology to students learning.

The methodology of this research uses a mixed approach which is qualitative and quantitative, two surveys with both teachers and students and one interview with teachers were conducted by the researcher that included a group of research questions which looked for answers on the status of ICT in the American International School in Abu Dhabi, consequently, its impact on teaching and learning.

However, most of the teachers agree that ICT influence their planning of teaching concerning course preparation, even though, a mismatch is found between policy and implementation. A little is being made regarding the training of the teachers for developing their skills in all aspects of ICT. In addition to that, the teachers in the school require support and time in order to use recent technologies and strategies so they can improve their personal work before to learn using them in the teaching process.

The school sounds to produce students with skills as the main contribution of ICT instead of being an instrument to improve the different intellectual abilities of the students, even though, it is very interesting to find that there is a positive attitude about the use of ICT in the school.

ملخص البحث:

يتم وصف "عصر المعلومات" من خلال الحوسبة المفتوحة وشبكة الويب العالمية وأنواع مختلفة من المستخدمين. في دولة الإمارات العربية المتحدة ، يتعين على المدارس التأقلم مع التغييرات لإعادة تنظيمها بكفاءة مع "عصر المعلومات". لهذا السبب تحاول المدارس تطوير مهارات وقدرات جديدة من خلال إعادة التنظيم وإعادة الهيكلة للسماح بهذا التحول الفعال.

تبحث هذه الدراسة في تأثير التكنولوجيا (وتسمى تكنولوجيا المعلومات والاتصالات) على التدريس والتعلم في المدرسة الأمريكية الدولية في أبو ظبي.

والغرض من ذلك هو الحصول على نظرة ثاقبة على عواقب الاستخدام الجيد للتكنولوجيا في التدريس وكذلك مساهمة التكنولوجيا في تعلم الطلاب.

تستخدم منهجية هذا البحث نهجًا مختلطًا نوعيًا وكميًا ، وأجرى الباحثون استبيانين مع كل من المدرسين والطلاب ومقابلة واحدة مع المعلمين شملت مجموعة من الأسئلة البحثية التي بحثت عن إجابات عن حالة تكنولوجيا المعلومات والاتصالات في المدرسة الأمريكية الدولية في أبو ظبي ، وبالتالي ، تأثيرها على التعليم والتعلم.

ومع ذلك ، يتفق معظم المعلمين على أن تكنولوجيا المعلومات والاتصالات تؤثر على تخطيطهم للتدريس فيما يتعلق بالتحضير للدورة ، على الرغم من عدم التوافق بين السياسة والتطبيق. يتم عمل القليل فيما يتعلق بتدريب المعلمين لتطوير مهاراتهم في جميع جوانب تكنولوجيا المعلومات والاتصالات. بالإضافة إلى ذلك ، يحتاج المعلمون في المدرسة إلى الدعم والوقت لاستخدام التقنيات والاستراتيجيات الحديثة حتى يتمكنوا من تحسين عملهم الشخصي قبل أن يتعلموا استخدامها في عملية التدريس.

تبدو المدرسة في جعل الطلاب يتمتعون بمهارات كمساهمة رئيسية لتكنولوجيا المعلومات والاتصالات بدلاً من كونها أداة لتحسين القدرات الفكرية المختلفة للطلاب ، رغم أنه من المثير للاهتمام للغاية أن نجد أن هناك موقفًا إيجابيًا من استخدام تكنولوجيا المعلومات والاتصالات في المدرسة.

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I would like to thank my sister Nisreen and all my brothers especially Anas who is also going to submit his dissertation soon which is in French studies, he inspired me and we have been motivating each other.

I would like to thank the teaching and non-teaching staff in the British university in Dubai for their assistance and cooperation and for sure this thesis would not have been done without the support and guidance of Dr. Naz Awan; I really express my gratitude and appreciation to her.

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Amer Kuzbor

Dedication

I dedicate this dissertation to my mother and father who taught me the meaning of life and do not stop praying for me.

To my lovely wife, Riham, for her continual care and support, for the delicious dishes she makes and taking care of our son Ali.

And finally to my friends Abdul Wahab and Ahmad who always motivate and encourage me to be successful and have a better life.

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Chapter one

1.0 Introduction

1.1 Overview

Usually, the purpose of education is to develop students' intellectual skills, to serve needs in society, contribution to economy and creating successful and strong work force, preparing students for careers as well as promoting a specific social and political system (Foshay, 1991). However, the introduction of new advanced technologies has made pressure on educational institutions where policy makers, employers, teachers and students obviously anticipate finding answers in the future; those institutions are shifting to ICT (information and communication technology) for those answers (Pearson and Somekh, 2006). Nowadays, obviously, developed countries have started entering the information age which is described by electronic transformation and processing information. However, technologies such as computers, video conferences, computer-based learning programs, multimedia including video and audio; and communication systems have become available at schools.

1.2 Statement of the problem

In the past few years, teachers in developed countries have been employing ICT in their schools in many different methods; these schools have developed many courses and projects through the use of ICT which were successful with the help of some funding from global or governmental institutions (SITES, 2005). The uptake and effect of those innovations in schools in the United Arab Emirates (UAE) and in particular Abu Dhabi is strongly related to this research.

The main concern for most schools in the UAE is that they try to realign themselves successfully with the information age but the question is how can the changes that require taking place be best attained? MOE (ministry of education) in the UAE has showed many ICT initiatives to complement 2020 vision; which is a strategic plan for schools that has started to be implemented in 2001, the aim is to restructure teaching and learning process as well as administration (Ministry of Education, 2000). The UAE has started to change its educational systems to produce creative and innovative students who can construct knowledge and make progress. UAE wants to assure that the quality of education and the development of methods would meet the recent international standards with special focus on presenting the recent

ICT resources in schools (official document Ministry of Education & Youth, 2000 Education vision 2020)

1.3 Background of the research:

A lot of schools are trying to develop new skills and abilities by reorganizing and restructuring, consequently, allowing effective transformation to a school to reflect the information age. Nevertheless, even schools that are showing a great deal of change, it does not mean an actual transformation is taking place. According to Fullan (1998) who asserts that educational change should be a process; not an event. Regarding schools in Abu Dhabi, they do not necessarily ensure that the change occurs for stakeholders but the change should be a process where each stakeholder including principals, students, teaching and non-teaching staff, have to engage in all initiatives and implementing them in teaching and learning process.

Heinich et al, (2004) suggest some alternatives to the traditional way of teaching that can be possible by using computers. However, her mentions something called ‘’process technologies’’ or it can be called teaching learning patterns which are valid through research to prove a successful learning. He states that those pedagogical methods usually enhance the achievement of students through placing them in frontal interaction with the subject matter. In addition to that, Heinich (2004) explained how society is open to modern technologies, but looking at education as a part of the society that is resistant to combining modern technologies for changing the way that instruction is executed. On the other hand, Smaldino et al., (2004) indicate that with the introduction of ICT, the role of the teacher has changed in the learning process, it is necessary that the teacher has to stop presenting information and to be facilitator or mentor. Brussel (2001) states that we live in a digital world where the interactive media gives us the reason and need for changing our way of learning, he also adds that new educational systems have to be learner driven and if schools want to survive, they should change the approach to issues of access and process.

Information and communication technology is the most exact and appropriate term that is used widely in educational context, ICT is defined as a diverse set of technological tools or/and resources that are used for communicating, storing, processing and managing information. Electronic devices can be an example of ICT, in addition to human interactive materials which give the user the ability to use them in teaching and learning practices. ICT is not just about hardware and software but it also includes

organizational and human aspects, and social, cultural, political, industrial, governmental and commercial implications (Anderson & Weert, 2002).

1.4 Significance of the study:

Daniel (1997) stated that schools should review the current structures and practices to meet the information age needs; that requires a great transformation. One of the main issues that can prevent the process of transformation is the lack of beneficial examples and successful stories that can lead the way (Dolence and Norris, 1995). The current research proposes to identify the impact of technology on teaching and learning in a school in Abu Dhabi. The first question will be about the consequences of good use of ICT on the teaching function from teachers' perspectives and the second one will be about the contribution of modern technologies to students learning (students' perspectives).

1.5 Research questions:

1) How is the role of teachers, their planning of teaching and assessment of learning influenced by ICT?

   a. How is the teachers-student role influenced?

2) Contribution of technology to students learning?

   a. What's the students' technology literacy level and are students motivated by ICT?

   b. Relationship of students to learning?

1.6 The Organization of the research

The research is divided into six chapters; the first one is the introduction which contains an overview and significance of the study regarding the impact of ICT on teaching and learning, it also contains the purpose of the research and research questions. Chapter 2 is about literature review which is about effectiveness of ICT use on the role of teachers and assessment of learning as well as planning of teaching; it also looks at the contribution of ICT to students learning and their motivation regarding technology and finally their relationship with learning. After that, chapter 3 talks about the methodology including the research design, sample, participants, managing the collected data and ethical issues. Then chapter four is about the results of the research that started with the teachers' survey results followed by the students' survey. The fifth Chapter includes analysis and interpretation of the results and finally chapter six discusses the research limitations, conclusions and some recommendations for future research.

Chapter 2

Literature Review:

2.1 Impact of ICT on teaching

2.1.2 Effectiveness of ICT use on teachers roles:

As a matter of fact, while some teachers have successfully integrated the use of ICT into classrooms, others do not try or accept any new technology. Through using ICT, teachers' roles have to change to keep up to date with new developments. However, ICT implementation in classrooms is very important for teachers and policymakers. A research has found that teachers have to use big amounts of appropriate resources that they rely upon for particular targets and they should modify to meet students' need. On the other hand, students should have a good level in using ICT for dealing with new technologies; teachers have to assist their students with all tasks instead of expecting the students just to turn on the computer and answer simple questions. Consequently, teachers should be proactive and have the confidence to implement different kinds of technologies (Beauchamp, 2008).

To illustrate the role of the teacher for putting ICT into practice in the classroom, many researchers looked at the competencies of teachers linked to ICT. It is confirmed that using computer simulation classrooms can be effective if teachers possess sufficient skills and information that allow them to implement such technologies efficiently. Moreover, if teachers are not skilled enough; computer simulation learning may stay out of reach. It is possible that teachers control computer simulations, and use them as a demonstration experiment when they teach science. Thus, a teacher's role has to concentrate on finding a pedagogical framework to implement computer simulations (Nico, Ruttena & Wouter, 2012)

Morissa (2011) looked at the challenges that teachers can face when they implement ICT, it was revealed that the reason of challenges and difficulty in using ICT is because teachers are weak concerning their knowledge about the availability of technologies and how they can use and implement them in classrooms, teachers also have to know and learn using ICT in appropriate ways that can give them the help to deliver the curriculum. As a result, Ward & Parr (2010) highlighted the importance that teachers should have the confidence and experience to help students learning

with ICT and incorporating technology into the classroom, and that requires to be a qualified developer to raise the skills of the teachers.

Others have focused on the benefits that teachers get from using ICT. For instance, it was argued that teachers can gain from the technologies when they support their students to set a connection between scientific theories that they learn and empirical evidence (Hennessy et al, 2007). Green (2008) adopted a different approach when he stated that it is necessary to find ICT resources for particular curriculum, confirming that both teachers and students possess sufficient ICT skills, even they cannot gain the same benefit from online resources. In addition to that, the researcher also stated that teachers should be trained on the use of ICT. Nevertheless, Tanner et al, (2005) believe that teachers have to change from traditional to more interactive teaching in a non-technological context and that would happen before knowing the advantages of ICT. Those studies not only present positive effects but also recognize the negative influence, so it will be possible to define the best ways to promote the role of teachers for better results and enhanced outcomes.

According to Chen and Wu (2012) who looked at technological environment in the classroom; they indicated that teachers have to help their students appropriately in a way that focuses on how they learn and explaining to them that it is fine to have and make mistakes during the lesson because, in the end, it is part of their learning. In addition, the technological environment in the classroom has to concentrate on the erudition of the materials related to reality; in this way, students can learn to enhance skills and achieve knowledge. Likewise, to learn in an environment with technology is identical to a trip and the teachers who get in the profession, they may provide new visions (Mukama and Andersson, 2008).

Similarly, according to Su (2011), ICT integrated environment has the ability to help students to gain more understanding and knowledge in a chemistry class and can improve students' attitude toward chemistry. Such studies focus on how important is that teachers can provide effective ICT environment for all students. However, Beauchamp & Kennewell (2010) added a very intriguing notion that a teacher or/and software can usually lead the learning process, on the other hand, students may have a different role which is leading resources. In addition, teachers have to know the importance of teaching students the use of ICT when they are away from ICT resources and in multiple settings. For instance, two students check out their results of learning actions together

whether in a classroom or in their free time (Cox and Marshall, 2007). Clearly, such studies emphasize the engagement of students to learn through using ICT.

A lot of studies went on investigating the effect of ICT attitudes of teachers on learning achieved by students. One study conducted research in four schools and it presented that most teachers have a positive and appropriate opinion concerning the use of technology in teaching and learning; they also add that it is beneficial for their students and can help develop the learning process as well as understanding information to convey meaning and facilitate knowledge. But there were negative results like communication and interaction skills which propose that some teachers do not embrace ICT (Sangraa & Mercedes 2010). In a nutshell, the attitude of teachers is very essential and necessary in teaching and learning, on the other hand, the teachers who do not show an interest regarding technology may cause an unfavourable and negative influence on teaching and learning processes in classrooms.

Figg & Jaipal-Jamani (2011) categorize some features that connect with the skills of teachers in using ICT; they both believe that teachers' skills are necessary to teach with ICT for all subject areas. Specific features of teachers actions associated with ICT planning include:

- Content-centric objectives
- The option of technology-improved activity
- A strategy of differentiation
- The sequences of activities

However, the features of good ICT implementation are:

- The reality that teachers have to be confident when they use ICT.
- Understanding particular techniques regarding classroom management to teaching with technology.
- Designing strategies.

We can see that all those features are important when considered by the actions of teachers when ICT implemented in the classroom. For instance, when teachers propose a lesson plan they should

have margins for different student learning, the teachers also should have good ICT experience for supporting their teaching; and to take into consideration that teachers who have better ICT skills; it will be positively effective on students.

To investigate more about how useful is ICT in education; we need evidence to be validated from all over the world. However, there are varied opinions where some researches confirm the usefulness of the instruction in ICT, Liao (2004) did research in Taiwan; he suggests the positivity over traditional instruction. A study carried out in China (Zhou, Hu and Gao 2010) support Liao's study but the only difference is that the first study does not define the subject area whereas the second one examined the subject of chemistry. It can be concluded that the usefulness of ICT can vary among subjects.

A particular pattern of technology-based research had got a big amount of interest and attention by educators and researchers. For instance, AlKhateeb (2000) carried out a study in the city of Irbid in Jordan in order to identify teachers' attitudes about instruction in ICT taking into consideration some variables like teachers' specialization, their gender and duration of experience. The sample contained 139 male and female teachers in five public schools in the city of Irbid. The questionnaire that was used included 40 different items divided into positive and negative selections. However, the results showed that teachers have positive attitudes concerning instructional technology; it was also found that there are remarkable differences between the beliefs of the teachers regarding instruction in ICT and the academic qualification in favour of the teachers who have BA degree over the teachers who have only diploma which is tow year program. Moreover, the research did not find any difference concerning teachers' attitudes toward instruction in ICT in terms of experience, gender and specialization. In a nutshell, what was found in this research provides us with a different and new conception of how teachers understand instructional technology as well as what factors affect their believes and views to ICT but it is necessary to mention that this research did not examine the attitudes of the students.

2.1.3 The impact of technology on teachers' roles:

The development of technology and the transformation in education are linked and that is clear in history, but the question is how the stakeholders in a school adapt and implement the technology. Means & Olson (1995) introduced that experience with computer-based teaching tools can change the way teachers teach. However, it has been argued an ignored reason that why a computer has not changed

curriculum in the way that some educators anticipate; that was because of the effect of the routine practice of teachers and their traditional methods of teaching. In addition, although there are several questions raised by critics regarding the potential of computers, only a few consider how the practice of traditional class is influenced its use (Means and Quellmalz 2004). Collis (1989) considers that some traditional schools have elements which will and have to remain without regard to their potential, and adds a suggestion that all teachers must be instructional leaders; where human to human interaction is always needed. Moreover, Becker (1994) indicates that there is a need to make systematic evidence in which teaching practices improve students' competency if supported by computer use, but Fullan and Smith (1999) believe that change is complicated and hard to be achieved in the classroom.

Most literature agree that the effective use of technology in the classroom can change the teachers' function. There are a lot of terms that explain the nature of that change and the most common ideas are: transferring information in teaching is moved from teachers to the technological media (Penuel et al, 2000). So teachers have more time to help their students and improve the learning process (Russell & Dwayer 2004), that change can affect the concept of teaching and even learning because it is influenced by more factors. Teachers' role is still critical due to the structure of this role that has changed some skills of teachers; Riel (1998) suggests that teachers should have more skills such as how to direct their students through the big quantity of information; teachers should understand different disciplines and learning in these disciplines if the goals are to use ICT for students' involvement in project-based learning, those students will still need to be guided and assessed by skilled and experienced teachers.

The impact of ICT on strategies of the teaching may produce some changes in the structure of teachers' role. For instance, the appropriate use of a computer for learning support let some teachers rely on more group work instead of lecturing (Schacter, 1999). On the other hand, Miller (2001) believes that the technology of the computer has many potentials that should be realized by both teachers and students in a classroom, so it is good to think about how the students learn and how the teachers teach and what they actually do in the classroom and how the ICT they are using is related when they do tasks and play roles in the classroom environment.

2.1.4 Assessment of learning and planning teaching:

Oblinger et al. (2003) confirms that one of the essential themes is that teachers' planning requires the teacher to prepare tasks for students and other teaching materials, but Kankaanranta (2005) has a

different view where he sees that the huge quantity of information is increasing at a rising rate, that means there is more knowledge for both teachers and students. In addition, it is significant that they have the ability to sift through information effectively. The computers offer a lot of tools that can collect, organize, process and communicate information. Not only the teacher but also the students should learn and train on using those tools efficiently, there are fresh attitudes will be formed and various technologies and skills will be adapted.

On the other hand, there is a report done for the US Congress concerning what technology can promise for teachers, however, the report pointed out that a new technology allows a teacher to get information quickly and simply regarding the availability and value of different options of instructional resources, in addition, benefiting from support for their using. Few years ago, technological communication that was used by teachers, particularly through email, has increased and the good thing is when teachers have access in classrooms to internal or external networks, they will have communication with others like educators, trainers, experts, colleagues or scientists for discussing things related to teaching practice, classroom experience, achievements and progress in their field (US Congress; office of technology assessment, 1995).

There is a need to review the assessment method at schools as long as the tools of ICT have become notable. At the moment, some assessment is based on using of textbook technology which depends highly on an authentic retention approach to learning, that kind of assessment is inappropriate to ICT environment; thus there are different ways to evaluate students learning but they should be formulated (Goldberg, 2003). Many educators are mindful of the big amount of information that can be found on the internet; using the internet is not hard and it is not expensive to spread information, anyone can distribute, edit, change or add information without validating any of these information by anyone. So when students surf the internet, they must check the validity whether the validity of the information itself or the validity of the source (Kankaanranta,2005). Lankshear and Snyder (2000) believe that using ICT supports teachers in finding up to date strategies and materials through accessing information, and teachers also can think and reflect on practice. Moreover, teachers may need support when using recent technologies to improve their experience before using them in the teaching process; most of that support can be accessed facilely by the use of ICT.

2.1.5 Teachers' hard work, ability and perseverance:

Nobody ignores that using ICT by teachers in the classroom means demonstrating higher levels of hard-working, skills, perseverance and ability. To plan learning using computers may take much time in addition to the demand of having complicated schedules and resources. Therefore, if teachers are adopters of ICT then they must be creative in finding solutions to any problem they encounter in order to get things done and make them work. However, teachers need to work together because when they use computers in classrooms there will be a need to get access to diverse resources that can provide new ideas and various materials for many classroom activities. On the other hand, schools should have publications and have to join journals that can support teachers in the classroom. In schools, teachers can share thoughts and other activities with each other so that everyone identifies and implements useful and beneficial uses (Lankashear and Snyder, 2000).

Some teachers consider that the use of computers can change their attitudes and even practices in the classroom; there is a need to develop particular skills which relate to classroom management and computer operation which make a barrier to many teachers. Therefore, teachers have to regularly update skills in both operation and use of technology; and have knowledge of the recent curriculum and pedagogy so it is very necessary that teachers keep motivated and assisted in practical. Office for Standards in Education (2002) has assured that one of the most powerful impacts on the best use of ICT is teachers' access to computers for the aim of planning and preparation.

2.2 Impact of ICT on learning

2.2.1 Contribution of ICT to student learning:

Countries like the United Kingdom (UK), Australia, Canada, New Zealand and the United States of America (USA) executed some assessments that address topics associated with the contribution of technology to students learning UNESCO (2000), but the UAE need to carry out such assessments. Some studies explain that the potential of technology in learning is enormous; several provisions are needed for that potential to be real at schools and specifically in classrooms. However, there are many studies concentrating on a wide range of topics and subjects which are related directly to the contribution formed by technology to student learning:

(1) Literacy of students concerning technology, (2) the particular learning which students obtain, (3) students' motivation when using the technology in learning, (4) the relationship of the students with learning.

Some of the provisions mentioned earlier which drive to good use of ICT; the following can work as a precondition: the influence of computer based learning technology to facilitate and promote students learning can be considered only when teachers and students have the sufficient proficiency to employ the technology, many studies have not dealt obviously with teachers' and students' knowledge and proficiency regarding their use of the technology in the classroom and this may be due to the assumed benefit and power of technology (Seever, 1992); Baker et al. (1994). Both of these studies treat that issue for both students and teachers and that present a remarkable contrast for students learning performances comparing to studies which did not deal with the issue.

2.2.2 Literacy of students concerning technology

Walker et al, (2000) thinks that computer literacy, knowledge and awareness are terms that have been used usually in education making a wide range of definitions. There are many studies that discuss important themes regarding computer literacy. However, Kimbell (1994) presents a recent term "capable" in technology which is used to show the ability of doing something through the resources of knowledge and proficiency so the globe will be transformed to "improvement". That is a technological literacy. Once the knowledge and skills are connected with computer technology, at this point it will suit with the computer literacy definition. Here it can be said that computer -literate students are part of technological literacy (Crawford and Vahey 2002).

The notion of computer literacy and computer knowledge are different and this matters the ability for using technology, the computer-literate student or teacher may use a computer perfectly but might not comprehend the role of the computer in society and cannot understand the implications of that role. On the other hand, the computer aware student can have enough knowledge about a computer but it is very hard to have the ability that let him/her use it. There is a nature possibility to find somebody who is literate and aware with the technology and particularly with computers. As a matter of fact, a lot of computer courses combine goals that are designed to improve students' literacy and awareness. Consequently, computer literacy might be considered through (1) knowledge about system, operations, abilities and components, (2) skills to use the computer and do tasks, (3) a positive attitude in regard to

the use of the computer whether in society or personally. In other words, a computer-literate person should possess all of those mentioned.

Skills, attitudes and knowledge are considered by school systems as a formal side of education. They assure the areas of particular learning that a student achieves within two themes; the first one is the learning specificity using recent technologies and the second one would be developing different intellectual skills. It was indicated that computer literacy is always associated with how people see the computer fitting into their present and future life; it is involved making a group of beneficial concepts concerning computers in a way that every one wishes to use computers, knowing how to use them as well as employing them in a helpful and proper manner (Crawford and Vahey, 2002). In terms of the school environment, that can mean there is a need to let students use the computers for solving problems and completing tasks. In addition to that, when students have technological skills and knowledge then they are supposed to be professional users who can solve problems and finish the computer work.

However, in this challenging environment, a lot of students deal with computers on a regular basis whether in computing or not computing subjects. Some programs are not prepared to handle computer literacy partly satisfy those goals. Usually, teachers are not just models for interactions which require to be dealt in contemporary life but also they are mediators for learning to relate to machines. A peer group in students' life mostly affects their attitude and motivation. The school environment is very important for students where they grow attitudes and develop perceptions about computers. Students at school are provided with motivation by people and experiences, modeling and information favorable to the use of the computer (Jonassen and Land, 2000).

As a consequence, Watson (2002) reached to a conclusion that the contribution of the technology can enhance the learning process in many ways and in different subjects; it can also develop skills and attitudes. The learning process relies not just on prior gained knowledge but also on what learning activity is using technology.

2.2.3 The motivation of students:

It was argued by Sasseville (2004) that a new technology can develop the interest of the students in learning various activities; leading them to assign extra time and awareness to those activities more than they do in normal classes. In addition, there is a big possibility that students will be more confident of their capabilities. Consequently, students' confidence may explain the attitude which a big number of

them adopt towards activities where technologies play an important role, and the persistence which students show in achieving those activities Demetriadis et al, (2003). Certainly, high levels of motivation normally facilitate learning but in the technological learning environment is very important to know that students become exceedingly active and energetic to guide their own learning.

A report has confirmed that by using technologies the motivation will have an impact on all students with different gender and ages. There are many reasons which contribute to the motivation of students; the reality that technology might be a strong tool to stimulate learning mainly because it makes an environment and offers content in a way that allows students to be more engaged and involved than a textbook does and more teaching tools which owns interactive capacity and lets students to participate in various activities which can summon them to share with other students (US Congress, Office of Technology Assessment. 1995). Most students give their full focusing or attention span and having the desire to devote to learn activities is much bigger when they are using a technology than they are in non-technological setting using traditional resources (Guthrie and Susan, 1995).

On the other hand, Cox (1997) investigated students' attitudes to ICT in a high school and their use of technology, the literature of this study which is about motivation pointed out that the frequent use of technology for different topics can give advantageous and stimulating influence on the students' learning. However, the responses of the students presented that they are increasingly committed towards the learning tasks, boost enjoyment, confirm self -esteem as well as students have the feel of accomplishment when they learn using technology, when the students were asked about the "using computers make learning more interesting and exciting" most of the students (75%) agreed and strongly agreed to that statement. Moreover, half of the students also agreed that they understand the topics more; and learn better when the use of ICT in practice.

Another research executed a case study about the impact of using ICT on students' motivation and learning achievement. Figures presented that most students showed a big enhancement in the motivation; there was an enthusiasm for starting tasks; and it was continued through the task. The results also showed that the majority of the students (88%) agreed that during their academic year, the use of a several collections of ICT let them more excited and interested more than anticipated; and about 87% of the participants indicated that with the help of ICT they can produce a perfect job which gave them the ability to express ideas and have a creative work (Bullock, 2001).

2.2.4 The relationship of the students with learning.

There is a difficulty to speak about how new technologies contribute to the students' real learning unless taking into consideration that students can cause an important change particularly when they get knowledge and trying to incorporate it with what they previously know. However, three themes were emerged:

1. The development of the research spirit: it was agreed by Law and Chow (2002) that new technologies possess a strong power to stimulate searching for more thorough information in a course, additional suitable solutions to problems as well as a bigger amount of relationships amongst many segments of knowledge and\or data. McKinnon et al, (1996) conducted a study in New Zealand to assess the influences of the use of computer technology in classrooms and to examine learning outcomes as well as the students' motivation and attitudes about the use of computer technology, the results showed that using technology contributed -with the help of other teaching tools- to developing and supporting that cognitive inquisitiveness and the spirit of inquiry considered very significant in students' learning. However, it was concluded that continuous computer use allow students to be technological literate and give them the ability to produce knowledge when analyzing data or information; and developing testable hypotheses. In this study, it is also noticed that ''teaching and learning processes occurred which are not commonly found in traditional secondary school classrooms.''(p.455). Moreover, it was noted that students tended to consider their work a common activity that can be available for examination and positive comments by a teacher and peers. In the end, it was realized that students have to be engaged and involved in an active and collaborative way in the construction and examining their own learning and knowledge.
2. The second theme is 'more cooperation amongst individuals' Graig (2004) agrees that using recent technologies reinforces cooperation between students whether they are in one class or classes in other schools, for the aim of letting them conscious of other facts and accessing related knowledge; carrying out projects with an actual relevance not just to students but also to other people.
3. The third theme is 'more integration and better assimilated learning' Barron and Bruillard (2007) described many trends regarding this theme and the most remarkable one is that given a deeper definition to standards integration ingrained in cooperation among students. However, that trend

points out that using technology in schools' systems is possibly to change the existing social environment from a competitive to a more cooperative one. The capability of simulation, quick combining a wide range of data, the representation of graphics, virtual learning tools and other types of roles given by technology make a major contribution to link the knowledge with different aspects of the student to guarantee more comprehensive absorption and intake of the various things that have been learned (Barron and Bruillard, 2007). That was proofed through Dwyer (1994) who conducted a project namely Apple Classroom of Tomorrow (ACOT), the aim was to monitor a group of students in the secondary school and comparing their learning to the graduate students from the same school. However, the results were different in terms of students' organization in accomplishing the work, they also had the ability to employ inquiry, collaboration, technology and problem solving skills unfamiliar to those graduates of usual secondary school programs.

Impact Project in the UK investigated the influence of ICT on students' learning who were 2300; studying in 19 different educational areas, the conclusion of this project showed that students' commitment to learn raised when they use ICT (Watson, 1993). Moreover, Robertson et al (1995) executed another study on high school students and the situations concerned with computer, when students were asked if they prefer to work with computers; most of them showed a positive attitude to learn and to be with computers.

In 1994, BECTA did publish "information technology works successfully" which is an outline of research results, some of the statements and conclusions according to Pachler (1999) are:

If students are not enjoying learning, they could be encouraged by using ICT, because it is flexible in terms of meeting students' needs and capabilities. ICT assists students to understand because it can present information in a new, different and simpler way. In addition to that, complicated topics and ideas become easier to understand due to the technology that keeps it more obvious. By using ICT teachers might check their teaching and how their students learn. The availability of ICT resources for teachers enhances and encourages using technology in syllabi (Pachler, 1999).

In West of Sussex and Birmingham, nine schools were chosen in a research to look at ICT activities and what if they have the ability to stimulate students by favorable experiences which participate the use of ICT, the majority of teachers (81%) who had a regular use of ICT said that everyone was stimulated in a

good way (Denning, 1997). Consequently, it is concluded that ICT not only has a strong and positive influence on the motivation of students, but also can boost their motivation in order to learn and can lead to a greater performance for learning outcomes. With the use of ICT, lessons became more amusing and exciting; the learning experience also became more enjoying, students are more self-confidant and self-esteem after getting control on their learning.

In the academic year 2000/2001, six elementary and secondary schools are examined; the research finds a group of positive and real effects on most of the students; that includes enhanced motivation, boosting their skills socially, enhancing collaborative work skills resulting the best achievements as well as the remarkable increase on students' confidence and self-esteem (Harris & Kington, 2002).

Hennessy (2000) carried out a study which is called ''the climate project'', students from 48 schools are assessed regarding their use of portable computers that gather different temperatures and present them as graphics at research centers. However, with the use of technology students are highly motivated and confident over three weeks. In addition to that, Becker (2000) investigated the extent of the influence of various uses of ICT in classrooms on the motivation of students and whether it continues to work in different times of the day, teachers show more usage of computers out of the class as they allow more involvement in computer activities. The rising students' use of computers in their free time is not related to socio economic status and ability.

Chapter 3

3.0 Methodology:

3.1 Ethical issues:

During the research, all precautions have been taken to guarantee that this research is carried out in an ethical manner, the principal of the school was completely told about the nature and process of the research. In addition to that, permissions were investigated from proper bodies to check any policy document which is useful to the research. However, Giordano et al (2007) believes that any researcher has to be conscious of the accepted ethical principal of research which contains matters of informed consent, confidentiality, privacy, deception and anonymity. There is no researcher can get an access to an institution without getting permission from that institution (Bell, 2005). Furthermore, the process of getting approval does not take much time and is obtained readily. The questionnaire of the research is given to the school and the introduction explained clearly the purpose of the research confirming that all participants to stay anonymous. Permission is taken after stating the following conditions and guarantees:

- Participants are to stay anonymous (Delaine, 2000). The point of anonymity is that when participants provide information; their identity must not be revealed. There is an obligation to retain all research data confidential and accomplished at any cost (Simon and Usher, 2000).
- Keeping all information confidential which means that if a researcher knows the participant who provides the information or is capable to identify him/ her from the given information, there is no way to make that public, the share secret surrounded by boundaries is also protected (Payne, 2000).
- All participants can have the chance to take a copy of the final report if they wish.

Teachers and students approached are asked to participate as volunteers to be participants in this study, and the participants in interviews can validate transcripts of the interview for accuracy.

3.2 Sample selection:

My target population is the American international school in Abu Dhabi (AISA) and particularly grades ten and eleven and it was ensured that AISA uses ICT. However, the number of the students who

participated is 60 selected at random; on the other hand, the number of teachers are 12 which is the total number of teachers who teaches grade 10 and 11 in the high school section.

3.3 Research design:

As described in introduction, the main aim of this study is to investigate the impact of ICT on teaching and learning in private high school in Abu Dhabi. However, the research merged quantitative and qualitative methods; the researcher developed two surveys (teachers and students) and one interview schedule (only teachers) that had a number of research questions to be addressed in the school by both teachers and students.

The research design for this study included both quantitative and qualitative methods and for data collection; two types of tools or instruments have been used and developed in this study which are questionnaires and interviews. Undoubtedly O'Donoghue and Punch (2003) stated that perfect research practice involves to use multiple or mixed methods in order to improve the validity of the research findings and accurately reflect the situation. Triangulation is a method used by a researcher to ensure validity in his/her study through analyzing research questions various perspectives.

Patton (2002) alerts that there is a misunderstanding about the purpose of triangulation which is to arrive at consistency through sources of data, consequently, giving the relative strength of several approaches; in other words, those inconsistencies are not supposed to weaken the evidence, but have to be presented as an opportunity to expose a deep meaning in the data. However, methodological triangulation usually requires using different qualitative and/or quantitative method in a study. For instance, we can establish validity when results from questionnaires and interviews are similar and if the conclusions from both methods are the same. For example, assume a researcher is carrying out a research of welfare to work participant to record her changes in life after one year of participation; the researcher could use interviews, surveys, document analysis or any type of appropriate method to assess the changes. If all the methods show in findings the same or very similar results; then it can be said that the validity has been successfully established but it is necessary to mention that the method needs a lot of resources and also needs further time for analyzing the information that yielded through the multiple methods.

The advantages of triangulation according to Thurmond (2001) are (1) it boosts confidence in the research data, (2) it creates innovative ways to understand a phenomenon, (3) it reveals unique results

and integrating theories and (4) it provides a deeper understanding of the problem. As an example of Burr (1998) who employed different triangulations to get a thorough idea of family need in critical care, when using the questionnaire and selecting participants for interviews, the researcher discovered that the members of family who were interviewees considered the sessions therapeutic, on the other hand, those participants who had not interviewed showed discontent and expressed their frustration on the questionnaire (Thurmond, 2001). So combining interviews and questionnaires did add a depth to the findings that could not have been conceivable by using a single method, as a result of that; the validity and utility of the results increased remarkably.

The balanced approach which described as qualitative and quantitative method is considered the best option for this study because they concentrate on the multiple dimensions of one phenomenon. The surveys that could be classified under quantitative research is usually involved with information about variables and what kind of relationships among them. In addition to that, the quantitative research is used by researchers to provide statistical data that works as an evidence in terms of relationships when they are merged with theory and literature.

On the other hand, qualitative data is a good source of using valid and abundant descriptions, in addition to explaining the different types of processes in distinguishable local context. However, researchers use qualitative research interviews for validating specific measures, moreover, interviews can be used also to explain and clarify the meaning of findings which resulted from the quantitative data (king, 1994).

Wellington (2000) believes that combining qualitative and quantitative data and evidence to be produced in a research; can give us answers to (why and what) questions. The quantitative approach requires collecting data through the use of questionnaires and facts from the group which is under study as well as it tries identifying specific trends, things and attitudes that are within the study results. Comparing to the qualitative method, it can be found that it presents further insight and validity, the importance lies when ignoring the way how individuals interpret and give sense to their own world, it can limit the chance for important data to surface. It is almost impossible to measure inner thoughts with a scientific sense; it is better to admit that those issues that help to understand the human behavior.

In order to guarantee comparative analysis through the various sources as well as contributing to the validity of the study, data were compared from the two questionnaire instruments. That was explained as ‘methodological triangulation’ (Cohen et al, 2002). It is necessary to remember that Esterby-Smith et al.

(1991) who reminded us to be careful from over generalization and over simplification of highly sophisticated issues, consequently, for generating a valid research triangulation should be used. Quite simply, triangulation is very beneficial to be used in a research but one should keep in mind that there are advantages and disadvantages; to be taken into consideration before application. Triangulation might be employed to deepen the understanding of a researcher of the issues as well as maximizing her/his confidence in the research findings.

3.4 Designing the questionnaire:

Cohen et al. (2002) points out that a questionnaire is usually one of the most used descriptive methods in social science research and particularly in educational context, although the difference of questionnaires in terms of their complex level. In addition to that, Bell (2005) confirms that questionnaires are rapid and cheap method to gather data when they are constructed accurately, a questionnaire is a good choice for small-scale research done by a single researcher. Others argue that a questionnaire provides significant benefits in administration; it presents an even stimulus, especially to a big number of participants simultaneously; providing the researcher a relative ease for data accumulation and not to forget confirming that all participants are to remain anonymous (Walonick, 2000).

When those points are taken into consideration and other factors, for instance, the availability of time and the ease of access to the different types of sources, the questionnaire method is very suitable for the researcher's needs as well as the population which is under study. Some Arabs have been succeeded in using similar questionnaires namely Al Hili (1993) as well as El Sanabry (1993). But there is a disadvantage of a questionnaire that can present a low response rate. Usually, the most efficient and effective method to secure a good response is a face to face interview (De Vaus 1993). As long as the response of the questionnaire of this research is more than 90 per cent; the rate of the response is considered sufficient and proper (Cohen et al, 2002).

After taking decision on the main objectives of the questionnaire through a former literature review, a plan is needed for the identification and itemizing the other topics of the questionnaire that are related to its main aim (Cohen et al, 2002). There is a need also to formulate particular information requirements that relate to those issues. However, regarding the notion of standardization; special questions are considered more suitable than general ones. So that gave a bigger focus on the agenda of the researcher

and reducing susceptibility to any untrue interpretation by participants. Different kinds of questions were used but for easy and simple coding, closed question were most used including multiple choice questions and forced choice questions, for example (yes/no),(true/ false/ don't know) as well as rating and ranking. A Likert scale was also used to assess the agreement as follows:

1. Strongly agree 2. Agree 3.undecided 4. Disagree 5. Strongly disagree

For other questions, assessing the frequency as follows:

1. In most cases or always 2.usually 3.Sometimes 4 Rarely 5.Never

In this way, the distinction is made between participants who had strong feelings and the ones who presented a mild opinion about the discussed topic. Likert scale is a strong and simple instrument because it is easy to codify. As a positive statement (strongly agree) was coded number one to show the fully agreement and as a negative statement (strongly disagree) was coded number five to show the fully disagreement. In addition to that, sufficient space was added to help the participants, the researcher tried to keep response blanks to the right side of the page so the participants find it easy to complete. A group of negative and positive statements were integrated and the rationale behind that is a respondent can be liable to consider every section on its own merit (Maher, 1993).

It was tried to design the questions not to be ambiguous and imprecise; avoiding assumption and knowledge questions where the participants might not understand it. Moreover, it was also avoided all kinds of double and leading questions as well as hypothetical questions (Bell, 2005). Where possible, questions were related to each other to avoid confusion. The questionnaire was designed taking into consideration that some of the students complete the questionnaire in English which is their second language, so the questions were written in simple, clear and comprehensible language avoiding long sentences.

The final form of the survey was approved and administered to the whole sample at the American international school in Abu Dhabi in late January. It was tried to place a considerable level of importance to follow all proper protocols before going to the school to complete the survey. That involved getting permission from the principal of the school and support to encourage students to do the survey. However, the principal of the school was very collaborated by sending a formal email to teachers explaining the aim and importance of the study. The researcher also explained how important

the questionnaire is for the study confirming the confidentiality in order to motivate the participants to answer the questions and thanking them in advance for their help and understanding (Cohen et al, 2002). It was argued that a cover letter is advantageous because it introduces the respondents to the topic of the research and clarifies any doubt that may rise by respondents, and encourages them to participate; furthermore, the cover letter ensures anonymity and confidentiality and influences effectively the response rate (Sarantakos, 1993). However, the survey was given to students after school time, specifically after the last period of the school day to make sure to receive a high return rate.

3.5 The interview:

An interview is a major and crucial source in qualitative research; Bell (2005) indicates ‘’the way in which a response is made can provide information that a written response would conceal. Questionnaires responses have to be taken at face value, but response in an interview can be developed and clarified. ‘’ (p.146). An interview has to be a controlled and scheduled communication event; it is a conversation with an aim (Burgess, 1995). It was suggested that open-ended questions have flexibility and give the interviewer the ability to examine the limits of knowledge and information of interviewees; they foster cooperation and offer the possibility to establish a relationship between the interviewer and the interviewee, the researcher also can get a good assessment of what interviewees believe (Cohen et al, 2002). In interviews, listening is a live pursuit but it should be said that we get engaged with selective hearing. Recording the interviews is recommended for research evidence; Hitchcock and Hughes (1995) indicate that tape recording may delay the process of selecting the edited extracts which can occur when the interviewer takes notes. And when the interview cannot be heard again; the interviewer probably records things out of context. Tape recording not only gives the interviewer the ability to hold eye contact with interviewee but also watch their body language. It is very important the researcher develops an atmosphere that reinforces trust and ease for the interview to be valuable and fruitful; and particularly if there is a need to keep contact with the respondent. However, Bryman (2004) argued that in the end of the interview, the interviewer thanks the interviewee and informing him/her what is the next step of the research.

3.6 The interview procedure:

One interview protocol was developed to be used with teachers, developing the protocol content related to the research questions and to the areas mentioned in the literature. However, in interviews, the

researcher will get a clearer picture on the impact of technology on teaching and learning. The research participants are 12 teaching staff who teach different subjects chosen randomly, after the data of the interviews were note taken, the researcher transcribed, analyzed them and then stored a on password protected files on a password protected computer. In order to obtain a deep awareness of the technology culture of all interviewees, the researcher designed a semi-structured interview. According to Patton (2002) the aim of the interview is to seek what is inside the mind of participants concerning their attitudes, behaviors, views and feelings towards the use of ICT in teaching and learning.

Borg and Gall (1996) point out that face to face interview consumes time and personally draining, even though it was chosen over phone calls because of the participants' preference. They were told that the researcher would come to the school to schedule an appointment for the interview within a week, that approach did make the first phone call not unexpected; participants got ready for the call and had sufficient time to regulate to the thought of the interview (Graham, 2005). Finally, the researcher considered a request to allow recording the interviews.

The interviews were carried out privately at AISA with one-on-one basis, supporting them to be easy with less apprehension and more openness. The entire 12 interviews were carried out by the researcher during two days, the first day were interviewed eight teachers and the following day were interviewed the rest four teachers, they were all asked if they agree to audio tape of the conversation but unfortunately teachers did not show an approval to record the interviews, so recording was replaced with note taking. The interviews were carried out with the use of the structured interview schedule, but some issues coming from the interviews were pursued using probes (Gillaham, 2000) ,for instance, (would you please tell me) or (How you can link that to?..) it is important here to keep a balance among consistency and discovery (Strauss and Corbin, 1998). Approximately 45 minutes were needed to finish the interviews, the researcher was realized the tough and busy day of the teachers and ensured that the interview would not affect so much their day. At the end of the interview, some of the teachers offered additional help to answer any question anytime and anywhere if the researcher wants so.

3.7 Data management and analysis:

According to Reid (1992) there are three stages of managing the data; data preparation and identification as well as data manipulation, these three stages give a good scaffold for all process arranges for this research. Preparing the data included to enter the survey responses into SPSS (Statistical Package for

Social Science). On the other hand, Yin (1994) stated that data identification involves a text to be divided into significative and easily locatable parts of information. SPSS was employed for storing and analyzing the data that produced from the survey of the students. Manipulating the quantitative data involves to put the data through the rigor of analysis that are related to research questions. However, in the survey, the open –ended questions might need a form of quantification. In addition to that, the total characteristic of the data was conserved as much as possible in order to increase the advantages of the qualitative data to the maximum. And eventually the responses to all questions have been switched to tables through SPSS. The themes that arose from the interview data could be quantified completely simple because most of the themes that came up were very similar; reducing and identifying data.

Chapter4

Research results:

4.1 The influence of ICT use on the role of teachers:

To have the ability to assess how teachers' role was influenced by ICT, many questions were asked in the teachers' questionnaire and it was attempted to be supported by additional questions in the interview. When the teachers were asked to complete the questionnaire, they answered questions about the impact of technology in teaching and learning (see Appendix B). However, most of the teachers pointed out that the following items a.1, a.2, a.3 and a4 in (table 1) influenced their role strongly and changed it to make environments that have more independent learning for students, so changing their roles to be like supporters to students after they were the only source of learning. In the interview, teachers indicated that ICT let them more effective teachers through the use of skills and the internet. In addition to that, homeworks and the achievement of students became more cooperative through group work and project-based learning, the use of ICT also enhanced highly the process of observing students' progress and consequently teachers show improvement when they correct any discrepancy concerning students' achievement.

Table 1 influence of technology on teachers' role

The role of computers and ICT technologies	N	Mean	S.D
a.1 teachers have to use ICT for creating environments for students' independent learning	12	3.75	.639
a.2 ICT can enhance the monitoring of the progress of students' learning	12	3.86	.619
a.3 computers makes teaching more affective	12	3.99	.477
a.4 teachers have to employ cooperative and project based learning	12	4.00	.658

The results obtained from the teachers' interview when they are asked (See Appendix B) what they thought about students are doing with technology, different responses were obtained but the majority of the answers was the students' use of Microsoft office, the internet, logical thinking and other Information Technology skills. And about 33% of the teachers indicated in the interview that ICT improved thinking process of the students; became more self-confidents and developed their attainment scope by using the Web (See Appendix B). That transferred the role of the teachers from instructors to mentors who share with students the knowledge process.

4.2 Assessment of learning and planning teaching:

Approximately three-fourth of the teachers (75%) pointed out that their students have to use ICT skills that are shown in (table 2), that explains that the planning of the teachers would be influenced when teachers' plan teaching the subject matter variously as they should cover ICT skills in their plan and they maintain using emails and the web.

Table 2 skills of teachers in planning of teaching

code	skills	N	P	S.D
1	To operate a computer including file saving, typing and printing	12	100%	.000
2	To write documents (the ability to type, edit and layout)	12	100%	.000
3	To make illustrations by using graphics programs	12	50%	.522
4	To calculate using spreadsheets software (to create a sheet and use formula)	12	58.3%	.514
5	To write simple programs	12	41.7%	.514
6	Communication by emails for teachers and students	12	75.0%	.452
7	To send, look for and use electronic types of information	12	83.3%	.389

Moreover, in table 3 next page. There are four items which are about ''how teachers' planning of teaching is influenced''. However, the first two questions in the table are about the learning process and the last two questions are about communication and cooperation. As a policy, half of the teachers tend to use computers for the instructional practices, most of them have expectation that students would employ technology as learning support; and 40 per cent of the teachers expected students to use emails but most of the teachers expected students to use the Web (see table 4).

Pearson correlation was low (less than <0.8); that confirms that although policy and intention were existed , change was so slow; meaning that goals are not realized by ICT. Those results are doubled by other responses from teachers' questionnaire where a high percentage showed agreement that ICT role in pedagogy confirms that there is a need for teachers to turn to employing the Web, improve skills of problem solving in teaching and giving students their own pace regarding learning as shown in (tables 3&4).

If ICT can change the teachers' way of planning courses and lessons and assess learning; it is necessary to review teachers' skills to check if they have the knowledge of the adequate skills. According to the results of the interview(Appendix B) most of the teachers stated that they have knowledge of using

presentation programs; and using emails and the web for instructional purposes, but the percentage was low regarding teachers' instructional process. On the other hand, teachers mentioned that there are some obstacles regarding the same subject matter where almost everyone 95% showed agreement on the existence of many obstacles concerning the use of ICT in instruction particularly the ability to use computers in classes, 90% mentioned there is no time for using the internet; half of them have problems related to resources and training and the lack of appropriate skills. Those aspects would influence teachers' planning of teaching passively (see table 5 next page)

Table 3 impact of technology on planning teaching as well as collaboration and learning process

		Policy goals			Realized			Pearson
code	**Statements that are about using computers in different aspects**	N	P%	S.D	N	mean	S.D	r
1	The use of computers by teachers in their instructional practices g	12	50%	.499	12	1.29	.454	.350
2	The use of computers by students as learning support	12	100%	.000	12	1.77		(a)
3	The use of email by students	12	40%	.439	12	1.02		.248
4	Students use additional databases through the internet	12	80%	.366	12	1.64		.483
	Average		67.5%					

Table 4 Influence of technology on pedagogy

	Teachers		
	N	Mean	S.D
1.The internet offers great opportunities for educational apps	12	4.50	.511
2.ICT improves skills of students like problem solving and critical thinking	12	4.00	.850
3.Teachers and students have to have their own email addresses	12	3.50	.584
4.ICT allows teachers to attune to learning students' pace	12	3.50	.584

Teachers were also asked when interviewed (Appendix B) what kind of changes they wish to find made at school concerning allocation of technology and how it is structured, most of them pointed out that it is

very necessary for the availability of frequent technical support, that also supported by the teachers when they were asked in the questionnaire in the following table p.127 they confirmed spending more or less twenty hours weekly for computer coordination, thus spending this time influences negatively their time for planning teaching; in addition it influences also the output quality because the skills of the teachers are kind of limited and for sure it is lower than the skills of a technical support coordinator, two more problems were mentioned by most of the teachers: very few training workshops as well as little time available for preparing ICT based lessons.

Table 5 obstacles that influence the realization of students' computer related aims

Code	Obstacle	N	P%	S.D
1.	Teachers have no enough time to plan lessons by the use of computers	12	100%	.000
2.	Hard to use computers in a class instruction practices	12	91.7%	.288
3.	Insufficient staff to supervise computer using students	12	91.7%	.288
4.	Obstacles in setting sufficient computer time for different lessons	12	100%	.000
5.	No scheduled time at the school for the use of internet	12	100%	.000
6.	Teachers have no scheduled time to explore opportunities for the use of the net	12	100%	.000
7.	Insufficient space for locating computers properly	12	41.7%	.514
8.	Teachers lack skills in the use of computer for instructions	12	41.7%	.514
9.	No frequent workshops and\or training on technology for teachers	12	100%	.000

Teachers also mentioned previously that the workshops they had attended – that were available at school from the beginning of the academic year 2018-2019 till the present- was just an introductory skills nature; that was ensured by an answer to a question when they were interviewed (Appendix B) about what was the most beneficial and helpful ICT training they had got, the results showed that around 35% of the teachers mentioned it was micro soft office programs and another 35% mentioned it was different applications available on the web. It is worth mentioning that just only one fourth of the teachers did attend web application based training workshops and none of the rest workshops that they attended included issues related to the developing instructional practices added to the conception that ICT is considered as an extra improving skills.

To assess the level of the teacher student role is influenced by the implementation of ICT, the question that was asked to the teachers in the interview: what can technology offer your students to achieve now that was not possible before the use of ICT at school; they considered it very interesting question and

35% of the teachers stated that technology gave students the ability to raise their attainment scope through the use of computers and the web; students also became more self-confident and thinking process was improved.

The second research question: impact of technology on learning:

4.3 Literacy of students in technology

In the following table, it can be seen that students' answer in the survey (Appendix C), about knowledge level of using computers, three-fourth of the students mentioned they are in the intermediate category while only 15% mentioned they are in the advanced level (table 6). However, the question about how many hours do they spend weekly on computers, the answers varied where generally 12.5 hours were spent on the computer use which are around two hours every day except two weekend days. The table also showed a low number of 50 minutes every day that students spent on work related to their study (see table 7).

Table 6 level of students in using the computer

	Frequency	Percent	Valid Percent
beginner	4	8.0	8.0
Intermediate	38	76.0	76.0
Advanced	8	16.0	16.0
Total	50	100.0	100.0

Table 7 Students' use of the computer

	N	Minimum	Maximum	Mean	Std. Deviation
How much time you use the computer weekly? (in hours)	50	0	30	11.88	8.603
How many hours you use the computer for school related work?	50	0	22	4.24	3.490

Table 8 presents seven academic classes taking by the students but none of those classes have got a website. On the other hand, the table showed that just in one class IT has been used as part of the curriculum and IT has been used in three classes as a curriculum support (30% of their classes) which can be considered quite low.

Table 8 students' use of ICT

	N	Minimum	Maximum	Mean	Std. Deviation
The number of academic classes you are studying currently?	50	0	13	6.72	3.368
How many classes – if any- have a class website?	50	0	6	.58	1.070
As a part of curriculum, how many classes employ IT?	50	0	9	1.14	1.143
As a backup of curriculum, how many classes employ IT?	50	0	1	1.98	1.857

4.4 Are the students motivated by technology?

Most of the students were happy to employ technology during lessons, though one fifth were afraid of the use of technology and that considered high figure for grade 10 and 11 students. Table 9 In addition to that, high percentage 74% (Appendix C) mentioned that their teachers sometimes employ technology during lessons; whereas 95 per cent of the students considered that using ICT makes learning more interesting and fun. However, it is worth mentioning that the students' answer about what are the advantages of computer use and the web in their school; they showed a high rate on questions of attitudes than on questions of skills (table 10).

Table 9 Students' feeling towards ICT integration

		Frequency	Percent
Valid	sad	2	4.0
	concerned	10	20.0
	happy	37	74.0
	Total	49	98.0
Missing	System	1	2.0
Total		50	100.0

Table 10 Advantages of technology

Computers and Internet	N	never	sometimes	usually	always	Mean	S.D
1.Help me to complete the work	50	8%	14%	54%	24%	2.94	.842

2. Give the ability to work faster	50	6%	14%	52%	28%	3.02	.820
3. enhance my writing skills	50	10%	14%	56%	20%	2.86	.857
4. Let me learn new things that are not possible without the computer and the internet	50	6%	16%	54%	24%	2.96	.807
5. Through technology, my grades improved	50	8%	14%	60%	18%	2.88	.798
6. Through technology, doing better in tests	50	12%	46%	30%	12%	2.42	.859
7. Let me share my work with teachers and classmates	50	8%	14%	52%	26%	2.96	.856
8. make our school much more interesting	50	6%	8%	50%	36%	3.16	.817
9. Give me more confidence	50	8%	10%	48%	34%	3.08	.876
10. Give motivation to learn differently	50	6%	10%	50%	34%	3.12	.824
11. Give me flexibility to work anywhere	50	4%	34%	28%	34%	2.92	.922

4.5 The specific learning achieved

Most of the students -about three fourth- (Appendix C) mentioned that they use computers whether they are laptops (portable) or desktops to prepare class presentations, writing assignments and tasks, doing projects, homework and surfing the internet table 11.

Table 11 types of activities you use the computer for in the school?

Code	Activity	N	P	S.D
1	To write a report	50	.84	.370
2	For a research purpose	50	.76	.431
3	To check an assignment	50	.30	.462
4	For emailing classmates and teachers	50	.32	.471
5	For preparing homeworks	50	.82	.388
6	For presentations in class	50	.90	.303
7	Surfing the net	50	.66	.478

In response to the items in table 12 which are access to technology; 65% of the students pointed out that they access computers freely in the school (Mean 2.5\4) and generally use Microsoft word. However, half of them use the web and 55 per cent use spreadsheets such as Microsoft excel and database programs such as (Microsoft access, Microsoft SQL server and Oracle database) finally the students' use of email in the school was a bit low (mean=1.8). The answers of the students varied when they were questioned about what did they like most towards technology; there was not an obvious consensus of the questions in table 13 below, however, the highest percentage was about accessing to information is easy by the use of emails and the internet. It was good to find that 15% of the students admitted that technology improved their thinking power more than skills enhancement.

Table 12 Accessing to technology

code	Type of access of technology	N	never	sometimes	usually	always	Mean	S.D
1.	Computers within the school	50	10%	50%	20%	20%	2.50	.931
2.	internet for assignment and tasks	50	40%	26%	26%	8%	2.02	.999
3.	Microsoft Word or any similar program	50	8%	46%	20%	26%	2.64	.963
4.	Microsoft PowerPoint or any similar program	50	8%	48%	28%	16%	2.52	.862
5.	using emails	50	46%	32%	18%	4%	1.80	.880
6.	Spreadsheet such as Microsoft Excel	50	20%	56%	16%	8%	2.12	.824

Table 13 Preferences of students in Technology

	preferences of students about ICT	Frequency	Percent
Valid	Q1. Enhances my ability to do homework and making my tasks more interesting	9	15
	Q2. The access is easy to information by the use of Web and email	19	31.6
	Q3. Enhances my skills	3	5
	Q4. Improve my ability to perform collaboratively	4	6.6
	Q5. Improves my thinking power	9	15
	Q6. Improves the learning process by using software and other techniques	8	13.3
	Q7. Improves the quality of learning	8	13.3
	total	60	100%

4.6 Students' relation to learning

According to my study, it was found that the students are motivated; half of them mentioned that ICT gives them more confidence and motivation so they can learn diversely, high percentage of 95% showed agreement that the use of ICT makes the lessons more enjoyable and interesting. In addition to that, 85% pointed out that ICT improves their performance and most of them also mentioned that ICT can lead to a greater extent of integrated and assimilated learning. When the students are asked ‘does ICT help you developing research spirit?’ half of them strongly agreed with the statement, most of them also indicated that with the use of ICT they can get the work done and sharing it with others. (see table 10 previous page and table 12 above).

Chapter 5

Interpretation & Analysis

5.1 Interpretation & Analysis of the first research question

How is the teachers' role influenced by technology?

Most of the teachers mentioned that ICT (table 2) has a strong impact on their role of teaching and transferred it to make environments for independent learning for the students; so changing their roles to be like supporters to students after they were the only source of learning. Table 1. A high number 74% of the teachers mentioned that with the help of ICT, they can teach more efficiently and effectively by the use of various ICT related skills as well as the use of the internet, table 2. That was further confirmed by the responses of the teachers when interviewed (Appendix D), they mentioned that majority of the students are using different types of technology such as Microsoft office programs, the internet, logical thinking as well as IT skills. In addition to that, in the interview, 35 % of the teachers stated that ICT improved the thinking process of the students, expanded their attainment scope and they became more self-confident by using the internet. Students' homworks and their achievement became more cooperative through group work and project-based learning, the use of ICT also enhanced highly the process of observing students' progress and consequently teachers have improved when they correct any discrepancy concerning students' achievement.

In classrooms, ICT can change teachers' function and work by transferring the teachers' role from instructors to mentors (Schacter,1999). The results of this study present some teaching activities that are transferred from teaching to the technology media where Means et al, 2001 suggested that teachers might support their students more efficiently; that transferred the role of the teachers from instructors to mentors who share with students the knowledge process.

How can the planning of teaching influenced? Assessment of learning

The results of the study present teachers in the American international school in Abu Dhabi who have high expectation concerning influencing changes in the planning of teaching as well as preparing instructional tasks where teachers should cover ICT skills in their course structures and giving special

importance on using the internet and emails. And that was seen in table 2 when 65% of the teachers mentioned that the school policy has to give students the ability to employ ICT related skills. In addition to that, half of the respondents had the intention to employ the use of computers in the instructional practice; around 85% of the teachers anticipated the students who teach to access the web whereas just 40% mentioned the use of students of emails.

According to the results that also emphasized the ideas mentioned previously in the second chapter where (US Congress, Office of Technology Assessment, 1995) showed agreement that ICT offers teachers instructional resources and using email raise cooperation with staff and students. But looking at several obstacles mentioned previously regarding the use of ICT in the school by teachers, and the lack of teachers' development in instructional capabilities by the use of ICT, where just 20% stated they have such skills, consequently, planning of teaching is being switched to a slow manner. Two third of the teachers pointed out that as a policy goal, they want using ICT in learning, communication and instructional tasks which means teachers should plan their lessons in a different way including the various skills of ICT as well as the use of the web. Nevertheless, realizing those goals were low, table 4 shows a Pearson correlation less than < 0.8 which means the goals are not realized by the use of ICT. In addition to that, it is also found that just 10% of the teachers stated in the questionnaire that they employ email for instructional aims; that probably because of the result that just one third of the teachers have an email address. That result has a negative influence on teachers who became less cooperated with others.

In the literature review, the assessment of learning methods that was showed by Goldberg et al, (2003) were not confirmed by the results of this study. However, a small amount is done concerning this scope where everyone are still using textbooks in the school and the transformation to internet based aided learning cannot happen because of the lack of multiple factors. All teachers require actual support and time in order to use different kinds of strategies and technologies; so they can improve their personal level before knowing how to use them when they are teaching. Consequently, they require many skills regarding the use of software as well as computer and classroom management Becta (2002). Findings of this study presented a great percentage of teachers who came to an agreement that ICT role in pedagogy confirms that there is a need for teachers to turn to employ the Web, improve skills of problem solving in teaching; and giving students their own pace regarding learning. (table 4). So, if ICT can change the teachers' way of planning courses and lessons as well as assess learning; it is necessary to review teachers' skills to check if they have the knowledge of the adequate skills.

Most of the teachers have presentation software knowledge where 60% stated that their knowledge regarding ICT related skills is general. On the other hand, 65% have knowledge in using email and the internet for instructional purposes, though regarding instructional processes; teachers showed a low percentage. The computers offer a lot of tools that can collect, organize, process and communicate information, teachers should learn those skills and technologies as well as adjusting to modern attitudes (Kankaanranta, 2005). The majority of the teachers 95% also came to an agreement that they are facing many obstacles concerning the use of ICT in instruction, in particular, taking advantage of computers to different classes; 90% stated there is no time to look at modern technologies like the WWW and about half of the teachers have issues related to lack of new skills, resources and training, due to those aspects; the teacher's' planning and their assessment of learning can be negatively affected.

The teachers showed their intention to see reforms concerning some factors such as allocation of technology and how it is structured. Most of the teachers pointed out that they need a technical support when they are at the school, this is supported by another result when the teachers mentioned they spent around 20 hours weekly only for computer coordination, thus spending this time influences negatively their time for planning teaching; in addition it influences also the output quality because the skills of the teachers are kind of limited and for sure it is lower than the skills of a technical support coordinator. For training opportunities and workshops teachers have got, more than 35% of them mentioned it was Microsoft office programs and another 35% mentioned it was different applications available on the web. There is an evidence from the responses that no workshops were offered on the development of instructional practice; and ICT is just used as an extra improving skills.

5.2 Interpretation & Analysis of the second research question

Impact of technology on learning

Literacy of students in technology

There is an effective usage of ICT for supporting and assisting student learning and their performance but that can be only found when students and teachers have skills and the sufficient knowledge to employ technology (Becta, 2003). The computer literacy of the students according to Crawford and Vahey (2002) is knowledge, and students' awareness is their capability to use technology. However, the results of the dissertation presented that about 75% of the students pointed out that their knowledge of

using computers is intermediate table 6, on the other hand, they showed quite low awareness where classes have no websites; ICT is being used in just two thirds of classes. Table 1

Are the students motivated by technology?

The core of ICT in education is to develop and enhance students' interest to learn different activities because it can create an environment and offer contents in a way that allow students to engage more and involve more straightway than textbooks can do and for sure better than traditional tools that were used in teaching (US Congress, Office of Technology Assessment, 1995). It was confirmed by the results that the majority of the students indicated they were motivated 75%. In addition to that, a high number 80% of the students mentioned that ICT can make their lessons more motivating and interesting table 10

The specific learning achieved

Generally, school systems think about skills, knowledge and attitudes as an important part of the teaching and learning process; emphasizing the scopes of specific learning achieved by students and that can be divided into two themes: the specificity of learning by the use of the new technologies and developing the different intellectual skills. However, it was indicated that computer literacy means the way in which people see how the computer can fit into their life whether in the present or in the future, that requires creating a group of practical concepts about computers so people will want to use computers and knowing how to use them in a helpful and proper manner (Crawford and Vahey, 2002).

Applying that in the school; it will mean that we need producing students to use computers for problem solving and doing tasks weather in or out of the school. Students have to solve problems with the sufficient knowledge and the appropriate skills in a way that the computer will work for them. Schools in Abu Dhabi sound to offer students with various skills as the main contribution of ICT instead of considering the skills as tools to improve the different intellectual skills, the majority of the students 75% confirmed they are computer users table 11; with a great level in skills of using Microsoft office namely Power Point and Word, and a low level in skills of using email table 12. Most of them 80% also showed high positive attitude regarding the usage of the computer table 10.

Relationship of students with learning

It was mentioned previously in the literature review (chapter 2) that there is a difficulty when speaking about the contribution of recent technologies to students' actual learning without highlighting that these

technologies have changed significantly the way students approach knowledge and combine it with their previous knowledge. What the students (75%) mentioned in table 11 was supported with fact that ensures the ideas of Law and Chow (2002) who believe that ICT can help in the development of research spirit, a high percentage table 10 also came to an agreement that ICT gives them the ability to share a lot of things with other teachers and classmates; that was indicated in the literature review which asserts the view that ICT gives bigger cooperation among individuals (Schulz et al., 2002). Eventually, in the questionnaire, most of the students strongly agreed that ICT grants more incorporated and better assimilated learning (table 10) (Baron & Bruillard, 2007)

All in all, there is an impact of ICT on teachers' role; ICT transferred them from traditional teachers to mentors who share the knowledge with students. That attitude with regard to pedagogy has improved thinking process of students, raised their skills and extended their attainment scope by using the web. Worth mentioning that the performance of both teachers and students were highly enhanced. Teachers showed an agreement that ICT influenced their planning of teaching, so teachers have to cover ICT related skills with lessons and they support their students for presenting feedback on their learning for such as homework solving skills. Even though policy goals and teachers' desire change on the 'realized' scale in the school. Not much is done in UAE and particularly Abu Dhabi concerning assessment methods; teachers require support and time for using recent technologies and strategies to improve their skills before using them in teaching process.

According to the attitude questions, it is very interesting to mention that they showed higher scores than skills related questions, the thesis results also demonstrated that combining ICT with teaching and learning is a matter that should be done at the school. Most of the students 75% are happy to use technology in the school and ensured that ICT let them more confident and motivated in the subject matter. It is encouraging to find that 15 % of the students thought that ICT improves their thinking power more than skills improvement.

Chapter 6

6.0 Conclusion:

6.1 Summary

The study showed that most of teachers said that ICT influenced their role and shift it from content expert to mentor who share the knowledge with students. That attitude has improved the thinking process of students and raised their skills and extended their attainment scope by using the internet. Worth mentioning that the performance of both teachers and students improved remarkably. Most of the teachers showed agreement that ICT influenced their planning of teaching and their course materials now require including ICT related skills so students can give feedback on their learning process. However, little was made in Abu Dhabi concerning the assessment methods; teachers require support and time to use recent technologies and strategies to improve their experience.

The school where the study was conducted sound to offer students the skills as the main contribution of technology instead of skills as an instrument to improve students' different intellectual skills. Additionally, it was good to find that attitude questions got the same as skills related questions. The results of the study also indicated that merging ICT into teaching and learning in the school is an attitude matter that has to be incorporated by teachers and students. The majority of the students were happy in terms of using technology during lessons and assured that ICT let them more confident and motivated in the subject matter. A modest percentage 15% of the students had a belief that technology improves their thinking energy rating more than skills enhancement.

6.2 Limitation

The investigation included only a private high school in Abu Dhabi, conducting a study in more than one school or in public high schools could have offered more insight to the research. In addition to that, ICT is continuously changing, developing and creating new concepts and theories, it is very important to

keep up to date with knowledge in regard to the existed framework as well as to the development technology and implementation of ICT all over the globe in educational innovation.

6.3 Recommendation for Further Research:

As long as ICT is developing in a very rapid pace in the present and there is a clear evidence to keep changing, schools are trying to adapt to the developing technology. However, what it has been reported in this research is the specific role that technology plays in the developing and emerging instructional practices where it is more and more adopted in schools. These ICT supported evolving practices indicate that those trends will continue accelerating and expanding in the coming years. ICT will play strong and advantageous role in enhancing teaching and learning in the future but the critical factor is that educational leadership has to keep addressing policy related issues taking into consideration the need to improve and develop the capability of schools to be ICT supported learning institutions.

Our future will depend highly on future oriented policy matters if they are granted some attention. For example, is there any kind of change regarding ICT related policies; that regularly adjusted to fit technological updates? And whether these policies are set up and examined whenever a recent internet opportunity is made for students to check inappropriate materials? Do staff development content have technical and instructional opportunities that are available for teachers? Are there regular assessments to highlight issues such as digital divides, in which students do not obtain equal opportunities to participate in ICT related functions?

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Appendices:

Appendix A (Letter to school)

2/24/2019

To: American International School in Abu Dhabi
To Whom it May Concern

This is to certify that Mr.Amer Kuzbor with Student ID number 20171188 is a registered full-time student in the Master of Education from the Faculty of Education offered by The British University in Dubai since September 2017.

Mr. Kuzbor is currently collecting data for his dissertation (Impact of ICT on teaching and learning)

He is required to gather data through conducting interviews and surveys that will help him in writing the final dissertation. Your permission to conduct his research in your organisation is hereby requested. Further support provided to his in this regard will be highly appreciated.

Any information given will be used solely for academic purposes.

This letter is issued on Mr.Kuzbor's request.

Yours sincerely,

Dr. Amer Alaya
Head of Student Administration

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Appendix B (Teachers' interview questions)

Interviews questions

1. What types of technology do you use at school and do you have skills and experience in using them?
2. Does ICT help for teaching more efficiently and how?
3. Have you attended any ICT training or workshop? What is the most useful one?
4. What kind of changes you like to be made in the school regarding the allocation and ICT restructure?
5. What you do on computers and how many hours you spend?
6. What kind of activities do your students usually do with technology?
7. What can technology allow your students to do now that was hard or impossible before was ICT available at the school?
8. How many hours a week are formally allocated to computer coordination?

Appendix C

Students' survey

1	Choose your level of using computers a. Beginner b. intermediate c. advanced
2	How much time you use the computer weekly? ( ) in hours How many hours you use the computer for school related work?
3	How many classes – if any- have a class website? ( ) class
4	How do you feel when you are told you will use technology in the class? a. Sad b. neutral c. happy
5	Do your teachers use technology during the lesson? a. Never b. often c. always
6	Do you think using technology during the lesson makes more interesting? a. Yes b. No
7	Do you email your teachers regarding a class assignment? a. Yes b. No
8	Choose the things that you use the computer for:

Code	Activity	yes	no
1	To write a report		
2	For a research purpose		
3	To check an assignment		
4	For emailing classmates and teachers		
5	For preparing homeworks		
6	For presentations in class		
7	Surfing the net		

9 Do you have access to technology? Please tick using this scale:

a. Never b. sometimes c. usually d. always

code	Type of access of technology	never	sometimes	usually	always
1.	computers				
2.	internet for assignment and tasks				
3.	Microsoft Word or any similar program				
4.	Microsoft powerpoint or any similar program				
5.	using emails				
6.	Spreadsheet such as Microsoft Excel				

10 What types of advantages can technology offer in the classroom regarding computers and the internet?

Code	computers and the internet…	never	sometimes	usually	Always
1	Help me to complete the work				
2	Give the ability to work faster				
3	enhance my writing skills				
4	Let me learn new things that are not possible without the computer and the internet				
5	Through technology, my grades improved				
6	Through technology, doing better in tests				
7	Let me share my work with teachers and classmates				
8	Give me more confidence				
9	make our school much more interesting				
10	Give motivation to learn differently				
11	Give me flexibility to work anywhere				

11 What types of technology are used in the class?

code	Types of technology	yes	no
1	A camera		
2	Powerpoint		
3	emails		
4	Interactive smartboard		
5	Projector		
6	The WWW		

Appendix D

Teachers' Survey

According to the objectives of your school, which of these skills have to be gained by your students at the end of the academic year? Tick ✓ or ×

code	skills	answer
1	To operate a computer including file saving, typing and printing	
2	To write documents (the ability to type, edit and layout)	
3	To make illustrations by using graphics programs	
4	To calculate using spreadsheets software (to create a sheet and use formula)	
5	To write simple programs	
6	Communication by emails for teachers and students	
7	To send, look for and use electronic types of information	

The following question is about using computers in different aspects, please answer both questions for each aspect which are (1) is it school policy at your school? (2) to what extent do you thing that is realized?

code	**Statements that are about using computers in different aspects**	yes	no		low	medium	high

1	The use of computers by teachers in their instructional practices g						
2	The use of computers by students as learning support						
3	The use of email by students						
4	Students use additional databases through the internet						

Please use the following scale to show your level of agreement about statements that relate to the role of computers and ICT in school?

1. Strongly disagree 2. Disagree 3.neutral 4. Agree. 5. Strongly agree

code	Learning process	SD	D	N	A	SA
1	The internet offers great opportunities for educational apps					
2	ICT improves skills of students like problem solving and critical thinking					
3	Teachers and students have to have their own email addresses					
4	ICT allows teachers to attune to learning students' pace					
5	Teachers have to use ICT more for creating environments for students' independent learning.					
6	ICT enhances observing the learning process of students					
7	A computer helps teaching more effectively					
8	Teachers have to encourage more cooperation and project based learning.					

Do you think that each of the following is considered a main obstacle that can affect the realization of computer- related goal in terms of students?

Code	Obstacle	yes	no
1	Teachers have no enough time to plan lessons by the use of computers		
2	Hard to use computers in a class instruction practices		
3	Insufficient staff to supervise computer using students		
4	Obstacles in setting sufficient computer time for different lessons		
5	No scheduled time at the school for the use of internet		
6	Teachers have no scheduled time to explore opportunities for the use of the net		
7	Teachers lack skills in the use of computer for instructions		
8	No frequent workshops and\or training on technology for teachers		

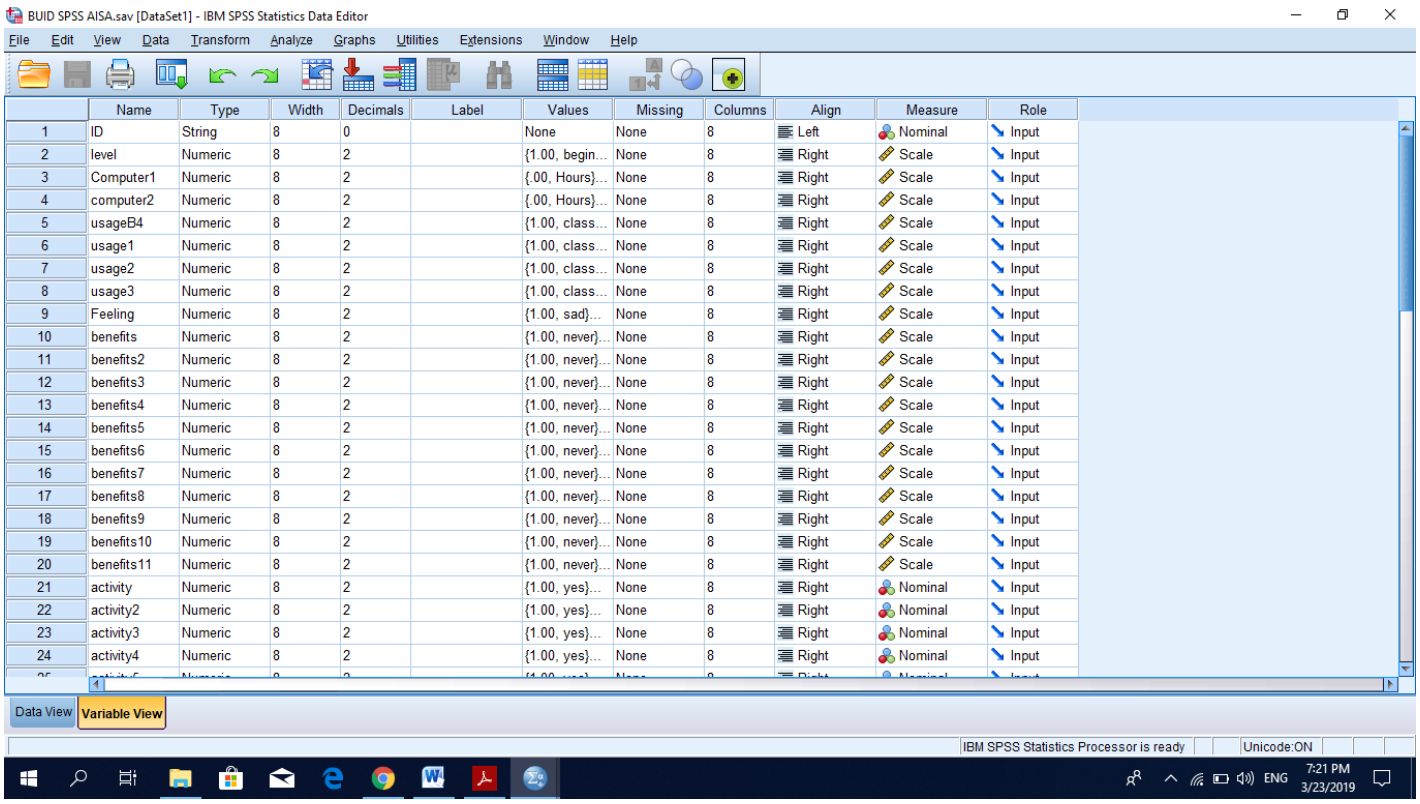
Please present if you agree or disagree with the following table regading the role of computers and other ICT using the following scale?

1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree

The role of computers and ICT technologies	1	2	3	4	5
a.1 teachers have to use ICT for creating environments for students' independent learning					
a.2 ICT can enhance the monitoring of the progress of students' learning					
a.3 computers makes teaching more affective					
a.4 teachers have to employ cooperative and project based learning					

Appendix E

Sample of the coding of Surveys in SPSS


BUID SPSS AISA.sav [DataSet1] - IBM SPSS Statistics Data Editor
File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help
Name Type Width Decimals Label Values Missing Columns Align Measure Role
1 ID String 8 0 None None 8 Left Nominal Input
2 level Numeric 8 2 {1.00, begin... None 8 Right Scale Input
3 Computer1 Numeric 8 2 {.00, Hours}... None 8 Right Scale Input
4 computer2 Numeric 8 2 {.00, Hours}... None 8 Right Scale Input
5 usageB4 Numeric 8 2 {1.00, class... None 8 Right Scale Input
6 usage1 Numeric 8 2 {1.00, class... None 8 Right Scale Input
7 usage2 Numeric 8 2 {1.00, class... None 8 Right Scale Input
8 usage3 Numeric 8 2 {1.00, class... None 8 Right Scale Input
9 Feeling Numeric 8 2 {1.00, sad}... None 8 Right Scale Input
10 benefits Numeric 8 2 {1.00, never}... None 8 Right Scale Input
11 benefits2 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
12 benefits3 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
13 benefits4 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
14 benefits5 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
15 benefits6 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
16 benefits7 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
17 benefits8 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
18 benefits9 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
19 benefits10 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
20 benefits11 Numeric 8 2 {1.00, never}... None 8 Right Scale Input
21 activity Numeric 8 2 {1.00, yes}... None 8 Right Nominal Input
22 activity2 Numeric 8 2 {1.00, yes}... None 8 Right Nominal Input
23 activity3 Numeric 8 2 {1.00, yes}... None 8 Right Nominal Input
24 activity4 Numeric 8 2 {1.00, yes}... None 8 Right Nominal Input
Data View
Variable View
IBM SPSS Statistics Processor is ready
Unicode:ON
ENG
7:21 PM
3/23/2019