

The Attitude of High School Teachers in Saudi Arabia towards Computers: Qualitative Study

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Abstract—Teachers can play a huge role in encouraging students to use computers and can affect students' attitudes towards computers. So understanding teachers' beliefs and their use of computers is an important way to create effective motivational systems for teachers to use computers in the classroom in an effective way. A qualitative study (6 focus group) was carried out among Saudi High school teachers, both male and female, to examine their attitudes towards computers and to find out their computer skills and usage. The study showed a gender differences in that females were less likely to attend computer workshops, females also had less computer skills, and they have more negative attitudes towards computers than males. Also the study found that low computer skills in the classroom made students unlikely to have the lessons presented using computers. Furthermore, the study found some factors that effected teachers' attitudes towards computers. These factors were computer experience and confidence as much having skills and good experience in computer use, the role and importance of computers had become in their life and in teaching as well.

Keywords—Attitude, Education, Student, Teacher, Technology.

I. INTRODUCTION

NOWADAYS computer technology is a very important tool; it is a necessary device that helps to achieve work speedily, professionally and economically [10]. Computers now enable students to be creative in learning and lead to better achievement on learning objectives [11]. Methods of teaching have changed and developed since teachers learnt about how to use computers and then integrate them into their teaching [6]. Educators and researchers mention that the attitudes of the teachers toward information technology are a key issue for successful use of computers in education [12]. The use of computers by teachers in the classroom is not only a tool to make effective learning process, but in addition to show students how they can use computers to learn [4]. Therefore, children should learn technology by convenient persons who are confident in their technological skills. Teachers follow the parents who have a strong effect on their children [9]. Teachers are the most important people who determine using computers technology in the classroom and consequently teachers require more knowledge about the technology so they can efficiently use it in the classroom [7]. The existence of computer technology in the classroom does not mean that it will be utilized efficiently. Several teachers are still technology illiterate and they do not have more

knowledge about using computers in the classroom [7]. A number of teachers are not using computers in their school or classroom even though they have positive attitudes towards computer [7]. Nationwide USA research reported that even though computers have become more available in school classrooms, the teachers are still not using them effectively for their curriculum [9]. While computers become more common in the classroom, it is essential to illustrate the respond of the teachers toward using technology [9]. Working and learning with computers is not an easy job, which leads some teachers to avoid using them [7].

II. LITERATURE REVIEW

As technology is a comparatively new learning tool in educational sectors, a number of teachers becoming nervous and confused while learning to work with the computers since they are not able to connect the new knowledge from computers and the previous knowledge from university or first training to be teachers [7]. Despite of the availability of the technology among schools, teachers will not be able to interact with the technology unless they have positive attitude towards it and have enough skills in using it [7], [2]. The availability of technology is not enough to get its benefits to students, but teachers' skills in technology that can make successful learning transfers to students via technology [5]. Teachers combining computer skills with beliefs in the importance of computers will result in full potential for teachers as well as students in using computers [5]. However, to effectively widen the range of educational chances that can be offered to students, teachers should approach and keep up with a certain level of technological ability. This level of technology allows teachers to be more effective with their work so they can communicate easily with students' parents, maintain records, preparing efficient research and nice presentations [2].

Teachers need to know more than just simply using a piece of hardware or a particular software application in order to use technology effectively in the classroom [6]. Teachers must have a wide-ranging knowledge across several aspects of the planning, implementation, and evaluation processes [6]. Teachers must also have a depth of knowledge to know how to use technology to teach parts of the curriculum to enhance student learning such as student-centered instruction [6]. Andersson & Streith [11] suggested "training teachers effectively, as this provides more experience in computers and competency with computers, and this in turn can enhance teachers to use computers easily". Using technology creatively by teachers for learning will require teachers to have higher degrees in computer skills [4], knowledge, competency [4],

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[11] and attitudes [4]. Ertmer [5] confirms that “effective use of technology and to integrate the use of computers in teaching requires the availability of the technology in schools, teacher training to use computer and intellect in who and when will use computers during the teaching process”.

In [9] it was reported that “the reason that teachers avoid using computer for personal purposes or in the classroom with students is the high degree of anxiety and feeling uncomfortable with the computer technology, and less computer confidence. They are unfamiliar on using and interacting with new technology. In addition, no differences were reported between teachers with regard to the experience of teaching, age or gender in attitudes toward computer or computer cognition”.

In [7] it was proposed that “there is a positive relation between teachers’ attitudes toward computers and using them in the classroom, and computer experience and knowledge. Having more skills in computing and a high level of experience tends to result in less computer anxiety and more favourable computer attitudes”.

Reference [8] found that “the needs that teachers believe that they are depending heavily on how accessibly ICT resources are to them and the extent to which the technology has been adopted for education. Teachers who have risen to higher stages of computer use have made technology an integral part of their classroom and use it to develop pupils’ higher cognition and this has been accompanied by a predictable change in their attitudes and requirements. At the top level of computer use in the classroom, teachers change their perception, seeing technology as integral, rather than additional to their classrooms”.

Becker [3] conducted a study to measure primary school teachers’ attitudes towards the internet. He found that young teachers have stronger attitudes toward the internet that not related to the age, but caused by the high degree of computer comfort they feel when using the internet as they grow up with technology changing. Also the study suggests strong positive relations between professional administration and internet use. The encouragement of teaching leaders to share their enthusiasm with their colleagues will promote the spread of effective use of computers throughout the profession. Among the teachers who use the internet on a professional basis, they report that a large proportion of their use involves discussing teaching methods and group project ideas, and personal topics with their colleagues. These teachers are also more open to observation from their peers.

Yushau [12] observed a study in Saudi Arabia among professors of the mathematics department. He found positive attitudes toward computers and using them for academic purposes. This finding suggests a high degree of computer acceptance as well as adopting computers as important tools in learning and teaching. In addition, the number of years teaching has a positive relation with computer attitudes, while there is no relation with regard to age and computer experience. However, professors in this study reported a low rate of using computers in the classroom, and that suggested intensive use of computers and positive attitudes, but this does

not mean professors adopt computers as tools of learning and teaching in the classroom.

Baylor & Ritchie [2] have conducted an instructors’ interview for 94 school teachers’ perceptions of the computer in the classroom. Teachers who are open to technology and change appear to implicate the technology in the classroom for helping students to learn and increasing their thinking skills. This study also shows that administrators that encourage technology to be used, in both actions and words, promote a culture of technology. Despite the contributions of administrators to encouraging the use of technology, the key determiner is the attributes of the teachers [2].

Almekhlafi & Almeqdadi [1] conducted a study in Emiratis and found some barriers that can limit the use of computer technology in the classroom. The most significant barriers were availability of technology in schools, a lack of motivation to use technology in the classroom, lack of computer skills and experience, and the high average of the students in classroom.” In addition to these barriers, a lack of availability of the technology in the schools can prevent the use of technology in the teaching process [9]. Regarding gender differences among teachers on attitude to computer, [1] found that “significant gender differences existed amongst teachers. Also female teachers are using a variety of programs and applications as they seem to be more experienced and knowledgeable in using computer programs and resources than male teachers. Also female teachers in this study had more computer experience than male teachers. However, in this study [1] both genders had high computer self-confidence and abilities to use technology effectively in the classroom”. “Teachers will need to change, with differing degrees their (a) beliefs, attitudes, or teaching ideas; (b) content knowledge; (c) teaching knowledge of instructional practices, strategies, methods, or approaches; and (d) novel or altered instructional resources, technology, or materials when they are asked to use technology to teach some material to students” [6].

From previous studies it is clear that students are strongly influenced by their teachers to accept technology as a learning aid so positive attitudes toward computers will increase teachers’ technological abilities and computer expediency. However, teachers’ positive attitudes toward computers and the availability and integration of computer in schools does not mean that teachers will use computers in classroom training, and more computer experience will make teachers more comfortable with computers, and will lower computer anxiety level. In addition, interactions between teachers and sharing their knowledge about technology and how they can present to their class can motivate teachers to use technology more in the classroom.

III. METHODOLOGY

A. Significance of the Study

The Ministry of Education in Saudi Arabia has adopted technology as a prime tool at different educational levels to increase the level of education and knowledge of students by using computer technology as a method of gathering

information and learning different knowledge from around the world [8]. The objective of this study is to identify Saudi teachers' beliefs on computer, computer skills, their use of computers in teaching and learning, and to find out any difficulties or barriers that can hamper the use of computers in teaching. In addition, to discover any gender differences in computer use, computer skills and experience among Saudi teachers. Also if teachers use smart phones as these are use like computer (accessing internet and has applications). Identifying these issues will provide suggestions in improving the use of computers in schools, training, accessing, and highlighting the advantages or weakness of using computers in school. This will then help improve education in Saudi Arabia and keep developing with other civilized communities in this era.

B. Study Procedure

Many studies have been carried out using quantitative methods to identify teachers' attitudes towards computers and their use of technology in general or in the classroom. However, focusing on quantitative methods can sometimes limit the depth of information gathered, specifically opinions on the benefits or difficulties regarding the integration of technology into the education system [1].

Then a focus group has been used in this study to found out qualitative data about high school teachers' attitudes toward computers and also to collect information on computer availability at schools and how teachers use them in the classroom. As the schools in Saudi Arabia separate girls and boys, so there are schools for girls and schools for boys and they are taught by the same gender, so female teachers teach girls and male teachers teach boys. Therefore, three female teachers' focus groups and three male teachers' focus groups have been conducted; each group had 6 teachers of different age, subject and teaching experience. This variety in age and subject is to ensure that teachers attitudes have been examined in terms of different age groups or subject that can cause a difference in attitude.

C. Questionnaire Design

The interview started with demographic questions about age, teaching experience and subject. The next questions were about computer use in home and school, computer experience, computer skills...etc. The interview was carried out in Arabic, as the interviewees were Arabic native speakers, in order to make the discussion easier and more effective. The interview was then translated to English for data analysis and discussion. The NVivo programme has been used to analyse this qualitative data using thematic analysis.

TABLE I
QUESTIONS ASKED THE FOCUS GROUP OF TEACHERS

No	The Topic of the Question
1	Demographic questions (age, subject, teaching experience)
2	Computer experience & computer use at home and work
3	Purposes of using computers
4	Using computers for learning and to prepare the lessons
5	Feeling when using computer
6	Computer skills teachers have
7	Attending workshops & liking to attend more
8	Using smart phone & applications
9	The advantages of computer
10	The disadvantages of computer
11	Benefits in using computer in teaching
12	Disadvantages of using computer in teaching
13	Using computer in the classroom(how often, how using it)
14	Asking students to do HW which required using computer
15	Students interaction when using computer in the classroom
16	Connecting with students online
17	Difficulties when using computer at class
18	Computer availability in the school
19	Connecting with other teachers online and sharing documents
20	Administration asks to use computer in the classroom
21	Feeling if the life without computer
22	Students use computer at school
23	Teacher thought about the encouragement that students have from their parent
24	Teacher thought about students use of computer and their skills

TABLE II
HIGH SCHOOL TEACHERS FOCUS GROUP

Group	Gender	Symbol
1	Male Teachers all their Classes Equipped with Computer, Projector & Smart Boards	M1
2	Male Teachers there is no Computer, Projector & Smart Board in their Classes	M2
3	Male Teachers there is no Computer, Projector & Smart Board in their Classes	M3
4	Female Teachers all their Classes Equipped with Computer, Projector & Smart Boards	F1
5	Female Teachers some of their Classes Equipped with Computer, Projector & Smart Board	F2
6	Female Teachers no Computer, Projector & Smart Board in their Classes	F3

IV. ANALYSIS OF THE RESULTS

A. Computer Attitudes

Most of males and females have positive attitudes toward computers, and they use them at home or school. In addition, they believe that computers are important in their life as they said this when they were asked about their feeling when they use computers. Female teachers feel that computers give them enjoyment and help them to communicate with the world: "enjoying.... I'm in a different world (F3).... cruise the world (F1).... very happy (F2).... self-confidence (F2)" while males feel when they use computer "comfortable (M1).... dazzle (M1)", "it is natural part of the life (M3).... confidence and enjoyment (M3).... I feel happy and enjoy it (M3).... achievement (M3)". In addition, teachers' feelings about what life would become without computers are strong evidence of computers' importance and computer attitudes. The females said: "disconnection with the world....isolation.... very hard,

it's like life without electricity.... it will be very tiring....my projects will not be saved, the portrait will destroy.... we will write the exam questions by hand", while male replies showed a range of attitudes such as "frustration, retardation....as if absent from the world.... the life stop (M1)", "I will feel resentful.... I will feel emptiness (M3)" and a sense that life would be difficult "life would be more difficult, monotonous and slow (M2).... life will be complex, difficult to do tasks (M1).... the work will be hard(M1)".

B. Smart Phones

All teachers in these focus groups use smart phones except one male teacher (M3). They have used them for seven years or less. There are no differences between males and females in how long they use smart phones.

Male and female teachers were found to use smart phones for different purposes. Females reported several applications in their phones such as: Google, social networking, games for their children, calendar, WhatsApp, e-mails, YouTube, camera, calculator and news. However, there are two females who use smart phones for calling and texting only and don't use other applications: "I'm ignorant I know just calling and texting (F1), nothing (F2)". Moreover, males use smart phones for similar applications as females, but they use smart phones more widely for different purposes: "bank application, notes, government applications, dictionary, weather application, currency change". One of the males mentions that he uses only one application in his phone WhatsApp, for chatting (M3).

On the other hand, One of the female teachers was not happy with smart phones as she expressed the following opinion: "smart phone has lots of disadvantages, wasting time, harm hand fingers, watching videos and chatting wasting time and easy to arrive at the forbidden(F1)".

C. Computer Advantages

Most of teachers believe that computers are important in our life and reported lots of advantages of computer technology, depending on its importance for them. Female and male teachers have mentioned similar computer advantages such as "saves time and effort (F1), (F3), (M2), (M1), (M3)", "easy searching about information (F1), (M2)", "everything available in internet, many sources in websites, preparing lessons, resolve issues, projects, clarify lessons in YouTube (F3)", "lots of benefits, save effort (F1)", "I can find news with updating (F1)", "communication between us and other world (F2)", "fast spread of the news and information (F2)", "completion of the work very fast (M1)", "the advantage of computers is variety, easy to use and easy and fast getting to the knowledge, or what you search about (M1)", "easy to find the information and viewing what's new (M1)", "saving information then get it back easily (M2)", "fast performance and give information in fast way (M2)", "lots of useful websites for teaching (M3)".

However, males seems to be differ from females: they focus on the quality of the work and in self learning and development as these elements are important for them: "Accuracy in some usage like drawing, and organisation and

good performance (M2)", "easy to record and analyse data (M2)", "people can learn in home about electronic learning (M2)", "the organisation (M3)", "using e-mails to deliver documents (M3)", "perfecting the work...accuracy, achievement and perfections keep up with development (M3)", "the ease, the speed, the accuracy and the enrichment to the subject (M1)", "tidy content (M2)", "save information in full satisfaction and perfect organization then easy to reach what I saved (M2)".

Females think differently in some ways, as they focus on teaching and their students: "computers are a grace, moving us from past tool that I go to library to find the information and register in the library and pay money (F3)", "everything between your hands... attract students, who see not like who listen (F3)", "we don't need the portrait or drawing (F2)", "pictures are better than talking (F2)", "computers make teaching easier (F2)", "video clips are useful and easy for absorption by students(F2)".

D. Computer Disadvantages

Teachers reported advantages of computers technology, but they also reported disadvantages that make them scared of or annoyed by computers. Female and male teachers agree in computers disadvantages people or students spend a long time with computers for entertainment, filling their time without feeling and leading them to health problems or isolation: "wasting time in entertainment, chatting (F3)", "the students spend their time in entertainment then they don't study (F3)", "also the computer takes all my time it steals me from my children (F2)", "from a disadvantage that a person probably spends long hours with computers without feeling (M1)", "lead to social isolation (M1)", "addiction using Internet.... wasting time in chatting and games affects the brain (M3)", "computer effect on human health especially eyes (M2)", "health problems (F1) & (F2)". Moreover, they mentioned that the unreliable sources from the Internet make them annoyed: "there are many unreliable sources (F3)", "most of the information are not true and not reliable (F1)", "inaccurate information and doubt in the resources (M2)", "not enough knowledge for student (M1)". In addition, they reported that using computers negatively affects reading and writing skills: "we don't use the pen and paper like before, it causes bad writing (F1)", "lack of reading books (F1)", because "students don't have books they get all information online (F3)". Furthermore, Saudi teachers, both male and female, appear to be worried about their children, and they want maintain their moral standards: "controlling children is the most difficult problem as the internet is open to the world (M2)", "the bad use like watching pornographic clips (F3)", "bad and porn websites (M3)".

Other disadvantages were in computer malfunction and Internet quality in Saudi Arabia: "the damages which break all device and programmes (M2)", "hacker and viruses (F2)", "computer broken (F1)", "the Internet quality is bad slow and can breakdown (F2)".

Males have reported additional negative points about computers: "The difficulties of some programmes because of

lack of programme quality (M1)", "lack and rarity in possibilities and lack of supports (M2)".

Finally, one of male group says that "but in general the benefits of computers overcomes the disadvantages (M2)", so they believe the important and the huge benefits and usefulness of computers.

E. Feelings When Using Computers

Teachers' feelings when they use computers were found in this study to be influenced by the computer advantages. The advantages make their feeling become positive, whereas their feelings become negative about computer disadvantages or when they suffer any problems with computers. Females have good feelings when they use computers: "enjoying.... I'm in a different world.... cruise the world.... very happy.... enjoying.... self-confidence", but they have bad feelings sometimes when they don't get benefits, face problems or spend a long time working on a computer. They reported: "it's interesting when I find what I'm looking about and feel comfortable, but I become nervous, tired and stressful if I didn't find anything or slow internet (F3)", "what bothers me in the internet is that some information is not true or different information from different websites, or not completed works (F3)", "happy but if I stay for long time I feel nervous (F3)", "sometimes when I didn't find what I want or didn't understand the programme I feel headache and nervous (F3)", "it was enjoyable before, but now no because I'm busy now I don't have time I have lots of work more important than using a computer (F2)". Also females' feelings are dependent on the purpose that they are using computers for: "I feel nervous when I do something related to my work, but enjoying when I use it in entertainment, video or social networking (F1)". Similarly, male teachers reported positive feelings when they are using computers as they get advantages from computers: "comfortable (M1)", "the ease and accuracy and speed (M1)", "Efficiency and speed and the ability to perform the learning process faster (M2)", "it is natural part of the life (M3)", "confidence and enjoyment.... I feel happy and enjoy it.... achievement.... comfortable (M3)". Males too have negative emotions when they spend a long time working with a computer "enjoyment but if I stay for long time tired (M1)".

F. Computer Skills and Experience

Female teachers reported having limited skills in using computers and they suggested the reasons for this is a lack of experience and that didn't use or learn computer in early age: "I don't know anything, when I need something I ask the students to do it for the class, that because I didn't learn computer in an earlier age, if I learnt from childhood I would be very confident, but now I don't absorb I'm grouchy (F3)", "yes true computer is not our generation it's the students' generation, they are better than us in using computers (F3)", "I don't have any skills; my daughter writes for me, she registered me in Twitter and Instagram (F1)".

Furthermore in addition to the computer experience, the age of teachers also affects their computer confidence. Older teachers, both males and females, have fewer computer skills and less confidence in using computers than younger teachers.

In fact, older teachers don't seem to use computers much at all. One female and male don't use computers at home or in school, while one female uses it only in the classroom to present PowerPoint presentations to the students.

G. Gender Differences

- 1- Male teachers have more skills and confidence than female teachers. Female teachers have reported the following skills: Word, PowerPoint, downloading programmes, Excel, interactive white board, Photoshop, smart board, email, YouTube, downloading videos. Some female teachers don't have any skills: "I don't have any skills (F1)", "nothing (F3)", "I don't know anything (F3)". On the other hand, males reported a wide range of skills: Word, PowerPoint, internet and Excel, printer English dictionary programme, Word or text processing and Visual Basic, Microsoft Office programs, browsing and writing, designing photos, designing the teaching lessons with PowerPoint, writing in Word English and Arabic, Photoshop.
- 2- Male teachers have a longer experience of computer use than female teachers as most of the males have used computers for 10 years and over while females have used computers for 6 years or less. The average computer experience for male was 15 years, while the female computer experience was 7 years.
- 3- Male teachers usually use computers daily at home for hours more than female teachers, as the males reported in the interview: "not less than one hour daily often, 5 hours every day, 4 hours daily, two to three hours every day, three hours daily, from one to three hours per day(M1)", "four hours daily, two hours every day, one to three hours per day, from one to four hours, no more than 15 minutes a day, 10 hours(M2)", "no more than one hour a day in school and home, one hour daily, 5 hours, 4 hours a day, two hours daily, 2 hours every day(M3)", while females said: "half an hour daily, 2 hours in week, I use it once a week (F3)", "4 hours in a week, 1 hour in a week...I use my laptop a lot I leave it open during the day(F1)", "three hours daily, two hours every day, from 2 to 3 hours daily....twice a week about 1 hour to 1 an half, 2 hours in a day(F2)".

Some of the female teachers don't use computers currently or use them a little for teaching: "in the past I used a computer for a long time to prepare presentations for the class, but now I have everything I don't need to use computer (F2)", "just one or two hours per week to prepare the lessons only (F1)", "little just to find what I need then close it immediately (F3)", "I just use it to write the exam questions then close it (F3)", "we just use it when we need it for teaching (F3)", "we don't have time to use it for long time (F3)".

- 4- Male teachers use computers for different purposes in teaching and other personal use: "browsing, for teaching and self-development, reading and watching news.... general education (M1)", "studying, academic searching, translation and Word, for searching, writing student data, writing exams and other usage, for entertainment,

communication and saving information then easy to return back to it (M2)", "news, bank and communication, the most common thing is browsing and writing, teaching purposes, Word, PowerPoint, Excel and Visual Basic, lessons websites providing information on what we teach (M3)". In contrast, most of the female teachers use computers for limited purposes. They use it for teaching (preparing the lessons) as the main purpose or only for this purpose and do not use computers for other purposes: "surfing the internet only, searching about pictures or presentations to use it for my class, most often PowerPoint and Word (F3)", "writing exams questions, collecting data for the class and preparing PowerPoint, searching (F1)", "browsing websites, preparing the lessons, news, Email, shopping, Twitter (F2)".

- 5- More female teachers seem to dislike having workshops in computer than males. Females replied negatively to the question "If the school gave you the opportunity to have computer workshop would you like to attend?". The teachers said: "no I don't have time now (F3)", "no I know what I need (F3)", "no I don't want (F3)", "me too I don't need it and would get no benefit from them (F3)", "no I don't want to get any workshops humans teach themselves (F1)". However, there are teachers who want to have computer workshops: "for me yes I want to learn and know more skills in computer use (F3)", "I hope (F1)", "I want but in an appropriate time (F1)", "we have basic knowledge we need to learn more deeply about computers (F2)", "yes of course, I want to learn about Word more (F2)". Female teachers want to have workshops to keep up with their children and control them, and another teacher wanted to have workshops that are useful for her work, as they said: "yes I like to learn more about computers at least to understand what my children do on computers (F3)", "yes, but simplified workshop and useful for my work (F2)", "yes why not I like to have anything new related to teaching (F1)".

In contrast, most of the male teachers would like to have computer workshops to increase their knowledge and keep up with technology improvements: "yes, to learn more skills (M1)", "yes because computer sciences and programmes are improving and renewing super-fast (M1)", "yes to improve ourselves and learn new skills we probably don't know (M1)", "yes to increase my experience and skills in computer (M2)", "yes interested to have a workshop in databases or Excel and Access (M2)", "yes to improve myself (M2)", "to know all computer skills, computer usage becomes the necessity of a civilized (M2)", "yes more benefits (M3)", "yes for self-improving (M3)". However, two teachers would not like to have computer workshops as they reported: "no because my subject doesn't need computers (M3)", "no we don't need it (M3)". Furthermore, most of the male teachers arrange to attend computer workshops themselves: "I have international license for computer leadership (M1)", "I attended a number of workshops on Microsoft office Word and Photoshop (M1)", "workshop in computer use (M2)", "Word and PowerPoint (M2)", "Visual Basic (M3)".

Most of the female teachers get workshops in their school. All three female groups said this: "in school they did a workshop for all school teachers (F3)", "the school did a workshop about how to use an interactive white board (F1)", "in school we had workshop in how to use interactive white boards and Word and how to edit photos (F2)". There is one teacher who paid for a computer workshop herself as she mentioned: "I paid to have a workshop (F1)".

- 6- Most of the male teachers are happy with the Internet and their life is linked with computers so reported the following feelings about living without computers: "frustration, retardation (M1)", "as if absent from the world (M1)", "the life stop (M1)", "I will feel resentful (M3)", "I will feel emptiness (M3)", "bored; we will turn to use limited techniques (M3)", and they think the work will be difficult without computers "life will be complex, difficult to do tasks (M1)", "doing the bank and government transactions will be difficult (M1)", "the work will be hard (M1)", "life would be more difficult, monotonous and slow (M2)", "life and work will be hard in some points because we couldn't save the information and send it easily (M2)". However, there are two male teachers who have different feelings. They don't have problems with living without computers: "no problem maybe we will lose fast performance and lose communication, but it is not important (M2)", "I don't care it's not important (M3)".

On the other hand, most of the females don't care living without computers: "I don't care (F3)", "no problem I hope that (F2)", "I don't worry (F3)", "no problem (F3)", and they are happy to use the traditional methods that they studied before when they lived without computers: "we will turn to the traditional old material (F3)", "we studied before without computers (F3)", "we lived and studied without computer (F1)", "we will return to use the traditional methods only, it's the basic (F2)", "we lived and studied without computer (F1)", "computer engage people and separate them (F3)".

Female teachers reported that giving classes without computers is better: "it will be better lots of presentations lose the importance of the lessons, and the students don't understand (F2)", "no problem and safe health and good brain, computers destroy students' thinking (F1)". Nevertheless, there are some females who have negative feelings about life without computers: "very hard, it's like life without electricity (F2)", "we will return to books (F2)", "it will be very tiring (F2)", "my projects will not be saved, the panels will destroy (F2)", "we will write the exam questions by hand (F2)", "disconnection with the world (F1)", "isolation (F1)". Furthermore, they mention that the absence of computers is not a problem for them, but it will be big problem with students "a computer is part of their life (students), while it's 20% or 30% of our life (F3)", "we can use books and other sources, but the students don't have books they get all information online (F3)".

H. Using Computers in Schools

Female Male and female teachers reported advantages from using computers in learning and teaching. Female and male teachers agreed that using computers in the classroom is benefited, very necessary and allows the use of new techniques that provide efficiency learning that students understand faster when use computers. They reported: "when I teach art the pictures in the PowerPoint shorten what I need to clarify for students, they see the steps in how to make the project (F3)", "I see connecting the information with pictures or video very important as it is easy to understand (F3)", "movement from traditional educational methods (F1)", "optical better than audio (F1)", "students absorbing more from the computer (F2)", "very important for the students (F2)", "sometimes they can't understand without pictures and videos using pictures closer the information to the students, also make the lesson easy and enjoyable (F3)", "students can replay what they didn't understand more than once (M1)", "prevents dispersion (M1)", "the information with computers becomes clear because it's linked with all senses (M1)", "provides the information in an interesting way (M1)", "ability to introduce the lesson in awesome way with high quality and efficiency (M2)", "it is saving time, get references easily, fast and easy communication and training (M2)", "speed learning and getting information fast (M3)", "source in finding information (M3)", "ability to benefit from information and data, fast implementation of tasks, and using computer anywhere (M3)", "easier explanation and deliver the information to the student in interesting way (M3)", "increase focus for student (M3)".

The teachers also indicated that computers motivate students to learn: "breaks the routine, and makes the students look forward to the class (F1)", "the students interact with what they learn and their absorption appears immediately (M1)", "make the lesson exciting (M1)", "thrill student (M2)".

Moreover, teachers suggested that computers make teaching easier: "in the past we make more effort but now everything is ready in the presentation and we don't talk a lot like before (F2)", "saving time and effort for both teacher and students (M3)". In addition, they reported that electronic books and notes are an added advantage of computers in teaching: "if they use electronic books rather than bring the books every day this would be better (F2)", "electronic books and electronic notes make it easy to carry everywhere (M1)". Males saw an additional benefit of computers in teaching: "organising students' grades and easy to get them (M2)".

Teachers also reported disadvantages of computers to students. Male and female teachers reported that students need control when they use computers and they lose their academic searching skills as they get the information from unreliable sources: "controlling children is the most difficult problem as the internet is open to the world (M2)", "computers remove students' academic searching skills and social communication skills (M2)", "the students depend on the internet and find the wrong information, not everything in the internet is true (F2)". Also, female and male teachers agreed that students use computers for entertainment and have no time for learning:

"the students spend their time in entertainment then they don't study (F3)", "not enough knowledge from student I mean they don't know how to use a computer effectively they spend the time for something not useful chatting or games, watching clips (M1)". Male teachers think the reason for not using computers in the correct way is "because they lacked the direction about how they can use it to learn or to be creative (M1)".

Female teachers reported that there are disadvantages in using computers in the classroom, but that these disadvantage not from computers, but from teachers that use computers in class in the wrong way: "some teachers depend on the presentations then don't make an effort in the class, she just presents the PowerPoint (F3)", "some teachers ask their students to prepare the presentation and that's wrong as the teacher should make it by herself (F3)", "also some teachers take presentations already available in the internet or buy them then use them in the class (F3)", "some teachers depend on the presentation and doesn't use the board or do activities (F1)", "distracted the attention of students (F2)". Teachers reported that students prefer to use traditional method and they remember the lessons more with them: "when we ask the students which method they prefer they like using the traditional method only pen and board and they don't like the presentations they said we understand more with the traditional method and memorise the information while the presentations we feel are boring and not absorbing (F2)".

Some teachers believe that using computers is important for all subjects" for all subjects.... the same opinion it's important for all subjects.... computers absorb all sciences, but provide programs that support all subject (M1)", but there are male teachers who reported that computers are not important for all subjects: "important exactly for scientific subjects and English (M3)", "no for math and physics subjects, but for other subjects like religion and Arabic (M3)", "I see for scientific subjects very important (M3)", "I see it's important for maths subjects and indispensable (M3)", "little, because of the lack of the benefits of computer, maths should be by board and pen easier and clearer (M2)". Some females stated that computers are not important for all subjects as males did: "depends on the subject I teach Arabic I don't need to use it in the class just searching about information (F1)", "it depends on the lessons and the subject (F3)", "depends on the subject, mathematics don't need for presentations I use it in rigid lessons (F2)", and they think using computer needs for some lessons and not for all lessons "in my opinion some of the lessons need to use computers to present pictures or video or to find information while there are lessons not important to use computer for (F1)".

Most of the teachers can use computers at school, depending on the computer availability, so in schools that are equipped with a computer, smart board and projector in every classroom their teachers use computers many times per week, whereas in schools that are not equipped with technology the teachers don't use computers in the classroom. These teachers explained: "there is no facilities in the class no computers or projectors, I have to bring my computer and connected and

that take time from the class time (M3)", "there is resource room which has computer, interactive white board and projector for all teachers and classes we should book this room first maybe before one month or more to give class in (M3)", "there is one room that has a computer, projector and interactive white board (F3)", "only one is not enough we are fighting to book this room and presentation take longer time so I should finish in 45 min the time is not enough (F3)". Moreover, they find difficulties in delivering the lessons through computer "sometimes the presentations don't open and get stuck then we spend half of the time to solve the problem (F2)".

1. Students and Computers

The teachers reported that most of the students use computers at home and they have good skills and more confidence than teachers. Females reported of students: "they are creative in designing presentations (F3)", "sometimes they lead us in computer use when we are lost in the class (F1)", "they are better than us (F1 & F3)", "yes they know how to work with programmes (F2)", "they are better than us, sometimes I ask them (F2)", males too reported "their achievements appear in their files which they have to complete them (M1)", "also it appears through their work with computers in the class (M1)", "sometimes we ask them to prepare a presentation for the class and they have very distinctive abilities (M1)", "especially electronic games and they have abilities in computer I think that (M2)", "they have good ability, it is the necessity of the times (M3)", "some of students have better skills than teachers (M3)".

Another opinion expressed by female teachers is that students use computers for entertainment most of the time: "they use it, but just for entertainment (F1)", "they use it for chatting and browsing, watching films, for secondary purposes (F1)".

On the other hand teachers reported that there are some students who don't use computers and they don't have any knowledge or skills: "I think not all students use computer it is depend on their families, maybe some of them can't use it or maybe they don't have it in home (M3)", "there are a number of students who are confident in computers and a number who don't know anything about computer (F2)".

Also, female and male students can't bring their own computers to school. Teachers were asked about what they think about how parents encourage their children to use computers and most of them think that parents encourage their children to use them and that increase their ability and confidence: "they bought computers for them (F3& M1)", "yes they provide it to their children (F1)", "I see parents encourage their children and they share opinions in school twitter accounts (F1)", "I think every student has three devices not one laptop, tablet and smart phone (F1)", "yes now the life works with computers (F2)", "yes they encourage them to use it and let them get courses in computers (M1)", "yes each home has internet and computers (M3)", "some parents share with their children, keep pace with scientific progress (M3)".

On the other hand, there are a number of students, especially females, who don't use computers at home and they don't have any skills. Female teachers said: "there are about 10% of students who don't have a computer, don't use it at home, they don't know anything about it (F3)", "there are students who don't have computers and no technology experience (F1)".

The reasons for not using computers could be related to the economic situation or could be parental strictness: "some of them are poor and can't provide computers, some have high economic wealth, but their parents are maybe strict (F3)", "I think parents are not happy with computers they don't recommend them for their children, but it's necessary in these days (F3)", "they are worried about using it for bad things then leading them to the distraction (F3)".

Moreover, some males have different opinion that parents not happy with computers, but their children force them to buy them: "I think they not encourage them, but the children themselves wanted computers and asked their parents to buy computers (M2)", "they see their friends and relatives have an iPad or laptop so they want to have it (M2)", male teachers suggested that "directions is important as the internet has websites that are destructive of morality and ideology (M1)". Male teachers suggested that parents should encourage their children and parental encouragement leads to computer creativity: "encouragement from parents increases their creativity (M1)", "they should encourage them to learn and use a computer, because it's become essential in work and for communication (M1)".

Most of the teachers give students homework that involves using a computer to prepare it: "one time in a semester, divide them into groups and every group prepares a PowerPoint (F3)", "to prepare PowerPoint or flash, but with a group of students once in semester (F2)", "not always depends on what they need (F2)", "sometimes they prepare presentations (F2)", "one time in the year a group of ten do one project together (F2)", "designing lessons from curriculum related to the lessons about nutrition (M1)".

However, male teachers set different types of homework: they use emails to send homework and webpages for electronic leaning: "doing homework then send it by e-mail (M2)", "we made a web page in English for communication to train student writing skills and learn more vocabulary (M2)", "sending homework by email and doing charts by computer (M2)", "doing short research (M3)". The teachers reported that students like working with computers at home and do some projects without asking them then they bring it to the school in flash memory: "Some students do that from themselves, they like working with computers and designing flash and PowerPoint presentation (F3)", "normally I don't ask them but some students show their preference to do presentations in the class".

Most of teachers give their students home work in a group to do it with computer, one of the male teachers express that because some students cant access to computer at home and it will be difficult to do it" because not all students have a computer at home so we do group projects students can share

in and present it (M1)". Some of male teachers reported a negative impression from students though: "I ask them to do PowerPoint presentation, but the respond is negative they don't want to do it (M3)", "students enjoy being with computer, but some students hate computers and they don't wish to learn or to use a computer (M2)". Additionally, some female teachers reported that they get benefits from students in the class as they help them when they don't know how to open programme: "I benefited from students as they have good experience, because the young use it at an early age (F1)", "the students help me when I am stuck in the presentation (F1)", "some of the students are creators they do better than their teachers in presentations (F2)".

Female teachers reported that students have good computer skills and they have it by the experience that they have computers from early age and they talk about computers with friends "they don't attend any workshops because they have good skills (F2)", "they talk a lot about computers and they have it from 7 years old (F2)", "they learn computers by experience not by studying (F2)". Also female suggested, computer encourage children learn reading and writing" computers encourage them to learn writing and reading to search and browse in the internet, for example my child of 5 years old told me I want to learn how to write (games) or a singer's name (F2)".

With regards to students' performance when teachers use computers in the class, most of teachers described good interaction. Female teachers said: "they are enjoying the class, they remember the lessons better when I use a computer (F3)", "they see the information in real and present with the idea, they are very happy (F3)".

Males also reported a high degree of performance when they use a computer in the classroom to deliver the lessons: excellent (M1)", "very high (M1)", "wonderful, probably they learn very fast (M1)", "huge interaction and raises their motivation to learn (M2)", "not so bad (M2)", "strong interaction with me when I use a computer (M3)", "they give attention to the lessons (M3)", and a male teacher have an additional benefit and interaction that can give students a more understanding "if the student didn't understand he can download the scientific article and replay it at home (M1)".

In contrast, some male and female teachers reported no difference in students' interactions when they use computers and some students hate them using a computer to present the lesson: "no differences in student performance it is the same using a computer or traditional methods (M3)", "normal no changes, students affinity depends on the lesson (F1)", "it depends on the class and the teacher who presents the lesson, for example: my class doesn't like lessons with PowerPoint because I use it every day then they feel bored, when I move to a new class they are very happy to have the lessons using a computer because they never had it with their previous teacher (F3)", "my students told me they feel sleepy when I use a projector because I turned off the lights (F3)", "they prefer writing on the board (F3)". One female teacher argued that using a computer in the class has a negative effect on students' performance: "the lessons that have presentations are chaos

for students they pay attention to the pictures and colours and do not understand the lessons, they feel it is entertainment and don't know about the basic goals, so when I review the lessons they remember the lessons with the traditional methods (pen and board) more than computer methods (F2)".

Some teachers didn't get any workshops in computer use for teaching and presenting in class, as they reported: "we never had rules or learn how to make effective presentations (F2)", "also the presentation should use a little when needs not for every lessons, there are degrees on how much time teachers use computers and presentations they ask us, but they don't ask on how to use it and when and that makes students feel bored from using computer in the class (F2)".

V. DISCUSSION OF THE FINDING

This study has been carried out to evaluate high school teachers' attitudes towards computers, based on computer experience, skills, computer use and availability of computers in schools. The study's results have shown that most teachers have a positive attitude towards computers and use them at home and at work. This is because they believe in the importance of computers in general life and for work purposes. However, male positive attitudes towards computers are stronger than female. Also, younger teachers have stronger positive attitudes towards computers than older teachers.

A. Gender Differences

The study shows there is a gender difference in teachers' attitude towards computers, since male teachers have more positive attitudes toward computer than female teachers. In this study six gender differences were found in regards to computers.

The first difference is male teachers are more confident and have more computer skills than female. The second difference is that male teachers have more computer experience than female.

The results present that male teachers use computers for more years whilst most of female teachers only used computers more recently, as early as six years ago, meaning that female teachers only began to use computers later in life than males.

The third difference is that male teachers use computers for a longer time than females.

Fourth difference is male teachers use computer for several purposes such as self-development, government, e-bank...etc. Whilst females tended to use computers for teaching as a main purpose and some used computers to prepare lessons only.

The fifth difference is male teachers like to have workshops using computers, more than their female counter parts. In addition, male teachers had computer workshops for themselves, unlike females whom had computer workshops provided in school for them. Also, males wanted to have additional computer workshops to improve their skills and increase their knowledge, whereas female teachers just wanted to have computer workshops to keep up with their students, how to control them and for teaching.

The sixth difference is that most male teachers felt

negatively if they couldn't use computer anymore and felt their work would be more difficult without computer access. In contrast, most female teachers did not worry about losing access to computers and some expressed happiness if they had to stop using computers and return to traditional methods.

All six previous difference, led to more negative attitude to computers from females than males. Since female situation in Saudi culture was more entrenched that the women should stay at home and rear children and focus on housework as their main responsibility. Therefore, it would be viewed that females would not have spare time to use computers as much as males since their responsibilities as mothers and housekeepers would limit the time they would have to leave their homes to attend computer workshops. Therefore, having workshops in school would be more suitable and accessible for females to learn how to use computers while they are already in their work environment. Moreover, males in Saudi Arabia are mainly responsible for the management of their family's financial expenses and decisions. Therefore, males are more likely to improve their computer skills in order to seek better employment and job opportunities; also they would be more familiar in using e-banks and e-government websites to manage their family affairs more easily from home.

B. Smart Phones

Most teachers, both male and female, use smart phones which help them have a positive attitude towards new technology and computers since smart phones allow easy access to internet and other applications similar to what computers can do. In addition, some teachers especially older don't have enough skills to use them and so they are only used for calling and texting, whilst other use them for chatting and social networking. Therefore even though a teacher may have a smart phone, it doesn't mean they have positive attitude towards it, they may have bought it to keep up with the latest trends and avoid using old mobile devices or they like the newer techniques. Consequently, some have reported some disadvantages from using smartphones such as; harm to health, wasting time in something that is not useful and easy access to forbidden things.

C. Computer Skills and Experience

This study suggested limited computer experience led to a lack of computer skills and confidence. Further to that, not using computers in early age and less computer use caused a lack in computer skills. Teachers who used computers for a long time and they have a lot of computer experience, have more computer skills and are more confident than teachers who use computers later in life. Older teachers from both genders don't have enough computer skills and then they find using computers or learning to use them very difficult which cause negative attitudes towards computers. Becker [3] has a similar finding that younger teachers have more positive attitudes than older teachers, because they have more competencies with technology since they have used them at an earlier age. Additionally, the study reported that lower computer confidence and experience, and lack of skills tended

to cause negative attitudes towards computers in teaching. Also, a lack of computer experience and skills among school teachers caused significant barriers, preventing teachers to use computers in the classroom [1]. In reality, some teachers especially females know how important computer technology is nowadays and how improvements and changes technology has brought to life, but they are less interested to use computers in the classroom or attending workshops to learn more skills in computer. This supports the finding that positive attitudes among teachers towards computers and their belief in the benefit of technology in learning is not enough to make teachers use technology in the classroom [11], [5]. But as much as teachers are confident in using technology and having skills and experience, they still need training in strategies to use technology in teaching that will result in the successful use of technology in teaching process [11], [5].

D. Computer Advantages & Disadvantages

Teachers in this study reported many advantages of using computers such as: saving time and effort, easy to find information from different sources, and the rapid spread of the news...etc. Moreover, teachers in this study reported the advantage of using computers to depend on the interest and importance to them. Therefore, male teachers focused on quality, accuracy and achievement of work, and they were interested in electronic learning. However, female teachers in this study were more interested in their teaching job and students learning. They expressed the advantages of computer use as making their work easier and motivating students to learn.

On the other hand, males and females teachers suggested the disadvantage of computers to be spending too much time on useless things, the causing of health problems, and misinformation from websites.

Furthermore, they reported that computers led students to lack writing and reading skills; because they had become accustomed to getting information from the Internet and from unreliable sources. These caused a reduction in reading books and searching skills from reliable sources. Also when students did all their tasks by computer, they would not have many opportunities to develop writing and drawing skills using pen and paper.

Moreover, Saudi teachers were unhappy with the Internet because it contains pornographic websites or clips, tempting students to learn bad things. Therefore, as a preventative measure some parents prevented their children from using the Internet.

Male teachers reported additional disadvantages from computer use, since a lack of program quality and lack of support, resulted in inferior computer skills and confidence among Saudi teachers, making them unhappy using programs. Additionally, many programs do not support the Arabic language. So they found it difficult to use computers or programs as they were unfamiliar with the English language.

E. Feelings When Use Computer

This study suggested that feelings when using computers

had a strong relationship with the advantages and disadvantages teachers got benefits from using computers. They had higher benefits when they felt happy, comfortable, successful and enjoyed working with computers. On the other hand, when they had negative feelings with computers such as: being stuck, spending too much time without finding what they needed, using a difficult program or had bad internet quality, then they felt nervous, had headaches and felt stress making the disadvantages more prominent. Likewise, teachers feelings when using computers are associate with the purpose of computer use so if they use it for their job they unhappy and nervous, but when they use it for entertainment or browsing internet, then enjoyed themselves. This finding supports the finding by [9] that a high degree of computer anxiety and lower computer skills can make teachers uncomfortable with technology and therefore, not using technology either for personal purposes or in teaching. Having low levels of confidence in computers and little experience can cause high levels of computer anxiety.

F. Using Computer in Schools

All teachers in this study proposed the importance of computers in teaching and learning. Moreover, they reported that using computers in classroom to clarify and close ideas to their students helped them understand the work better and retain information in their memory. Furthermore, teachers suggested that computers made students learn individually through electronic lessons. However, all teachers also reported some disadvantages from using computers in learning such as losing writing and writing skills, access to unreliable sources, getting wrong information and wasting time for something not useful. These situations could be caused by lower computer skills and knowledge from students and a lack of academic and learning sources in Arabic (as mentioned in previous studies that there were not enough electronic sources in Arabic), and therefore that students don't have certified references and lack academic and searching skills. Therefore, students use computers for entertainment purposes rather than learning, to watch films, social media chatting and playing games.

Teachers using computers in the classroom were affected by the computer availability in the school and classroom. Schools that were provided with enough computers, projectors and interactive white boards had teachers who used these to present lessons than schools which limited computers to only four classrooms. When schools that had only one classroom equipped with computer, projector and interactive white board; teachers are not using computers often. They found it difficult to bring their own devices and take the time to connect these into the classroom to deliver the information. This finding supports Ertmer [5] finding which suggests that effective use of technology in the classroom depends on the availability of technology. So when computer became more available in the classroom, this will motivate teachers to use them in order to provide students with new and effective teaching methods. Rosen & Weil [9] also proposed that a lack of availability of the technology can become a barrier that

prevents teachers from use technology in the classroom.

In addition, teachers suggested there were some disadvantages of using computers in the classroom to present their lessons. But these were caused by unskilled teachers who did not know how to use computers in the classroom effectively. Teachers who used presentations for every lesson caused students to feel bored, and the teachers who designed the presentations with lots of pictures and colours so that students' mind didn't distract, but they could focus too much on the pictures and effects rather than understanding the meaning of the presentation. Since using technology or devices by teachers does not necessarily mean they able to use them successfully in teaching process. Therefore teachers should train to have skills in how to use technology to enhance students' learning in the classroom [6]. Moreover, most teachers used computer presentations for all lessons without changing and so made students feel bored. To integrate technology in educational methods, teachers should change their beliefs and attitudes towards technology to be more positive, acquire skills in using the devices, and gain knowledge in how to use technology in teaching to improve students learning [6]. As spend time in class presenting materials using PowerPoint presentations for example it is not the most effective use of computers and will negatively effect students learning as well as hinder their attitudes towards computers. Additionally, teachers spent a long time to prepare lessons and present it that the students get stuck in the classroom and don't know how to behave. Therefore, they make students feel bored, unexcited and develop a hatred towards computers. Students preferred to have lessons by traditional methods and not always by computer presentations.

G. Students and Computer

This study showed that all teachers believe most students have their own computers and can access from home. They also believe students have more computer confidence than the teachers themselves as they started using computer from an earlier age, so computer experience increased their confidence and skills. Furthermore, teachers reported that male and females students are very creative using computers and have good skills as seen when they submit homework or projects which were done using computers. Some students appear to prefer doing projects with computers and like designing PowerPoint presentation, without asking them.

On the other hand, some teachers argued that there is a small percentage of students either males or females who can't access computers from home and so have very little computer skills and experience. Therefore, if teachers asked a group of students to do one project using computers to prepare, not all students had computers to work with. There are three prospected reasons for students not having access from home. Firstly, parents financial situation maybe be poor, and so they can't pay for their children to have their own devices or accessing the Internet. Secondly, their parents could be strict and they don't want their children to access the Internet. And thirdly, the students themselves do not have positive attitudes towards computers; they may have access to devices and

Internet but prefer or dislike using them.

In regards to parents, teachers suggested that students who have encouragement from their parents, tended to have their own a computer or tablet so their parents must have bought them the computer and some parents connect with their children by social networking. Also, teachers in this study suggested that students whose parents did encourage them to use computers were creative. Moreover, the teachers suggested that it was not necessary that a student who owned their own computer had parents encouraging them; it could have been the students arguing with their parents to buy a computer for them like their friends, even against their parents' wishes.

The study indicated that students in high school both male and female have computer classes and they get access to computer labs in the computer class time only, and they can't get access to the lab or to their own laptop or mobiles in schools as it not allowed. Therefore, students not accessing computers in school can't share with their friends and teachers their activities or work and they can't work together in the same time. In fact, if students use computer in school they can learn from each other and can motivate other students who don't like using computers. In addition, only computer science teachers use the lab, but other subject teachers can't get access to the computer lab. They can use computers in the classroom if they are available or book the resource room to give lessons using computers. Unfortunately, teachers need access to the lab in some lessons to do exercises with computers such as charts, drawing or searching and learning individually, and lead students in how to use computer to learn. Therefore, teachers are not able to direct and teach their students in how to use computer to learn and advise them where are good electronic sources.

Teachers reported that students' performance was better when they used computers to deliver their lessons and they did better in exams. Whilst some teachers reported that student's performance when using computers or not were similar, but some reported better results with traditional methods using pen and board. In fact, using computer in class motivated the students to learn, and gave them the information in an interesting way but students' performance depended on how good the teachers performance was in using computers to design and deliver the information effectively on students' performance.

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