THE IMPACT OF TEACHERS’ EDUCATIONAL BELIEFS ON THE CLASSROOM USE
OF COMPUTERS IN SAUDI ARABIAN PRIMARY SCHOOLS

By

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The members of the Committee appointed to examine the thesis of MANAL ALABBAS, III find it satisfactory and recommend that it be accepted.

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Abstract

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This study examined the factors that affect the application technology, especially computer technology and applications in Saudi classrooms. Given the importance of technology use in affecting student outcomes, the researcher intended to establish the how teacher’s attitudes and beliefs affected the use of such technologies affected its application. This qualitative research was conducted using the survey research design. According to the results of the study, an overwhelming 93.22% agreed that attitudes and beliefs affected how implemented computer use in classroom. Indeed, 71.9% strongly agreed that their attitudes and beliefs had a significant bearing on their use of computer in classroom. However, it is important to note that 17.80% of the respondents disagreed with statement that their beliefs or attitudes affected their use of computers in classroom. Additionally, the researcher examined the factors that hinder computer use computers in Saudi Arabian classrooms. The results of this study indicate that about 42.31% representing about 50 of the respondents indicated that accessibility to computers remained one of the major challenges affecting their use in Saudi classrooms. This indicated a need by the Saudi Educational sector to institute proper technological infrastructure that would enhance accessibility of computers in schools across the country.
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Dedication

I dedicate this work to my beloved parents: Dad Abdullah and Mum Hussah, my sister Norah and my lovely family, my husband Thamer, my son Abdullah and my daughter Reatal. These persons have been patient and supportive to me during the entire course of my study.
CHAPTER ONE:
INTRODUCTION

Background of the Study

Previous studies on the use of computers in classrooms assumed a relatively small aspects of attitude since it is only technology-allied aspects, for example attitudes to computers and computer understanding, which were taken into consideration. However, most contemporary investigations are based on instructors’ scholastic beliefs, customary beliefs, and constructivist beliefs, as the architects of computer applications in classrooms. These investigators have also continued to monitor for the effect of know-how-related aspects, computer knowledge, and overall computer outlooks. These contributing factors of computer applications are normally considered with the intention of ascertaining differences in their contribution to use of computers in the classroom. Pajares (1992) supports the supposition that teacher beliefs are a substantial contributing factor in illuminating why educators adopt computers in the classroom. In addition, considering the influence of computer understanding, the outcomes show a positive influence of constructivist views on the classroom application of computers (Hermans, van Braak, & Van Keer, 2008). Also according to past research on application of computers in primary school classroom, traditional opinions were seen to have a negative influence on the classroom application of computers.

According to Knowles (1992), instructors’ educational beliefs progress during the course of their lifetimes and are swayed by a multiplicity of factors, as well as events, understandings, and other individuals in their lives. Some beliefs are openly assumed from the culture, whereas others are molded by involvements enclosed by the culture. Thus, culture in this perspective represents those shared experiences of individuals from a particular area. For instance, every
single individual shares comparable experiences as a kid, as a member of a clan, and by way of being a parent. These practices shape educators’ beliefs about learners, curriculum improvement, and the general teaching and learning process (Knowles, 1992).

According to Shulman (1987), instructors’ beliefs originate from four sources: formal instructor training, scholastic tools and structures, amassed content awareness, and from applied experience. In addition, Lortie (1975) claimed that instructor training and classroom teaching knowledge lead to the progression of educational content understanding, whereas disciplinary skill in instructor education aids to improve curricular and topic matter awareness among potential instructors. Raths and McAninch (2003) outlined three key sources for instructors’ beliefs: knowledge in education and teaching, individual knowledge, and knowledge in formal understanding, together with school subjects and educational understanding. They stressed that knowledge in education and teaching was the most significant formal source for instructors’ beliefs as a result of having learners in formal graduate school for several years. Moreover, informal capabilities are represented in the relations that educators have had, or have, in daily life, and that might possibly have some effect by adding to, regulating, purifying, supporting, stimulating, or even shifting their beliefs and awareness.

The kind of understanding that a teacher has makes them act in a definite manner such as to, carry out a professional expansion activity, or conduct a classroom activity (Hermans, 2008). The author has labeled beliefs as sieves through which all original facts must pass and which are applied to deduce new proficiencies. Prawat (1992) maintains that beliefs are formed through a practice of social creation and enculturation. Kagan (1992) claims that to understand how an instructor reasons, feels, acts and plans, and how the instructors identify what they know, it is
vital to understand the association and the rigidities between background and their life involvements.

Educational attitudes and beliefs play a very important role in determining whether and how computers are employed and applied by primary school teachers in their classroom. Moreover, because of the firmness of teacher beliefs, it is generally established that it is extremely challenging to inspire or alter classroom activities based on a teacher’s attitude and beliefs (Hermans, 2008).

The incorporation of computer studies in primary school education in Saudi Arabia has influenced academics for virtually 20 years. In this respect, numerous investigations concentrated on assessing the influence of beliefs and attitudes toward computers, computer know-how, and computer teaching. Nevertheless, outcomes of past research point out that the full influence of variables on the application of computers in the primary school classroom remains moderately low. That is, there are fewer variables, which have been examined in the study of computer application in primary schools. Obviously, the matter cannot be constrained to just technology-allied aspects. The incorporation of educational computer application in professional proficiencies of teachers suggests an extra multi-faceted approach (Zeichner, 1980).

One would ask: what decides whether and how instructor employs computers in the tutorial room? There is a mounting agreement that the implementation of educational improvements can only be clarified when scholastic beliefs of instructors are also taken into consideration.

According to Janssen (1996), instructors understand inventions in line with their individual beliefs. In other words, tutors agree more certainly with inventions that are consistent with their individual ideas of teaching and learning. Therefore, the addition of computer studies in primary school education is unlikely to be successful unless scholars and educationists
recognize teachers’ individual educational views and their connection with teaching and learning activities. But then again, investigation about the connection between instructor beliefs and integration of computer use is still uncommon in Saudi Arabia. Nevertheless, recent studies reveal that instructors’ educational beliefs have a tendency to be connected with their application of computers in the classroom. On the other hand, the latter findings are not supportive to clarify the kind of computers that are employed in learning. Little is known about the correlation between views of educators and the use of computers in the classrooms in Saudi Arabia. This investigation intends to determine whether teacher beliefs are associated with computer use in primary school education in Saudi Arabia. For that reason, this study will research whether recognizable patterns can be established that reflect a characteristic set of beliefs assumed by instructors (Hermans, van Braak, & Van Keer, 2008). Then, the study will scrutinize the perception of teachers, their beliefs, and how they might influence the application of computers in Saudi Arabian primary schools. Finally, the research will seek to find out what needs to be done in order to change teachers’ educational beliefs in the use of computers in Saudi Arabian primary school classroom as an effective teaching tool.

**Problem Statement**

Over the previous years, the Saudi Arabian government has recurrently recognized that there is need to improve its human capital by refurbishing its educational system. Incorporating educational improvement as a key constituent in its economic improvement strategies, Saudi Arabia has increased registration proportions for both males and females and financed school infrastructure heavily (El-Sanbary, 1994). Despite progressive registration results, Saudi Arabian schools continue to create less than skilled graduates, thus accumulating to the ranks of idle Saudis. The result of this is the slow incorporation of computer application in classroom by
teachers. This problem is distinctive to Saudi Arabia, as educational systems in other Gulf States are capable of incorporating computer use in their focusing on computer application in classroom right from primary school level. Computer knowledge is very important in the Saudi Arabian job market. Without finding the root cause of lack of computer application in classroom by Saudis teachers, despite the heavy investment done by the Saudi government in education, Saudi economic growth will remain low.

Digital expertise, and specifically computer knowledge, is noticeable aspects at all stages of education in the present day. Regardless of extensive access, though, computer-based knowledge remains to be under-exploited and the opportunities of this knowledge as teaching tools are not being appreciated in Saudi Arabian primary schools. This problem has been obvious for some time and remains a matter in nationwide contexts (Bauer & Kenton, 2005). Incorporating use of computers as a significant learning tool encompasses considerably more than just offering learning equipment. In its place, incorporation of computer-based knowledge can be perceived as a “skill” that progresses as instructors adjust their teaching approaches, opinions, and practice (Bauer, & Kenton, 2005). With the intention of upholding mastery in the “skill,” it is essential to examine the explicit role educators as individuals play in the practice of computer use incorporation into the primary school classroom.

Computer knowledge may be exceptionally challenging inventions to be combined as teaching and learning tools within the curriculum, to some extent, because the computer technology accessible changes quickly (Hermans, van Braak, & Van Keer 2008). Therefore, to stay in touch with continuous revolution in software, hardware, and instructional inventions that go together with improvements in computer knowledge, instructors are required to continually modernize their computer knowledge and adjust their teaching methodologies (Riel, & Becker,
2000). The constant alterations may give rise to instructors being “perpetual novices” in the midst of use of computer incorporation. Instead of demonstrating a linear progression in aids via a stage-like development, the addition of computer knowledge can be branded as a recursive spiral where innovation necessitates a continuing resolution of prior skills together with revision to innovative requirements. The frequent and prompt improvement inherent to computer expertise, consequently, may itself constrain the embracing and incorporation of this knowledge within some classrooms (Pajares, 1992). Therefore, this study will seek to gather findings that will help improve the use of computer in primary school classroom in Saudi Arabia.

**Objectives of the Research**

- The research will seek to know whether teachers’ educational beliefs affect their confidence in the use of computers in classrooms as an effective teaching tool.
- The research will also investigate whether teachers use computers in their class and the factors that influence them in deciding whether to use or not use computers in their class.
- The research will also seek to find out what needs to be done in order to change teachers’ educational beliefs in the use computers in classroom as an effective teaching tool.

**Justification of the Proposed Study**

Teachers are important agents in the concrete implementation of an innovation process within a classroom setting. Teachers’ educational use of computers can only be fully understood when taking into account their educational beliefs (Loveless & Dore, 2002).

Computer know-how is absolutely interconnected to computer attitudes. The more involvement instructors have with computers, the more likely they will report positive attitudes towards computers. Positive computer attitudes are expected to nurture computer incorporation
in the classroom (Hermans, van Braak, & Van Keer, 2008). Therefore, this study will help in investigating the relationship between teachers’ educational beliefs and their computer use. This, in turn, will help come up with solution on the teachers’ explanations for beliefs thus helping the primary school students in Saudi Arabia to have a chance of learning computer studies.

**Significance of the Study to Primary School Education in Saudi Arabia**

The study will be of a great importance to the Ministry of Education since it will help them find out the effect of primary school teachers’ educational opinions on the classroom use of computers. This will help them in creating new policies and guidelines to be used in primary education in Saudi Arabia thus helping in creating a situation whereby primary school students are presented with a chance of learning computer studies. In addition, this study will be useful to the education sector in helping the stakeholders initiate ways of changing teachers’ educational outlooks and beliefs toward the use of computers in classroom.

**Assumptions of the Study**

- The research will help all stakeholders realize the effect of primary school instructors’ instructive beliefs on the classroom application of computers.
- The research will shed light on how teachers’ educational attitudes and beliefs affect the use of computers in classroom.
- From this research, scholars will be encouraged to carry out a separate research on how to reverse teachers’ educational attitudes and beliefs in the use of computers in classroom.

**Statement of the Hypothesis**

- Teachers’ educational beliefs affect their confidence in the use of computers in classrooms as an effective teaching tool.
• Teachers’ attitudes and beliefs in relation to teaching and learning stimulate how they reason concerning the use of computers in the classroom as a cognitive tool in knowledge building.

• Teachers’ educational beliefs tend to prevent changes in teaching practices (approach) necessary for classroom use of computer.

The remainder of this thesis begins by exploring the literature, which is organized around the following aspects of the study: teachers’ beliefs and instructional practice; attitudes about computer technology and various classroom variables; information and communication technology (ICT) and learning; attitudes towards computer use, teacher training, and student experiences. Following the discussion of the relevant literature, I outline the methodology and methods of data collection. Next, I introduce the data and discuss its relevance to current literature and the problem of the study. Finally, this thesis concludes with section that provides data informed inferences concerning Saudi Teacher’s perception on the use of computers in classrooms.
CHAPTER TWO

Literature Review

This section of the thesis surveys existing knowledge on the theme of the study. The literature and related studies discussed here have either direct or indirect bearing on the influence of teachers’ beliefs on the use of computer technology in the primary school classroom. The following discussion offers inputs with respect to the theoretical background of the study and highlights links with the current study and previous research. The literature review also extends the researcher’s working knowledge of the area of study (Kumar, 2011). The discussion includes the following aspects of the study: teachers’ beliefs and instructional practice; attitudes about computer technology and various classroom variables; information and communication technology (ICT) and learning; attitudes towards computer use, teacher training, and student experiences. The literature review concludes with a synthesis of the surveyed works.

Teachers’ Beliefs and Instructional Practice

According to Haney, Lumpe, Czerniak, and Egan (2002), there exists a relationship between instructional practice of teachers and their beliefs. This opinion has support from the study they undertook that anchored their conceptualized concepts based on: (1) people’s acts are generally built on their beliefs; (2) The changes that the teachers make in their subject curricula is aimed at aligning them to their respective context and beliefs of teaching; and (3) a relationship exists between the practices of classroom and the beliefs and perceptions of the teachers.

Precipitating of classroom action based on this study, is significantly reliant on beliefs of the teacher, a condition that creates reaffirmed and reconstructed beliefs. Their predecessors with
similar understanding had demonstrated how teachers’ beliefs act like filters that guide them during curricula and instructional decision-making (Golombek, 1998). Golombek (1998) held that the teachers’ beliefs are the sole explanation to why and how they adapt to new classroom environment or teaching methods. Such research studies would confirm the importance of teachers’ beliefs and emphasis on the existence of belief-teacher relationship as being a potent input in the educational system change. Similarly, some studies have held that the classroom challenges often limit their ability to offer instructions that correspond to their beliefs (Totter, Stutz & Grote, 2006). It is evidently becoming known that there exist a parallel between the teacher’s natures of technology-oriented experience with that of the teacher’s student-centered beliefs on instruction. These critics hold that the teachers adopting the student-oriented constructivist style of teaching are likely to apply the use of new technology in their classrooms as opposed to the ones who do not. Nevertheless, the studies undertaken have majorly relied on surveys and self-reported data. More research is necessary to help provide clearer knowledge on the debate.

The line of thought suggesting a prediction on the teachers’ computer attributes, competence and their cultural perception to their attitudes towards the computer technology does not appear to have the same opinion with other researchers. According to Baylor and Ritchie (2002), the morale of teachers is said to be essentially affected by the involvement of constructivist technology and their professional development. In addition, Granger et al (2002) through their analysis argue that factors like informal ICT education, teachers’ collaboration, and proper atmosphere for learning should be greatly considered in the learning of computer technology among the teachers.
There have been discussed various reasons explaining the introduction of technology in classrooms. According to Zhao and Cziko (2001), three main reasons come into existence for this noble act. The first is the belief that ICT addresses higher-level goals compared to the traditional approach. Second is the belief that ICT application enables the teachers to have sufficient resources and competency in the computer use and last, the position that ICT has no possibility of causing harm in the higher-level goals attainment than the traditional approach.

The effectiveness of this introduction must be followed by a proper integration of technology into the schools’ curricula. In ensuring this, two main barriers must be considered (Ertmer et al., 1999). The first barrier to be considered is the insufficiency of software and computers, poor instructional planning due to scarcity of time, and lack of technical and administrative support in the schools. The second barrier entails resistance to change, traditional instructional practices, and the beliefs about computer teaching. A concern should therefore be placed on the schools’ policies, which are usually under-utilized and under-designed.

**Information and Communication Technology (ICT) and Learning**

According to Niederhauser and Stoddart (2001), application of technology to instruction promotes the use of constructivism in education. Through their study, they argued that the teachers’ perspectives and beliefs pertaining to the efficacy of harnessing computer technology in their instruction are associated with the type of software they are actually using in the classroom. From their concept, one would maintain that the use of computer technology does not direct instructional path towards a unitary focus. It would mean that various types of computer software are adopted to address different educational objectives. This concept contradicts some researchers’ opinion on the teachers’ pedagogical and epistemological background with their instructional practice. For example, a study by Tondeur, Van Keer, Van Braak, and Valcke
revealed favorable attitudes of the teachers towards ICT especially in the education system. Additional studies on the teachers’ computer technology attitudes have revealed that the schools’ ICT plan, their ICT support, and trainings have significant influence on the ICT use in the classrooms. This is based on the study they carried out on the variables of ICT from within a classroom context to a school-wide development approach. Tondeur, van Braak, and Valcke (2007a) rejected the possibility that the use of computers can be examined as an isolated variable in the context of education. Through their study, they suggested that a better understanding of the different forms of computer usage in education could motivate efforts to adopt computer-related school policies to enhance learning further. In this light, Tondeur et al. predicted that computer usage would eventually be associated with teacher, classroom, and other educational variables, which influence learning. This suggests the necessity of fusing computers into the framework of education not merely by installing hardware classrooms and laboratories but by incorporating computers into teacher training and professional development.

Attitudes towards Computer Use, Teacher Training, and Student Experiences

The attitude of the teachers towards the computer technology is predicted by their computer attributes and competence together with their cultural perceptions (Albirini, 2006). In his study on the English language teachers in a non-English speaking country, the relationship that exists between the teachers’ variable computer attributes and their computer attitude was undertaken. In addition, an extension of study in the teachers’ competence of the computer technology as well as their access, personal characteristics and cultural perceptions were carried. According to Galanouli, Murphy, and Gardner (2004), the trainee teachers’ confidence is usually high when instructions are given to them through the computers more than through any other approach. This could be reflected in the survey that was carried out to evaluate on the teachers’
attitudes in relation to the national UK initiative that was called the New Opportunity Fund. It is only the content and form of knowledge being applied that causes negative feelings during the training periods. Shapka and Ferrari (2003) on the other hand emphasize on the significance of understanding the relationship between successful computer engagement and self-efficacy among the teachers. They argue that the learning students are likely to notice the subtle attitudes of their teachers. Similarly, van Braak and Tearle (2007) through their analysis found that the personal use of computer for scale learning increases the computer attributes measures for learning among the students.

With respect to constructivist approaches, Niederhauser and Stoddart (2001) support the argument that application of technology to instruction promotes the use of constructivism in education. However, the researchers maintained that use of computer technology does not direct instructional path towards a unitary focus. Accordingly, various types of computer software are adopted to address different educational objectives. The study reported that teachers’ perspectives and beliefs pertaining to the efficacy of harnessing computer technology in their instruction are associated with the type of software they are actually using in the classroom. The findings scaffold previous research relating teachers’ pedagogical and epistemological background with their instructional practice. This suggests the necessity of fusing computers into the framework of education not merely by installing hardware classrooms and laboratories but by incorporating computers into teacher training and professional development.

On one hand, Galanouli, Murphy, and Gardner (2004) evaluated teachers’ attitudes on computers with respect to the £230 million national UK initiatives called the New Opportunity Fund. Nine hundred secondary and primary teachers with 11-18 years and 5-11 years of experience participated in the survey. The results showed that the trainees’ confidence in the use
of computers in instruction was enhanced. However, there was a sizeable negative reaction to the training itself with respect to form and content. On the other hand, Tondeur, van Braak, and Valcke (2007a) rejected the possibility that the use of computers can be examined as an isolated variable in the context of education. Grounded on a comprehensive survey of existing knowledge on the use of computers for instructional purposes, Tondeur, et al. designed an instrument for the measurement of various forms of computer use in the classroom. Three hundred and fifty two primary school teachers participated as respondents of the study to identify a typology of computer usage. The study employed confirmatory factor analysis and identified three factors in the typology of computer use: as a tool for information gathering, for learning, and for learning fundamental skills in computers.

Bovée, Voogt, and Meelissen (2007) found among 240 students in primary and secondary South African schools that computer access and experience are associated with the students’ attitude towards computers. Similarly, Shapka and Ferrari (2003) investigated attitudes of 56 pre-service teachers aiming for secondary or primary school teaching jobs in relation to computers. As part of the research, the team also assessed the outcomes from a challenging computer activity. Gender differences and program effects were assessed using MANOVA. Findings showed no gender differences on computer-related attitudes and the outcomes of the challenging activity. However, there were differences in the program effects and in the outcomes of the computer task. Trainees for secondary school showed higher computer self-efficacy and were less likely to pass up on a challenging computer task than their counterparts training for primary school were. There were no differences in their success with the computer task. Using correlation analysis, a strong relationship was established between computer attitude and task outcomes. The findings suggest the importance of understanding the association between self-efficacy and
successful computer engagement among teachers since it is the “teacher’s subtle attitudes and action that children pick up on” (p. 133).

Tondeur, van Braak, and Valcke (2007b) singled out a gap within the context of Flanders education. While the governmental education authority delineated a knowledge- skills- and attitudes-related ICT framework for expected student outcomes, a survey among 570 teacher-respondents revealed that teachers focused their efforts primarily on the development of their students’ technical skills in ICT. This not aligned with the ICT curriculum goals of integrating use of ICT in the process of teaching and learning.

Results of a study by Tondeur, et al. (2007a) showed that there was variance in the present-day practice in tapping computers as an instructional tool in the primary level of education. Similarly, van Braak and Tearle (2007) found that personal computer use for learning along with a scale developed to measure computer attributes for learning predicted students’ actual use of computers as a tool for learning. Results suggest that a better understanding of the different forms of computer usage in education can motivate efforts to adopt computer-related school policies to enhance learning further. In this light, the researchers predicted that computer usage would eventually be associated with teacher, classroom, and other educational variables, which influence learning.

Haney, et al. (2002) introduced the current study to the theoretical framework comprising teachers’ beliefs and instructional practice. A number of the foregoing studies also provided insights about how teachers’ beliefs and perceptions affect the implementation of ICT in the primary and elementary school classrooms (Albirini, 2006; Baylor & Ritchie, 2002; Ertmer, et al., 1999; Granger, et al., 2002; Hermans, et al., 2008; Tondeur, et al., 2008; Waite, 2004; Zhao &Cziko, 2001). The literature review also found scaffold for the use of ICT in improving student
learning (Niederhauser & Stoddart, 2001; Tondeur, et al., 2007a). Some studies were also reviewed pertaining to computer attitudes, teacher training and student experiences (Galanouli, et al., 2004; Shapka & Ferrari, 2003; Tondeur, et al., 2007b). These previous studies assisted in contextualizing groundwork the current study. To this end, the areas covered in the literature review concretized the groundwork for the successful synergy of ICT and instruction to enhance student learning.

Therefore, this study examines the Saudi Arabian teacher’s perception the use of computers in classrooms. To achieve this, I analyze slow incorporation of computer application in classroom by teachers. The research problem evaluated is the impacts of Saudi teachers’ educational beliefs on the use of computers in classrooms. That is, establishing whether this beliefs are the reasons for the slow adoption of computers in Saudi Arabian primary schools. The next chapter reviews the research methodology and methods of data collection.
CHAPTER THREE

Methodology

Research design

To explore the influence of teachers’ scholastic beliefs on the classroom application of computers, a survey was adopted as the main method of data collection. The researcher designed the questions, which guided the interviewers while collecting information. The survey was administered to teachers in Saudi Arabian primary schools. The survey method proved useful in acquiring information that became an essential tool in examining teachers’ beliefs concerning attitudes and beliefs toward the use of computers in the classroom.

Rationale

A survey research design adopted by the researcher to conduct this particular study enabled the collection of teachers’ thoughts through their responses to the survey questions. Indeed, survey research design has been hailed as an effective method for gathering data from a wide range of respondents in educational settings. As reported by Hermans, van Braak, and Van Keer (2008), educational researchers have adopted the survey design because of its ability enhance the researcher’s understanding of educational issue under study. As such, the researcher embraced the survey design for these reasons, and its ability to enable the researcher to collect data rapidly from several respondents without increasing the time required to complete the study. Additionally, a survey design lends itself to probability sampling procedures, which helped to eliminate the human bias in sampling.

Population

The researcher initially intended to interview 80 teachers from various schools across Saudi Arabia. However, when the questionnaire was posted online, the researcher received an
overwhelming response from potential participants. In fact, the researcher received responses from 146 participants. Nonetheless, it is important to note that out of the 146 respondents; only 118 completed filling in the questionnaire. As a result, the final data analysis included only the completed questionnaires (N=118). This represented a response rate of about 80.82%.

**Sampling frame**

A sample is a part of a larger figure specifically selected to denote the envisaged portion in entirety. Sampling on the other part is a process by which this portion is preferred. To determine the perception of teachers on the use of computers, primary school teachers were contacted in Saudi Arabia. Of the 146 potential respondents, 118 teachers were engaged to by the researcher to obtain data necessary for to decide whether to reject or fail to the study hypotheses.

**Instrument**

On-line surveys were sent to 146 primary school teachers across regions in Saudi Arabia. The first section of the survey questionnaire collected demographic information concerning the study participants. The next section of the survey questionnaire was intended to gather data that would enable the researcher to answer the research question.

**Data collection procedure**

Survey questions were designed to gather information on teachers’ use of computers in their classrooms. Twitter, Facebook and school email addresses were used to send the link of the survey questions. Participants had to follow the sent link in order to respond to the survey questions. After completely responding to all questions, the participants submitted the form through the same link provided on Twitter, Facebook, and school email addresses.
Data Processing and analysis

The data collected in the research activities were analyzed using descriptive statistics. Descriptive statistics method of data analysis was employed in this case because the nature and the progression of teacher beliefs and belief structures, interaction were expected between teachers both as persons and in communal setting to which teachers belong. In this investigation, teachers (N = 118) were from primary schools in Saudi Arabia. Descriptive analysis was used in which tables and graphs were employed in describing what the data indicates quantitatively. Tables, charts, and graphs were given clear titles, labels to ease data analysis and interpretation.

The next chapter provides a detailed summary of the results of the data analysis. First, I present the descriptive statistics concerning the respondents’ educational backgrounds, gender, and age. Next part of the results section presents statistical analysis of the stated study hypotheses.
CHAPTER FOUR

Results

Descriptive analysis

Although the study results indicated that the male respondents were 55.08% while 44.92% represented females, the respondents were not categorized according to their gender in comparing their educational attitudes and beliefs. The demographic data on education was collected during the research to determine the highest educational level of the participants and whether it had a bearing on the responses. Graduate participants were 77.12% followed by diploma holders, masters, and higher diploma holders with 10.17%, 8.47% and 4.24% respectively. This data is represented in Table 1. The respondents’ ages were collected to determine if it had an influence on their attitudes and beliefs. The results indicate that the majority (52.54%) were aged between 30 and 40 while those between the ages of 20-25 and 50-55 were 5.93% and 2.54% respectively. Presenting the opinions of different regions was important to determine the influence of the regions on the participants' perceptions towards using computers. The majority of the respondents were from the central region (66.10%), followed by the Western region (11.86%) and the western, Northern and Eastern Region at 8.47%, 7.63% and 5.92% respectively as shown in Table 2.

Table 1: Educational level of the participants

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Total responses</th>
<th>No. of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>8.47%</td>
<td>10</td>
</tr>
<tr>
<td>Graduate</td>
<td>77.12%</td>
<td>91</td>
</tr>
<tr>
<td>High Diploma Holder (Three Years)</td>
<td>4.24%</td>
<td>5</td>
</tr>
<tr>
<td>Diploma Holder (Two Years)</td>
<td>10.17</td>
<td>12</td>
</tr>
</tbody>
</table>
Table 2: The regions the participants belong.

<table>
<thead>
<tr>
<th>Region of residence</th>
<th>Total responses</th>
<th>No. of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central region</td>
<td>66.10%</td>
<td>78</td>
</tr>
<tr>
<td>Northern region</td>
<td>8.47%</td>
<td>10</td>
</tr>
<tr>
<td>Southern region</td>
<td>5.93%</td>
<td>7</td>
</tr>
<tr>
<td>Western region</td>
<td>11.86%</td>
<td>14</td>
</tr>
<tr>
<td>Eastern region</td>
<td>7.63%</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>118</td>
</tr>
</tbody>
</table>

The effects of educational beliefs on computer use were an integral part of the study as indicated by the hypotheses.

H1: “Teachers’ educational beliefs affect their confidence in the use of computers in classrooms as an effective teaching tool.” Educational belief was highlighted as a factor affecting the participants' confidence in using computers as an effective teaching tool as indicated by 64% agreed. Table 3 represents the confidence of the participants towards computer use. Granger, Morbey, Lotherington, Owston and Widema (2002) and Albirini (2006) support these findings emphasizing that inadequate teacher confidence prevents them from using computers in class. Although the respondents overwhelmingly agree (85%) that computer knowledge is necessary to use computers in class, the teachers are afraid to use computers since they believe they have limited knowledge on ICT, thus reducing their enthusiasm.
Table 3: My educational beliefs affect my confidence towards computer use in the classroom as an effective teaching tool.

<table>
<thead>
<tr>
<th>Response</th>
<th>% of the Respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>28.81%</td>
<td>34</td>
</tr>
<tr>
<td>Agree</td>
<td>35.59%</td>
<td>42</td>
</tr>
<tr>
<td>Neutral</td>
<td>11.02%</td>
<td>13</td>
</tr>
<tr>
<td>Disagree</td>
<td>17.80%</td>
<td>21</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>6.78%</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>118</td>
</tr>
</tbody>
</table>

H2: “Teachers’ attitudes and beliefs in relation to teaching and learning stimulate how they reason concerning the use of computer in the classroom as a cognitive tool in knowledge building.” Various questions were used to answer the hypothesis. The participants overwhelmingly (93.22%) agreed that their attitudes and beliefs influence how they think of computer use in the classroom as a cognitive tool in knowledge building as represented by table 4. Of the total number of participants, 71.19% strongly agreed while 22.88% agreed that computers are good instructional material and should be used in the classroom as shown in table 5. A similar study by Haney, Lumpe, Czerniak, and Egan (2002) and Albirini (2006) on the use of computers in schools highlighted teachers’ attitudes as a factor that shapes their reception towards using computers as a tool in students’ knowledge building. The studies also reveal that successfully implementing educational technologies in the classroom depends largely on the educators’ attitudes and this determines the effective use of computers in the classroom. This is
also highlighted by 85% of the participants who agree that their attitudes towards computers influence their decisions on using computers in the classroom.

Table 4: Do your attitudes and beliefs influence how they think of computer use in the classroom as a cognitive tool in knowledge building

<table>
<thead>
<tr>
<th>Response</th>
<th>% of the respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>93.22%</td>
<td>110</td>
</tr>
<tr>
<td>No</td>
<td>6.78%</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>118</td>
</tr>
</tbody>
</table>

Table 5: Are computers a good instructional material for use in the classroom

<table>
<thead>
<tr>
<th>% of the Respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>71.19%</td>
</tr>
<tr>
<td>Agree</td>
<td>22.88%</td>
</tr>
<tr>
<td>Neutral</td>
<td>2.54%</td>
</tr>
<tr>
<td>Disagree</td>
<td>1.69%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1.69%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

H3: “Teachers’ educational beliefs tend to prevent changes in teaching practices (approach) necessary for classroom use of computer.” From the data, the respondents also overwhelmingly (89.83%) noted that their beliefs affect their use of computers in the classroom. The majority of the respondents (89.83%) also noted that their educational beliefs affected their
decisions on whether to use or not to use computers in the classroom as represented by table 6. In similar studies by Ertmer, Addison, Lane, Ross, and Woods (1999), Albirini (2006), and Bauer and Kenton (2005) on the attitudes of teachers towards ICT use, the findings reveal that teachers’ attitudes affect their beliefs towards the adoption of ICT in education. The results of the findings of the studies also reveal that although teachers’ experience with technology, their visions, and the global adoption of ICT are important in the adoption of technology, their attitudes towards it takes precedence. The authors also indicate that their positive attitude towards ICT use in schools not only helps enhance computer integration but also avoids teacher resistance to using computers. The three studies also drew similar results on computer use in the classroom. They note that new technology is embraced if the potential adopters perceive that it has an advantage over the previous innovations and is compatible with existing practices.

Table 6: Your educational beliefs affect your decisions on whether to use or not to use computers in the classroom

<table>
<thead>
<tr>
<th>Response</th>
<th>% of the respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>89.83%</td>
<td>106</td>
</tr>
<tr>
<td>No</td>
<td>10.17%</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>118</td>
</tr>
</tbody>
</table>

On the key factors that influence the teachers’ use of computers in the classrooms as represented by table 7, the majority of the respondents (67.39%) indicated that they use computers due to their awareness of computer use, their confidence, education belief, computer accessibility in the school districts, and their levels of education. The level of education and computer accessibility in the school districts received no responses when they were tabled as
independent factors. In a study by Albirini (2006) on the characteristics of teacher education, the bachelor’s degree was considered the standard qualification required to be a computer teacher in the Arab region. The number of graduate respondents in the study (77.12%) also indicates response towards the use of computers in the classroom.

Table 7: Factors influencing the participants’ computer use in the classroom

<table>
<thead>
<tr>
<th>Factor</th>
<th>% of the respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer awareness</td>
<td>6.52%</td>
<td>6</td>
</tr>
<tr>
<td>My confidence</td>
<td>1.09%</td>
<td>1</td>
</tr>
<tr>
<td>My educational belief</td>
<td>21.74%</td>
<td>20</td>
</tr>
<tr>
<td>My level of education</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Computer accessibility in my school district</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>All of the above</td>
<td>67.39%</td>
<td>62</td>
</tr>
<tr>
<td>Others</td>
<td>3.26%</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>92</td>
</tr>
</tbody>
</table>

From the data analysis, the majority of the participants (67.8 %) agreed as table 8 shows, that they had taken classes related to technology indicating that the Saudi educational sector is keen on implementing technology among its students as indicated by El-Sanbary (1994). When the respondents were questioned regarding the use of computers in classrooms, the majority of the respondents (77.97%) indicated that they do use computers in their classrooms. In a similar study by Zhao and Cziko (2001) it was noted that computer technology is an effective method in the widening of educational opportunities. In their examination of 30 teachers on technology use in their instruction, and how much they used it, the respondents overwhelmingly (82%) noted
that computer use was part of their regular instruction. These results were also reflected in the question that asked whether the participants did not believe computer use was necessary in classrooms. In fact, the majority of the respondents 40.68% strongly disagreed and an additional 31.36% disagreed with the statement.

Table 8: Have you taken any classes related to technology

<table>
<thead>
<tr>
<th>Response</th>
<th>% of the respondents</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>67.80%</td>
<td>80</td>
</tr>
<tr>
<td>No</td>
<td>32.20%</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>118</td>
</tr>
</tbody>
</table>

From the study results, the key factor hindering computer use in the classroom was indicated as the school district’s accessibility to computer use by 42.31% of the respondents. Albirini (2006) points out that as a developing country, Saudi Arabia has not instituted proper technological infrastructure as compared to the developed countries. They also note that the reason for lack of widespread implementation of the program in the districts is the reluctance to use the internet in the Saudi culture as officials censor it. Computer inaccessibility in the districts may have many underlying factors and is an area that requires further research. The next chapter provides the discussion on the results obtained. Supporting evidence of the study results are also provided in this section. In addition, the study limitations and conclusion are presented in this section.
CHAPTER FIVE

Discussion

This study investigated the attitudes of teachers in Saudi Arabia towards computers and the relationship of teachers to various independent variables. The attitudes of teachers toward computers are recognized globally as a key factor in the successful integration of computers in schools (Raths&McAninch, 2003; Albirini, 2006). The findings of this study suggest that the participants have positive attitudes towards computer use in education. According to Albirini (2006), the positive attitudes of the teachers show that teachers have totally embraced the rationale for computer introduction in schools and have based their judgments on understandable reasons. Thus, the majority of the participants consider computers as an educational tool that is viable and with the potential to create a difference in schools and in the classrooms.

In literature, there exists a positive correlation between teachers’ attitudes and computer experiences (Shapka, & Ferrari, 2003). In a study by the authors on various variables affecting computer adoption in the school, the authors point out that the confidence of teachers towards computer use rises after receiving training on computer use. Moreover, computer training plays an important role in boosting the confidence of teachers, a factor that contributes to teacher resistance towards the adoption of computers in the learning and teaching environment. The study highlights that teacher confidence is crucial, adding that the other factors that influence the complex decision of computer use by teachers in the classroom include how easy using computers are, and how useful it is in their job performance. In this study, the attitudes of teachers towards computer use differ with experience in computer use and prior computer experience considered an important factor affecting their attitudes towards the use of computers in their classroom.
The positive attitudes can foretell the decision-making behavior of teachers in the future regarding the use of computers in classrooms. These positive attitudes show that the participants are willing to use computers in their classrooms once they are available to them. The study findings also reveal that the teachers have the intention of learning about computers and implementing them in the classroom. The attitudes towards computers and its implementation in the classroom setting are a symbiotic relationship that has been reported extensively in literature (Zhao & Cziko, 2001). The findings of the study also show that the participants are positive over the relative advantage that computers have as an educational tool. The study results also show that more than half of the participants use computers in the classroom meaning that they have access to computers in their schools. According to Lim (2002), access to computers in the classroom is important in adopting computers successfully as an instructional tool. According to the author, computer accessibility and availability are important factors that affect computer use for instructional purposes. Thus, if teachers get the opportunities to access computers, then their level of technology use in their courses may arise.

Various factors are seen to influence teachers’ perceptions on the use of computers in the classroom. In a similar study by Janssen (1996), teachers who were offered opportunities by joining innovative computer enhanced projects did so due to the pressures of using computers in their curricula teaching or the learning of new technical skills. From this study, various factors are seen to influence Saudi teachers’ perceptions of using computers in the classroom such as the teachers’ perceptions of the usefulness of technology in teaching, their beliefs, and overcoming fear and enthusiasm related to computer use. Lim (2002) and Albirini (2006) agree that a single course on computers can affect the attitudes of teachers positively towards computer use convincing the teachers that technology is a valuable classroom tool. Albirini (2006) also found
the presence of a strong relation between the success of computer use in the classroom and the attitudes of teachers.

Hermans, Tondeur, van Braak, and Valcke (2008) note that teachers do not regularly use computers in the classrooms since institutions and programs often overlook how important training teachers and matching the teachers' goals with the tools they hope to use is. The attitudes of teachers towards technology and teaching can both prohibit and support computer use in the classroom regardless of their basis. Although many of the study participants had various reasons for using or avoiding using computers in the classroom, the study reveals that, teachers who are able to use or overcome various hindrances include those with prior experience in computer use. On the contrary, various studies also note that positive attitudes towards computer use do not guarantee that teachers will have the ability to use computers in the classroom (Janssen, 1996; Lim, 2002; Hermans, Tondeur, van Braak & Valcke, 2008). The authors note various factors that hamper the technology use including time pressures from outside and within the class, the lack of resources and materials, standards and curricula, inflexible or insufficient guidelines, the absence of support or recognition of computer integration, inadequate technical training and support. The extent to which the variables relate to computer use and the rate of change to computer use in the classroom poses barriers to the use of technology. This area could be explored further to determine how they relate to the attitudes of the teachers in Saudi Arabia.

Limitations and recommendations

In brief, there is a need to broaden the scope of the inquiry to include the impact of gender on the attitudes of the Saudi Arabian teachers. In a study by Galanouli, Murphy, and Gardner (2004), the author found that the confidence levels of males and females towards computer use in the classroom differed. While the differences in gender were not this papers’
theme, the issue manifests other issues that are faced in the reform process of education in Saudi Arabia and is recommended for further research.

The study also demonstrates the significance of leadership in facilitating and promoting integration of and access to computers in the classroom and in the teachers’ curriculum. These conclusions demand a re-think of the existing practices such as the need for decision makers and leaders of schools to understand the approaches that would help promote positive beliefs regarding computers held by their staff. These roles describe the observations of Albirini (2006) that are mirrored in the Syrian context.

To achieve change practically, the experiences of teachers should be increased through additional exposure to computers and the facilitation of its use. This provision of proper access to computers and technical support potentially enhances the levels of teacher confidence in making the pedagogical changes. According to Bauer & Kenton (2005), increasing training and the provision of computer knowledge and skills through open workshop sessions and available courses are essential in enhancing teacher confidence levels, creating motivation and positive attitudes towards computers.

Conclusion

The relationship between teaching practices and their perceived beliefs in the context of computer use reflects the current practices in the educational setting and teacher education in particular. Saudi Arabia is a developing nation working its way through the change process of the information revolution. The nation provides an interesting development context to gain insight into the strategies for improving the understanding of the past and emerging paradigms of professional practice.
The interactive nature of computers and the powerful search engines brings access to online technologies, opening up the frontiers of knowledge in vast directions. This study informs teacher education in Saudi Arabia providing an insight into the educational beliefs of teacher and the factors influencing the integration of computers in the classroom. The findings of the study therefore provide a starting point that is constructive to investigate further the rapidly changing teaching culture of Saudi Arabia.

Thus, using computers in education should not be looked at as a tool for transferring instructional material but should be viewed as a medium for creating, discovering, learning, and sharing knowledge. Although issues of infrastructure often take precedence over improving teaching and learning, investments are often on the latest technologies without the consideration of the interests or needs of the target group. Teachers are the prime actors in the implementation of computer use in learning and teaching and should be accorded the necessary attention. The teachers should be involved in all the implementation stages and be assured that the approach is advantageous, compatible with the teachers teaching practices, and that they will receive the necessary technical training and help.
References


Appendixes

The following are 15 survey questions that will take 5-10 minutes to complete. These survey questions ask you about the effects of your educational beliefs on the classroom use of computers. In this case, educational beliefs mean your view on education. Kindly answer all questions in the survey. Your participation is highly appreciated.

Survey Questions

Please fill in the blank spaces or tick the appropriate response

1. How old are you?

☐ 20-25
☐ 25-30
☐ 30-35
☐ 35-40
☐ 40-45
☐ 45-50
☐ 50-55
☐ 55-60

2. Gender

☐ Male ☐ Female

3. Educational level

☐ Master ☐ Graduate ☐ High Diploma Holder ☐ Diploma Holder
4. **Which region do you belong in?**

- Central Region
- Northern Region
- Southern Region
- Western Region
- Eastern Region

5. **Have you taken any classes related to technology during your education?**

- Yes
- No

6. Do you use computers in classroom?

- Yes
- No

7. If yes, what is the key factor that influences you to use it?

- Computer Awareness
- My Confidence
- My Education Belief
- My Level of Education
- All of the above
- Other (please specify)
8. If no, what is the key factor that hinders you from using it?

   Lack of Computer Awareness

☐ My Confidence
☐ My Education Belief
☐ My Level of Education
☐ All of the above
☐ computer accessibility of my school district
☐ Other (please specify)

9. What do you think are the effects of your educational beliefs on the use of computer in classroom?

10. Do your educational beliefs affect your decision of whether to use or not use computers in classroom?
☐ Yes ☐ No

11. Do your attitudes and beliefs influence how you think about the use of computer in classroom as a cognitive tool in knowledge building?
☐ Yes ☐ No

12. Computers are a good instructional material and should be used in classroom?
☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

13. I always like using computers in classroom.
☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

14. I believe it is not very necessary to use computers in classroom.
15. One has to have computer knowledge in order to use computers in class.

16. According to me, use of computer in classroom would not affect student performance.

17. My educational beliefs affect my confidence in the use of computers in classroom as an effective teaching tool.

18. My attitudes toward computers influence my decision on the use of computer in classroom.

19. Is there anything that you would like to add about using computer in classroom?