TEACHERS’ BELIEFS AND ATTITUDES ON COMPUTER TECHNOLOGY AS AN INSTRUCTION RESOURCE IN PUBLIC SECONDARY SCHOOLS IN UASIN GISHU DISTRICT, KENYA

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Key Words
Teachers, Attitude, Beliefs, Computer Technology, Instruction

Abstract
Most countries have embraced the use of computer technology in education. Teachers’ beliefs reflect personal theories conceptualized as a set of assumptions teachers hold on various educational processes such as curriculum, school, students, teaching and learning and knowledge. These beliefs seem to act as mediators between curriculum goals and their actual implementation since teachers are to make their curricular decisions based on their own effective and cognitive schemes. The study purposed to determine teachers’ beliefs and attitudes on computer technology as an instruction resource in public secondary schools in Uasin Gishu District, Kenya. Co relational research design was adopted. The target population consisted of teachers from public secondary schools in Uasin Gishu District which has 106 secondary schools. A purposive sampling procedure was used to select schools that offer computer studies as an examinable subject at KCSE level. A stratified sampling procedure was used to divide the schools into two groups: public and private to obtain the desired sample of 169 teachers studied, a number found acceptable for correlation study were used questionnaire and an observation guide to collect data on teacher beliefs and attitude towards computer technology as an instruction resource. The study subjects respond to items on a Likert –type scale ranging from 1-4 (Disagree to Agree) regarding their beliefs and attitude toward computer technology as an instruction resource. Analysis was done through descriptive statistics and results displayed in tabular form. The study found that teacher beliefs and attitudes on the effectiveness of computer technology indicated that most teachers acknowledged the effectiveness of computer technology in teaching. The study also established that most teachers had confidence in using computer technology as a resource in curriculum deliver. It is therefore recommended that based on teacher interest in learning about and using computer technology that the Ministry of Education should develop programmes to equip teachers with relevant skills to keep up to date with developments in teaching for the benefit of their students.
**Introduction**

It has been argued that beliefs have a strong impact on teaching and learning (Handal, Bobs and Grimison, 2001; Lovat and Smith, 1995). If teachers’ beliefs do not match the goals set, it is likely that resistance will be generated resulting in a low take-up (Burkhardt, Fraser, and Ridgway, 1990). Conversely, if teachers’ beliefs are more compatible with educational reform, it is probable that new ideas will be accepted and adopted in the classroom. Teachers’ attitudes and concerns as a factor affects teacher’s use of computers in the classroom. In any case, teachers’ attitude toward computers is important to the way computer-based technology is used in instruction. (Beadion, 1990; Ercan and Ozdemir, 2006; Gardner, Dicceina and Dukes, 1993). Lloyd and Gressar (1994) have pointed that a teacher’s positive feelings about computer will also help to generate or reinforce such feelings in the students. In addition, Jennings and Onwegbuzie, (2001) and Break (2001), noted that personal acceptance of technological innovations would influence attitudes towards computers and furthermore that computer experience tends to directly affect attitudes toward computers (Kay, 1989; Gardner, Dicceina and Dukes, 1993; Woodrow, 1994; Yildrim, 2000).

A number of studies show how the nature of teachers’ beliefs is not favourable to adopting technology. Newhouse (1998) surveyed 60 Australian teachers and found that even when teachers had technical skills, they were reluctant to implement technology in their classroom. Teachers were not convinced about the benefits of computers in education and supported very limited roles of technology in the classroom. The author concluded that one of the factors for such resistance was teacher’s preference of traditional methods of instruction. Similarly, Mills and Ragan (1998) examined the instructional practices of US 30 elementary teachers in their implementation of education software in their classroom. The findings showed that there were substantial differences on the way teachers implemented the innovation. There were also differences in the levels of use of the software, which were attributed to different beliefs on the role of the software. Becker (2000) investigated beliefs and instructional practices of 4083 middle and high school teachers and found that teachers with a higher constructivist inclination towards teaching and learning were more likely to use technology in the classroom. Fulton and Torney – Purta (2000) obtained similar findings. Writing in terms of gender, Bobis and Cusworth (1994) stated that female (pre-service teachers) is more likely to display negative attitudes to teaching mathematics when calculators and computers are involved. Moreover, McDugall (2001) has noted that in Australian schools, there are more boys than girls undertaking computing studies courses at secondary level.

There is evidence from a six-year study conducted by Medcalf-Davenport (1998) that there have been no major changes in teachers’ attitudes towards technology in education. The author adds that the computer is still viewed as a curriculum rather than as a tool for teaching the classroom. There is resistance and fear in the integration of anything new into the classroom and teachers do not recognize the usefulness or necessity of using technology for teaching and learning.

Many teachers have been educated in teacher training colleges and schools at a time in which computers were absent of the educational landscape, therefore, they tend to repeat the instructional pattern they learn while sitting in classroom during many years of schools. This follows the apprentice style of learning which is predominantly in their trades such as mechanics, carpentry, among others in which the learner actually learns by watching. Godfrey (2001), citing a number of research studies adds that teachers are “reluctant to hand over control of the learning environment to their students’.”

Salpeter (1998) suggested that while the use of technology improved test skills, writing skills, and the way of thinking by the students, teachers were more comfortable with the human role they were accustomed to playing without the interference of machines. These teachers posed the question ‘could technology replace teachers.’ While some tasks could be assigned to technology, only teachers motivate students and meet their emotional needs (Peck and Dorricot, 1994). Valmont and Wepner, (2000) add that contrary to the wisdom of the fanatical technologist, computers do not think, initiate, or react the way teachers do. This
highlights the importance of teachers in the integration process.

According to (Atkins and Vasu, 2000; Gbomita, 1997; Snider and Gershner, 1999), teacher’s attitudes or concerns, as one of the several important human factors, have a significant influence on one’s computer adoption or implementation behaviour in the classroom. Moreover, lack of implementation of an educational reform can be the result of teachers’ instructional beliefs not matching the original goal of a particular innovation (Haynes, 1996; Koehler and Grouws, 1992). Further, low degree of success in many educational reforms has been seen as a major reason why teachers’ instructional beliefs need to be considered (Fullan, 1993). Consequently, it is very important that prior to any educational innovation, teachers’ instructional beliefs are explored, identified, and dealt with to determine whether they are appropriate or not (Handal and Herrington, 2003).

Statement of the Problem

It has been argued that beliefs have a strong impact on teaching and learning (Handal, Bobs and Grimison, 2001; Lovat and Smith, 1995). The government Kenya puts emphasis on use of computers as an instructional source in schools (Republic of Kenya, 2005). This is practical if teachers’ beliefs are more compatible with educational reforms because teachers’ beliefs should match the goals set to facilitate new ideas in the classroom. This implies those teachers’ attitudes and concerns as a factor can have an effect on teacher’s use of computers in the classroom. In any case, teachers’ attitude toward computers is important to the way computer-based technology is utilised in instruction. (Beadion, 1990; Ercan and Ozdemir, 2006; Gardner, Disceina and Dukes, 1993). However, many teachers have been educated in teacher training colleges and schools at a time in which computers were absent of the educational landscape, therefore, they tend to repeat the instructional pattern they learn while sitting in classroom during many years of schools. This follows the apprentice style of learning observed in most secondary schools in Uasin Gishu District, Kenya as is predominantly manifested in their trades such as mechanics, carpentry, among others in which the learner actually learns by watching (Godfrey, 2001). Consequently, teachers may be reluctant to hand over control of the learning environment to their students. In any case, Salpeter (1998) suggested that while the use of technology improved test skills, writing skills, and the way of thinking by the students, teachers were more comfortable with the human role they were accustomed to playing without the interference of machines. The Study therefore investigated teachers’ beliefs and attitudes on computer technology as an instruction resource in public secondary schools in Uasin Gishu District, Kenya the event the teachers posed the question ‘could technology replace teachers.’ While some tasks could be assigned to technology, only teachers motivate students and meet their emotional needs (Peck and Dorricot, 1994).
Purpose of the Study
The purpose of the study was to investigate teacher’s beliefs and attitudes on computer technology as an instruction resource in public secondary schools in Uasin Gishu District, Kenya

Objective of the study
To determine teacher’s beliefs and attitudes on computer technology as instruction resource in public secondary schools in Uasin Gishu District, Kenya.

Conceptual Framework

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
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<tbody>
<tr>
<td>Beliefs and Attitude</td>
<td>Computer Technology</td>
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<tr>
<td>Teacher Interest</td>
<td></td>
</tr>
<tr>
<td>Teacher Confidence</td>
<td></td>
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</tbody>
</table>

Intervening Variables
- Traditional instructional methods
- Inadequacy of computers

Source: Own Concept
Materials and Methods

Research Design

The researcher employed a correlational research design because it permits one to analyze several variables either singly or collectively and to show their relationships (Michael, 2010).

Sampling Procedure and Sample Size

The target population consisted of teachers from public secondary schools in Uasin Gishu District. The District has 106 secondary schools. A purposive sampling procedure was used to select schools that offer computer studies as an examinable subject at KCSE level in Uasin Gishu District. A stratified sampling procedure was used to divide the schools into two groups: public and private. To obtain the desired sample, the researcher got lists of names of all public and private schools offering computer studies. The names were coded randomly. The coded numbers were then placed in two tiny boxes, one for public schools and the other for private schools. The boxes were shaken and a number selected. After each selection the boxes were shaken to ensure that there was an equal chance for each school to be picked. This was done until the desired number of schools was selected. 169 teachers were studied a number found acceptable for correlation study.

Data collection Instruments

The researcher used a questionnaire and an observation guide. The questionnaire had both close and open ended items. The questionnaire consisted of 24 item assessing teacher beliefs and attitude toward computer technology as an instruction resource. The respondents were required to respond to items on a Likert –type scale ranging from 1-4 (Disagree to Agree) regarding their beliefs and attitude toward computer technology as an instruction resource.

Findings

Teachers’ beliefs and attitudes on computer technology as instruction resource in public secondary schools in Uasin Gishu District, Kenya

The objective of the study was to determine teacher’s beliefs and attitudes on computer technology as instruction resource in public secondary schools in Uasin Gishu District, Kenya. This was done by requesting respondents to make responses on items on a Likert type scale ranging from 1-4 (Disagree to Agree). The scale of interpretation was as follows: 1-1.49 Disagree; 1.5-2.49 Tend to disagree; 2.5-3.49 Tend to agree; 3.5-4.0 Agree.

Teachers’ beliefs and attitudes on computer technology as instruction resource in public secondary schools in Uasin Gishu District, Kenya was determined through descriptive statistics as shown in Table 1.
### Table 3: Descriptive statistics of teacher beliefs and attitudes

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>MEAN</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am interested in learning more about computer technology*</td>
<td>3.5323</td>
<td>1.00614</td>
</tr>
<tr>
<td>I feel computer technology isn’t appropriate to my teaching*</td>
<td>2.0059</td>
<td>1.32959</td>
</tr>
<tr>
<td>Computers scare me**</td>
<td>1.2012</td>
<td>.65991</td>
</tr>
<tr>
<td>I find computer resources useful*</td>
<td>3.3550</td>
<td>1.16675</td>
</tr>
<tr>
<td>I feel I should develop my skills to keep up to date with developments in teaching*</td>
<td>3.8817</td>
<td>.54354</td>
</tr>
<tr>
<td>I need to develop my skills and knowledge for the benefit of my students*</td>
<td>3.8994</td>
<td>.49576</td>
</tr>
<tr>
<td>I wish it had never been invented**</td>
<td>1.6272</td>
<td>1.18902</td>
</tr>
<tr>
<td>I don’t think computer technology is necessary; no one else is bothering**</td>
<td>1.0888</td>
<td>.43417</td>
</tr>
<tr>
<td>Computer technology isn’t a priority for me</td>
<td>1.4320</td>
<td>.80721</td>
</tr>
<tr>
<td>Some pupils are as scared as me**</td>
<td>1.1538</td>
<td>.52327</td>
</tr>
<tr>
<td>I prefer using it on my own when no one is there to see me make mistakes**</td>
<td>1.3846</td>
<td>.73193</td>
</tr>
<tr>
<td>It is moving too fast for me**</td>
<td>1.8698</td>
<td>.97326</td>
</tr>
<tr>
<td>I find it easy to select appropriate computer technology resources for my teaching*</td>
<td>2.4379</td>
<td>1.05107</td>
</tr>
<tr>
<td>I can’t cope with all the computer jargon**</td>
<td>2.000</td>
<td>1.13913</td>
</tr>
<tr>
<td>I feel supported with my use of computer technology*</td>
<td>2.7751</td>
<td>1.20380</td>
</tr>
<tr>
<td>All the technology can distract the student**</td>
<td>2.0118</td>
<td>1.01763</td>
</tr>
<tr>
<td>Systems are slow; I’d be quicker using a book**</td>
<td>1.6864</td>
<td>.90757</td>
</tr>
</tbody>
</table>
I feel lost in the information age** 1.6095 .92654
I can never find anything relevant for my pupils** 1.3314 .70476
The pupils are way ahead of me in their use of computer technology** 2.1775 1.11450
I think it is helpful for my teaching* 3.4556 .90605
I believe that technology-based instruction can improve learning achievement* 3.7396 .54851
I believe that technology-based instruction increases student’s motivation* 3.7751 .57454
I am willing to follow school policy on implementing technology-based instruction* 3.8107 .57705
Overall Mean 3.4201 .37975

*N (169)

Source: Field data

Figure 1: Percentage of Teachers by Teaching

Positively stated items (*) indicating positive beliefs and attitude had the highest means ranging from 2.4379-3.8994. On other hand, negatively stated item (**), indicating negative beliefs and attitude had lower means ranging from 1.0888-2.0059. The results yielded a mean of 3.4201 with a standard deviation of 0.37975.

Discussions

The researcher grouped the items into three themes based on the similarity of items as follows: teachers’ beliefs and attitude based on the effectiveness of computer technology; teacher interest in learning about and using computer technology; and teacher confidence in using computer technology.

Based on teacher beliefs and attitudes on the effectiveness of computer technology, most teachers agree or tend to agree that, computer resources are useful; computer technology is helpful for teaching; technology based instruction can improve learning achievement and increase student’s motivation. However they disagree or tend to disagree that: they wish it had never been invented; computer technology isn’t a priority; they can’t cope with all the computer jargon; computer technology can distract learners; systems are slow, would be quicker using a book. This implies that teachers acknowledge the effectiveness of computer technology in teaching.

Based on teacher interest in learning about and using computer technology, most respondents agree and tend to agree that: they are interested in learning more about computer technology, they feel they should develop skills to keep up to date with developments in teaching; they need to develop their skills for the benefit of their students; they find it easy to select appropriate computer technology resources for teaching; and they are willing to follow school policy on implementing technology based instruction. This implies that teachers have high interest in learning about and using computer technology.

Concerning teacher confidence in using computer technology, most teachers disagree or tend to disagree...
that: they are scared by computers, they prefer suing computers when no one is there to see them make mistakes, computer technology is moving too fast for them; they feel lost in the information age, can never find anything relevant for pupils and pupils are way ahead of them in their use of computer technology. This indicates that teachers have confidence in their use of computer technology.

In general, most respondents indicated that they have positive beliefs and attitude toward computer technology as an instruction resource. Similar findings were reported by Jones and Jones (2005) who found that attitudes of both faculty and students were positive- both believed that the Web and especially Blackboard’s Course Info were beneficial educational tools. Williams et.al (1998) though their study did not examine teacher beliefs, found that teachers attitude toward ICT were generally positive.

To determine the relationship between teacher beliefs and attitude toward computer technology and integration of computer technology as an instruction resource *Simple Linear Correlation* was used. Teacher beliefs and attitude toward computer technology had a *p* value of 0.028 which is less than the significance level 0.05. This shows that there is a significant relationship between teacher attitudes and beliefs and integration of computer technology as an instruction resource. This implies that teacher beliefs and attitudes determine their integration of computer technology as an instruction resource.

The teacher’s attitude towards computer will be important to the way computer based technology is used in instruction (Beaudion, 1990; Ercan and Ozdemir, 2006; Gardner, Discena and Dukes, 1993). Moreover, the way in which users perceive an innovation was fundamental to their level of use of the innovation (Fullan and Promfret, 1977).

Despite the positive beliefs and attitude toward integration of computer technology as an instruction resource, the extent of integration of computer technology is low. Ertmer *et.al* (2001) reported that teacher’s visions for or beliefs about classroom technology use did not match their classroom practices. Despite the fact that most teachers described themselves as having constructivist philosophies, they implemented technology in ways that might be described as representing a mixed approach, at times engaging learners in authentic project-based work, but at other times engaging their students to complete tutorials, practice skills, and learning isolated facts. This implies that the positive beliefs and attitudes are not enough, there is need to examine the beliefs and attitudes teachers have about the teaching learning process as these beliefs seem to affect the teacher’s instructional practices. It is usually the factors that are personal, and deeply ingrained, such as instructors personal beliefs about the instruction process (Ertmer, 1999) and the value of computing in education (Kent and McNergy,1999) that play a big role in the way the faculty integrates technology tools into instruction.

**Conclusions**

Given that teachers beliefs and attitudes on computer technology as an instruction resource in public secondary schools are not enough to facilitate the integration of computer technology as an instruction resource in curriculum delivery. It is necessary to investigate teacher beliefs about instruction and also determine teacher instructional practices in curriculum implementation in public secondary schools in Kenya.

**Recommendations**

In view of the foregoing research findings and conclusions, the following recommendations are made

i. The study found that teacher beliefs and attitudes on the effectiveness of computer technology indicated that most teachers have acknowledged the effectiveness of computer technology in teaching. It is
therefore recommended that based on teacher interest in learning about and using computer technology, the Ministry of Education should develop programmes to equip teachers relevant skills to keep up to date with developments in teaching for the benefit of their students.

ii. The study established that most teachers had confidence in using computer technology as a resource in curriculum delivery. It is therefore recommended that the Ministry of Education should equip schools with computers for teachers use in the teaching process.

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Handal, B., Bobis, J., & Grimson, L. (2001). Teacher’s mathematical beliefs and practices in teaching and learning thematically. In J. Bobis, B.


