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Relationship between Teacher Educators' Attitude towards Computers and their Level of ICT Integration in Instruction in Primary Teacher Training Colleges in Kenya

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ABSTRACT:
This study examines the relationship between teacher educators' attitudes towards computers and their level of ICT integration in instruction in public primary teacher training colleges in Kenya. Rogers's Theory on the Diffusion of Innovations (2003) is used to understand the key factors affecting ICT integration as well as the teacher educators' attitudes towards ICT integration in the classroom. In terms of methodology, the simple random sampling technique was used to select six teacher training colleges in Kenya and 169 respondents to participate in the study. Data was collected using a questionnaire, interview schedule and observation. Descriptive statistics were used to analyse the data collected formeans, frequencies, means, percentages and standard deviation. The Pearson Moment Correlation was used to determine the relationship between teacher educators' attitude and their level of ICT integration. The study results indicated a low level of ICT integration in teaching in all teacher-training colleges. It was also noted that teacher educators had positive attitudes towards ICT integration. However, they did not seem to integrate the available ICTs in their classroom instruction. It was further established that there was a positive relationship between their attitude and their level of ICT integration in instruction. The Ministry of Education should organise in-service training for teacher educators in teacher education institutions on ICT integration in instruction. At the same time, there is a need to applaud and encourage by means of incentives teacher educators who exhibit positive attitudes so as improve their ICT integration in their teaching. Consideration should be given to older teacher educators' who may be holding poor attitudes towards computers.

Key Terms: Teacher-Educators, ICT, Integration, Attitude, Computers

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Introduction

Recent research shows that there has been considerable progress in the integration of Information Communication Technologies (ICTs) in teacher education institutions in developed countries. However, very little is known about ICT integration in developing countries. The use of ICTs for supporting classroom teaching has interested educators in many fields of study. This is because ICT has impacted the quality and quantity of teaching, learning, and research. It offers many ways of improving teaching and learning in the classroom and administration and provides opportunities for students whose choices may be limited due to lifestyle and life commitments and are subsequently unable to attend classes and to discuss classwork with lecturers and colleagues (Ololube, 2006).

According to Farrell and Isaacs (2007), there has been a keen interest by African policymakers in the use of ICT to meet Education for All (EFA) objectives and the needs of the rural and under-served areas. However, there has been no consolidated documentation of what is happening in this area, nor is there a comprehensive baseline data on the state of ICT use in education in Africa, against which future developments can be compared. Kenya is not an exception. The use of ICT in teacher education poses a challenge despite the efforts of these institutions in ICT investments.

There is increased interest in ICT in teacher education in Kenya over the past decade and, as a result, these institutions are spending much of their budgets on ICT infrastructure (Chemwei, 2013). This notwithstanding, the expected benefits have not been attained, and ICT integration for teaching and learning still remains low. Chemwei, Kiboss and Njagi (2016) have pointed out that most teacher training colleges in Kenya have computers, but not many tutors are using them in instruction.

Despite all this support and the availability of technological tools, tutors are still reluctant to integrate ICT into their teaching activities. Based on the discussion above, it is evident that a key aspect has been excluded from both the technology plans and their subsequent implementation processes: the attitudes of the end-users and the real agents of change within the classroom arena, the tutors. If tutors do not have the attitudes, knowledge and skills necessary to change their classroom practices, there is no need to act.

It is widely acknowledged that unless tutors develop positive attitudes toward ICT, they will not use ICT in their teaching practice. The strong relationship between computer-related attitudes and computer use in education has been documented in many studies (Albirini, 2006; Usun, 2009). For instance, Usun (2009) argues that teacher's attitudes toward ICT may be a significant factor in the implementation of ICT in the classroom. While a number of studies on teachers' attitudes and ICT integration have been conducted in developed countries, there are no reported studies investigating this topic in primary teacher training colleges.

Teacher educators' Attitudes and ICT Integration in Instruction

Attitude is a predisposition to respond favourably or unfavourably to an object, person, or event (Ajzen, 2005). Attitude is defined as a positive or negative feeling associated with performing a specific behaviour (Samak, 2006). The characteristic attribute of attitude is evaluative in nature. This can include evaluations of issues, people, events or objects. Such evaluations can either be negative or positive or negative, but they can also be uncertain at times or unresponsive. An individual will have a favourable attitude if they believe that the performance of the behaviour will lead to mostly positive results and vice versa. But whether or not a person participates or intends

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to participate in any behaviour is influenced by the people around them. Attitudes are formed directly from experience. They may arise from direct personal experience, or they may result from observation. Rogers (2003) asserts that attitudes determine whether a person is willing to try a new innovation or not.

The strong relationship between computer-related attitudes and computer use in education has been demonstrated in many studies (Sang et al., 2010; van Braak, Tondeur, & Valcke, 2004). Attitudes toward computers influence teachers' acceptance of the usefulness of technology, and whether teachers integrate ICT in their classroom as well (Liaw, 2002). According to Mumtaz (2000), schools can go only so far to encourage educational technology use without taking consideration of teacher attitudes. A tutor's attitude towards computer technology may be a significant factor in his implementation of computers in education. This is because an educators' positive attitude towards technology is a necessary condition for the effective use of computers in the classroom. For the most part, the responsibility for preparing highly qualified workers who are up to the challenges of a global economy rests on teachers. Thus, for tutors to be able to integrate technology successfully in their classrooms, it is crucial that they cultivate and maintain positive attitudes towards technology and attain adequate computer skills (Samak, 2006).

An earlier study by Lloyd and Gressard (1986) found that positive attitudes by teachers towards computers correlated positively with their experience in using computers. Many researchers have observed that the successful integration of technology in the classroom depends primarily on addressing teachers' attitudes towards computers. It, therefore, follows that teachers' attitudes towards computers are a significant factor in enhancing the quality of learning and teaching using computers. Thus, tutors in teacher education institutions must, at least, have a basic knowledge of both hardware and software applications in order to be qualified enough to integrate technology in their instructional practices (Siegel, 1995).

Sooknanan (2002) conducted a study to investigate the adoption of technology in the education system in Trinidad and Tobago utilising Rogers' (2003) attributes, namely relative advantage, compatibility, complexity and observability. He found that the above attributes were significantly correlated to the integration, with the exception of complexity. In effect, relative advantage, and compatibility were found to be most closely related to teachers' attitudes. This means that teachers who perceived computers to be reliable, accurate and met their information needs to be demonstrated positive attitudes. But complexity affects the rate of adoption because the more complex innovation is perceived, the slower its adoption rate will be. Additionally, observability impacts a teacher's attitudes toward ICT. Teachers who had never encountered computers as an educational tool demonstrated negative attitudes. Sooknanan's (2002) study accentuated the importance of computer attributes in the process of computer integration in teaching. A critical factor that all staff need to recognise and understand is that integrating computers in classroom practice is a complex innovation which requires a radical change in the school's practices and culture. This also extends to the curriculum, the teacher's attitudes and classroom practice. Such change is achieved incrementally over a long period. Overall, the literature reveals that attitudes towards technology remain a significant factor in influencing the integration of technology in teaching. In effect, when teachers perceive ICT as easy to use, beneficial, compatible with their current activities; easy and have observable outcomes, they will demonstrate positive attitudes towards ICT.

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Statement of the Problem

ICTs play a critical role in enhancing teaching and learning. It is for this reason that there is an increasing pressure from policymakers for tutors in teacher training colleges to graduate teachers who are skilled, confident and competent in using technologies in their instruction (Chemwei, Kiboss and Njagi, 2016); MOE, 2005). Tutors in PTTCs are expected to model appropriate uses of ICTs in instruction in order to equip future primary teachers with the necessary knowledge, skills and attitudes to effectively use these skills in their working lives. In order to achieve the Vision 2030's goal of establishing a computer supply programme that will equip students with modern ICT skills, the education and training sector continued with a programme targeting 20,229 public primary schools and PTTCS, a coordination office to help coordinate and harmonise ICT in education, especially the integration of ICT in teaching and learning, was undertaken.

Although some researchers have reported the effectiveness of integrating ICTs as instructional tools in teacher education, it is not clear whether tutors are integrating them in the curriculum. The integration of ICT in primary teacher education has been slow, leading to the conclusion that there are crucial factors influencing the integration levels of ICT in teacher training colleges. According to Hennessy, Harrison and Wamakote (2010), there is a range of physical and educational factors that affect ICT integration and adoption in the classroom. These include, among others, unreliable access to electricity, limited technology infrastructure and teacher attitudes towards ICT use. Among these factors, teacher-related variables such as teachers' attitudes towards ICT are found to be the most powerful predictors of technology integration (Chemwei, 2013; van Braak, Tondeur, & Zhu, 2011). Therefore, the teacher educator's attitudes could positively impact ICT integration in primary teacher training colleges.

Methodology

This study employed a descriptive survey. The study involved six public primary teacher-training colleges in Kenya. PTTCs were preferred since they are a representative of the basic teacher education institutions in the country. These colleges which offer certificate in primary teacher education are Eregi, Mosoriot, Kilimambogo, Murang'a Machakos, and Baringo TTCs. Primary TTCs were chosen because there have been initiatives by the government to integrate ICTs in teaching in teacher education. The target population for the study consisted of the entire teacher-educators in Kenya. During this study, there were 21 teachers' colleges in the country. However, three have been elevated to university colleges. Thus, the author chose to omit them and utilised the 18 fully operational primary school teacher training colleges as the population of the study. All these colleges have computer laboratories and are making efforts to improve their ICT capacity. On average, teachers' colleges admit 600 students annually for a two-year certificate in primary teacher education. Tutors in these colleges range from 29 to 90 and 1,299 teacher-educators in public TTCs (ROK, 2005).

The author decided to use the simple random sampling technique since the population was within reach of statistical evaluation. First, a sample of six teachers' colleges was picked from the 18 colleges forming the research population. This was 30percent of the total number of primary teachers colleges in the country. The six colleges were picked at random using the balloting method. In these colleges, the total number of teacher-educators was 418. From this total population, the study used Sloven's formula to determine the sample size. It was

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found that a sample of 204 teacher-educators would be needed to represent the population in question accurately. The proportionate sampling technique was then used to select two hundred and four participants who served as respondents chosen from the teacher-educators across the colleges to constitute the sample. Majority research has a preference for methods that provide high accuracy, generalisability and explanatory power, with low cost, rapid speed and maximum management and administrative convenience. Therefore, a combination of the following research instruments was used in this study for complementary purposes: a questionnaire, two interview schedules and an observation schedule. The data were analysed using the Statistical Package for Social Sciences, SPSS version 17. Descriptive statistics using frequencies, means, standard deviations, tables and percentages were used for the data on the level of ICT integration into teaching by teacher-educators in TTCs.

Percentages were also used to answer questions that asked the levels of teacher-educators' attitudes in using ICTs in TTCs. The correlation was used to determine if a significant relationship existed between the level of ICT integration and teacher educator attitudes towards the integration of ICTs. In addition, the teacher-educators' attitude was designated as an independent variable, while their perceived level of ICT integration into teaching is the dependent variable in the analysis. The significance level was set at 0.05. Information from interviews was recorded and transcribed verbatim. A qualitative assessment procedure was applied to the respondents' answers. The text was read, and an interpretive statement that captures the essence of the respondent's quote was written.

Results and Discussion

Teacher educators' Attitudes towards ICTs

Attitude refers to a positive or negative feeling associated with performing a specific behaviour. An individual will have a favourable attitude if he or she believes that the performance of the behaviour will lead mostly to a positive result or vice-versa (Samak, 2006). Educators are likely to resist the introduction of ICTs into the classroom for a variety of reasons. Their unfamiliarity with the technologies, the additional time and effort necessary for effective use and the feeling that ICTs pose a threat to their professional role and image are some of the reasons for this resistance (Omwenga, 2004).

Acceptance of innovations is dependent largely on attitude formation (Menjo, 2007). In the study, the attitudes of teacher-educators towards ICT for instruction were investigated, and the outcomes were as shown in Table 1.

Table 1: Teacher educators' Attitude toward ICT Integration into Teaching

	SA	A	U	D	SD
I feel comfortable using computers	37.1	46.5	4.4	8.2	3.8
I fear using computers	18.9	15.2	5.5	27.8	31.7
I dislike using computers when teaching	6.2	11.8	28.6	37.9	36.1
Working with computers makes me feel at ease	26.8	47.8	10.8	12.7	1.9
I enjoy using computers in teaching	29.2	40.3	14.9	13.6	1.9
I feel happy when teaching with computers	26.8	34.4	20.4	14.0	4.5
I would prefere learning more	66.0	29.6	3.7	0.6	0

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about computers					
I am glad there are many computers these days	55.7	29.1	10.1	3.2	1.9
Computers make academic climate stimulating	50.6	32.5	8.8	5.0	3.1
Computers save time and effort	56.3	27.5	5.0	6.3	5.0
Computers increase teachers' workload	17.5	16.3	10.0	23.8	2.5
Colleges would be a better place without computers	4.9	11.0	4.9	12.9	66.3

Teacher-educators' attitudes towards ICT integration were generally positive. In effect, 83.6 per cent of the respondents strongly agreed and agreed that they felt comfortable using computers in instruction. But 34.1 per cent teacher-educators were fearful of integrating computers in instruction. 18 per cent disliked using computers in instruction. On the other hand, 69.5 per cent agreed and strongly agreed that they enjoyed using computers in teaching. The responses, furthermore, indicate that an overwhelming majority of them (95.6 per cent, SA and A) would like to learn more about computers. Another 83.1 per cent (SA and A) felt that using computers makes the academic climate in school more intellectually stimulating.

73.8 per cent agreed and strongly agreed that computers save time and effort. Yet a few of them (15.9 per cent) felt that computers increase teachers' workload. However, despite the overwhelming interest among respondents to integrate ICT into teaching, there were some who were not interested in ICT as a medium of instruction. Reluctance to engage and actively participate in ICT initiatives was likely to be caused by a number of reasons. These include insufficient technology resources, lack of time and lack of training to integrate ICT.

Correlation Analysis Results

The survey had 12 items concerning teacher-educators' attitude towards computers. The Pearson Moment Correlation Coefficient was used to determine whether there was a relationship between the teacher-educators' level of ICT integration and their attitudes towards computers. The calculated correlation coefficient between the level of ICT integration in teaching by teacher-educators' and their attitudes towards ICTs as tools for instruction was 0.451**, implying that there is a moderate positive relationship between the sets of variables.

Interviews with principals and heads of departments in the sampled colleges gave varied viewpoints about teacher-educators' attitude towards ICT integration. Some teacher-educators prefer using ICTs, while others do not. Those who do not like it claim that their computer skills are too low and have not had time to train since ICT is time-consuming. Nevertheless, every teacher-educator uses computer simulations during micro-teaching lessons to prepare students for their teaching practice. From the interviews conducted with principals and HODs, there was an indication that unwillingness by older teacher-educators, lack of cooperation from the college administration as well as lack of facilities have contributed to poor attitudes among the teacher-educators. Unless teacher-educators see a relative advantage in computer-integration, their attitudes tend to become positive towards computers. Those attitudes would also be compatible with their existing values, and so the

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integration of the computer into teaching may occur more readily (Rogers, 2003).

Observations made by the author in the respective colleges confirmed that at the time of the study, very few teacher-educators used ICTs as tools for teaching. But notable integration was seen in the ICT, Mathematics and Science departments. This is where some teacher-educators appear to have a positive attitude because some of them own laptops and do not rely on what the colleges' administrations provide. They reported that they were only limited by time and resources. For instance, one of the college principals was quite explicit about the attitude of teacher educators when he stated:

> It is only a small percentage of tutors who have a positive attitude toward ICT integration. I would put it at 55 per cent of them. One of the reasons is inadequate computers in the college which are worsened by the MOE's reluctance to supply them with computers. The Ministry of Education has always promised to support ICT use in TTCs, but their promise has not been forthcoming. If anything, teacher' training colleges have been forgotten by the government.

The sentiments point to a lapse in the MOEs effort to support the integration of ICTs in TTCs. It is recommended that the government give attention to TTCs in order to makef ICT integration a success in Kenyan schools.

In summary, the findings of this study prove that the teacher-educators had a relatively positive attitude towards ICT integration. As discussed earlier, the majority felt comfortable using computers while a handful was reluctant in integrating computers in instruction. Most of them enjoyed using computers. It was also noted that an overwhelming majority would like to learn more about computers. At the same time, the majority of the teacher-educators agreed that using computers made the academic climate intellectually stimulating. In effect, ICTs save time and effort and motivates. Very few respondents felt that computers increased teachers' workload yet, despite the overwhelming interest among respondents to integrate ICT in teaching, there were some who were not interested in ICT as a medium of instruction.

Conclusion and Recommendations

Evidentially, teacher-educators generally have a positive attitude regarding ICT integration to instruction. While a positive attitude towards an innovation leads to ICT adoption, integration was not the practice in classroom instruction in teacher training colleges in Kenya. Nevertheless, further study would be necessary to establish the exact status of teacher-educators' attitudes. It was the feeling of most teacher-educators that the college administration was the greatest impediment to ICT integration. Thus, it is recommended that principals of all TTCs should be knowledgeable in it. More importantly, the findings suggest a need to applaud and encourage (by means of incentives) teacher educators who exhibit positive attitudes so as improve their ICT integration in their teaching. Consideration should be given to older teacher educators' who may be holding poor attitudes towards computers.

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