Perceptions of Teachers on the Use of ICTS as a Teaching and Learning Tool in Secondary School Agriculture in Bungoma County,Kenya

Wasike Alex Juma, Justus Moturi Ombati and Agnes Oywaya-Nkurumwa
Department Of Agricultural Education And Extension,Egerton University P.O.Box 536-20115,Egerton,Kenya.

ABSTRACT

Education is a basic right and essential part of human rights as recognized in the Universal Declaration of Human Rights. For the right to education to be realized, the process of learning should reflect the needs and aspirations of society. Technology is one such avenue through which education objectives may be achieved. Whereas evidence shows an increase in investment in ICTs in education in Kenya, perceptions of teachers on use of ICTs as a teaching and learning tool in secondary school agriculture has not been studied much, more so in Bungoma County. The purpose of this study was to establish the teachers' perceptions on use of ICTs in the teaching and learning of secondary agriculture in Bungoma County. A descriptive research design was employed. The target population of the study consisted of 498 agriculture teachers of secondary schools in Bungoma County. Purposive sampling was used to select 120 respondents. A self-administered questionnaire was used to collect data. Validity of the instrument was ensured by input from the supervisors from the Department of Agricultural Education and Extension at Egerton University. Reliability was established by pretesting it with 30 agriculture teachers from the neighbouring Kakamega County. Data was collected and analyzed using the Statistical Package for the Social Sciences (SPSS) Version 20. The results were presented in frequencies, means and percentages. The study established that the perception of agriculture teachers towards the use of ICTs in teaching and learning was positive as a higher frequency of teachers agreed that use of ICTs in teaching and learning was useful. The study also established that few teachers used ICTs in teaching of agriculture as compared to other subjects as a higher percentage of agriculture teachers agreed that preparation of a lesson that involved use of ICT in teaching and learning was more demanding than the conventional approach. The study recommends that teachers of agriculture should have opportunity to train in use of ICT for teaching and learning, and also develop initiatives at personal level to improve their ICTs skills.

Introduction

Agriculture was first carried out by slaves who were given instructions on the best practices in the subject by their masters (King, 2014). In 1882, agriculture was placed on the program of the French schools marking a new epoch in the history of German agriculture (Scrada, 2010). Agriculture was made compulsory in rural schools in Canada as early as 1899 (Media, 2014). According to the United States Bureau of Education nineteen schools were offering agriculture by 1901 with a vocational aim in United States of America (Raamefar, 2017).

Vocational agriculture was introduced in Kenya's secondary school curriculum initially at Chavakali High school in 1959 (Covington & Dobbins, 2004). Due to the premium the Kenyan Government had on agriculture, it focused on developing a curriculum that would address the developmental needs of the country with agriculture as the main driving force. This resulted in the expansion of schools offering agriculture to six more schools; Rapogi, Kisii, Narok, Njoro, Kangaru and Bungoma school (Konyango, 2010). Teaching and learning of agriculture has become an essential tool for achieving food security in many developing countries including Kenya, and therefore, much effort has been put in to make it more accessible, affordable and of high quality. Such efforts include among others the integration of Information and Communication Technologies (ICTs) in the teaching and learning in secondary schools (World Bank, 2004). Some of the ICTs used in teaching include live broadcast for radio and television and generic software applications such as audio cassettes, CDs, tapes, video cassettes, DVDs, satellite, the internet, and web-based content. Electronic devices such as the radio, television, computers, telephones, video tapes, audio tapes, and projectors are classified as ICTs (Adomi, 2010).

A study by Mselle (2012) which focused on teachers' attitudes towards integration of ICTs in education in secondary schools in Tanzania found that the majority of the teachers were aware of ICTs and integration but they were not integrating ICTs in their teaching. In Kenya, the use of ICTs in education in general tops the government's agenda. According to ICTs in Education Session Paper of 2010, integration of ICTs in education not only helps learners acquire the 21st century skills of critical thinking,

Tele:
E-mail address: alexjwasike@gmail.com

collaboration and problem solving, but also improve the quality of curriculum delivery (Government of Kenya, 2011). While the initial plans to introduce ICTs especially computers were aimed primarily at developing ICT skills, the focus over time has shifted to leveraging ICTs to address issues of access aiming at improving teaching and learning (Government of Kenya, 2012). Consequently, a great deal of time and money is spent on the quest to provide appropriate ICTs to teachers and students. The expectation therefore is that agriculture teachers would use these ICTs effectively in teaching and learning. Few studies have however been done to establish the same. The current study therefore sought to find out the perceptions of the teachers on the use of ICTs as a teaching and learning tool in secondary school agriculture in Bungoma County, Kenya.

Statement of the Problem

Despite the benefits of ICTs in teaching, little is seen in the use of ICTs as a pedagogical tool in secondary schools in most developing countries, including Kenya. While there is a wide range of innovations in ICTs to support effective and quality delivery of educational services, only a few of the agriculture teachers fully exploit the opportunities offered by use of technology for teaching and learning in secondary schools. Whereas evidence shows an increase in investment in ICTs in education in Kenya, perceptions of teachers on the use of ICTs as a pedagogical tool in secondary agriculture remain unclear. Without information and knowledge from such studies, it will continue to be difficult to tap on the benefits of ICTs in the teaching and learning of the agriculture subject in Kenya secondary schools.

Purpose and Objectives of the Study

The purpose of this study was to establish the teachers' perceptions on the use of ICTs in teaching and learning of secondary agriculture in Bungoma County. By determining their perceptions on the use of the technology in the teaching and learning of the subject, the study could establish their attitudes and preparedness to use it in their work.

Literature Review and Theoretical Framework

The literature related to this study is divided into the following themes;- Agriculture Teaching Methods in Kenya, Resources Available in Secondary Schools in Kenya, ICT Utilization in Teaching of Agriculture in Secondary Schools and Benefits of Using ICTs in Secondary schools.

Agriculture Teaching Methods in Kenya

Teaching learning strategies are traditionally referred to as methods of teaching (Kisirikoi, Wachira & Malusu, 2008). Modern trends in teaching emphasize certain approaches which determine the strategy to be used. These approaches include; interaction approach, collaborative approach, transmission approach, experiential approach and facilitation approach.

From the above approaches the agriculture teacher determines the strategy to use depending on the content one is teaching. The most used strategies in teaching agriculture are lectures, demonstrations, discussion, educational visits, projects, question and answers, assignments and practical (Vandenbosch, 2011).

In Kenya, Ngesa (2006) indicated that teachers of agriculture use lecture, class discussion and group discussion methods. Demonstrations, practical, experiments, projects and problem –solving are moderately used. In this methods ICT is hardly incorporated thus the need to find out the perceptions of agriculture teachers, learners and head teachers towards the use of ICT as a pedagogical tool in Bungoma County.

Resources Available in Secondary Schools in Kenya

In their study of secondary schools in Kenya, Konyango, Onyango and Kibett (2010) found that educational software, lack of internet access and e-mail were lacking in schools. They recommend staff training, mainstreaming of ICTs across the curriculum and provision of adequate ICT equipment as ways of enhancing integration of ICTs in curriculum delivery. It is apparent that use of ICTs enables access to learning as they can solve many of the educational challenges faced by education systems in developing countries. When teachers use it as a teaching tool, it improves instructional delivery, hence making learning more effective. However, for this to happen, teachers must be ready to acquire the knowledge, skills and attitudes needed to use ICTs.

ICT Utilization in Teaching of Agriculture in Secondary Schools

Andoh, (2012) defines implementation as processes and decisions made by individuals every time they consider adopting innovation. Khan, Hassan & Clement, (2012) describes implementation of ICTs in schools as the decision made by school leaders and teachers to make use of technology as the best course of action available. Andoh, (2012) observes that the process of implementation of ICTs starts with initial hearing about the technology to final adoption and using it. In practice, the usual teaching and curricula approaches still remain basically unchanged in many schools, while the technology is typically poorly adopted and underused in classroom (Dzidonu, 2010). It appears that the emphasis is on students ICTs capabilities rather than application of ICTs knowledge and skills to other subjects across the syllabus.

Despite its importance and strategies developed by government to implement ICTs in schools, research conducted in many schools in the country has established that most of them are not effectively using ICTs to support teaching and learning (Manduku, Kosgey & Sang, 2012). Laaria, (2013) revealed that despite efforts made by various stakeholders and importance of the ICTs in education sector, the National ICT policy on education of 2006 has not been effectively implemented as was intended. It is with this background that an investigation on perception of agriculture teachers towards ICTs in teaching in secondary schools in Bungoma County, Kenya was conceptualized.

Keengwe, and Onchwari, (2011) notes that, despite rapid growth in ICTs access by teachers and students both at home and school, and substantially improved school ICTs infrastructure connection to internet, computer labs, availability of educational software, most teachers are not keen in adapting and using ICTs during teaching and learning. Usman and Pascal (2014) observed that most of reforms and initiatives in using ICTs in teaching in schools failed due to their top-down approach that did not take into account teachers' attitude and awareness of ICTs as a pedagogical tool. Therefore, an investigation of agriculture teachers ICTs perception can provide insights into their preparedness in adopting and using technology in classroom

Benefits of Using ICTs in Secondary schools

According to Peeraer , and Petegem, (2011) ICT benefits schools in several ways: enhancing learning in classroom , improves management of school (for example, it helps in timetabling, record storage, secretarial work like, typing staff meeting minutes, examinations and letters) , improves accountability, efficiency and effectiveness in school activities and use of Power Point presentations and internet.

Table 1. The percentage of agriculture teachers' perceptions on use of ICTs in teaching and learning.

Statement	SD	D	U	A	SA	TOTAL
I am keen to make use of a radio in teaching	65.2	32.7	2.1	-	-	100.0
Teaching is about books, pens, chalk and blackboard	23.8	19.6	0.7	51.4	4.5	100.0
Computers are a luxury for most of my students	51.9	30.3	-	11.2	6.6	100.0
Internet can help me learn many new things	-	5.8	13.8	48.6	31.8	100.0
Use of animations makes agriculture interesting	0.4	6.2	-	50.1	43.3	100.0
Use of ICTs can improve teaching	-	7.6	2.4	54.4	35.6	100.0
I prefer the secretary to type for me lesson plans	1.5	17.1	8.7	46.6	26.1	100.0
Use of ICTs requires Administrative support	0.5	3.6	0.9	29.3	65.7	100.0
Use of open resoussed materials is learner centered	19.2	16.5	1.4	47.3	15.6	100.0
Am confident when using power point slides	21.3	26.4	10.9	30.1	11.3	100.0

N=117

Hennessey (2014) takes a cautionary view by stating that putting ICTs infrastructure in school does not itself create stimulating new learning environment that are about shifting the culture of classroom teaching and the ethos of schools. By using ICTs, schools can present high quality teaching and learning.

This study was guided by technology acceptance model (TAM) (Davis, 1989). TAM is relevant in that when agriculture teachers perceive ICTs to be useful and easy to use; then it may influence their attitude positively which determines the actual use in teaching and learning of secondary agriculture.

Research Methodology

In this study, a descriptive survey design was used and it provided the opportunity for full, rich and deep descriptions of the participants' perceptions. The target population for this study consisted of 498 agriculture teachers of secondary schools in Bungoma County. Purposive sampling was used to select 120 respondents for the study. A questionnaire which consisted of a number of both open-ended and closed-ended questions were used to enable the researcher to gather data within a shorter time and allowed standardization, ease of use, and anonymity. The questionnaire was pretested using 30 secondary school agriculture teachers in Kakamega County, which did not form part of the main study. Validity of the instruments was ensured by input from the supervisors from the department of Agricultural Education and Extension. Data was collected and then analyzed using the Statistical Package for the Social Sciences (SPSS) Version 20. Qualitative data was analyzed along set themes in the use of ICTs in teaching and learning of the agriculture subject. The results were presented in frequencies, means and percentages.

Results and Discussions

This section presents data on perceptions of agriculture teachers on the use of ICTs in teaching and learning of agriculture in secondary schools in Bungoma County. To ascertain the perceptions of agriculture teachers on the use of ICTs in teaching in secondary schools, a five point scale was used. Teachers of agriculture were provided with statements and asked to choose the level of agreement by indicating that they: Strongly Disagree=1, Disagree=2, Undecided=3, Agree=4 or Strongly Agree=5. The findings are summarized in Table 1.

The results in Table 1 indicate that majority of the respondent disagreed that they were keen to make use of a radio in the teaching of agriculture as compared to those who agreed that they were keen to use the radio. Majority of the respondents agreed that teaching is normally about books, pens, pencils, chalk and the blackboard as compared to those who disagreed. Majority of the respondents 51.9 percent strongly disagreed and 30.3 percent disagreed that computers are a luxury for most of their agriculture students considering their poor social background while only11.2 percent agreed

and 6.6 percent strongly agreed respectively. The other 48.6percent of the respondents agreed and 31.8percent strongly agreed that the use of internet can help them learn many new things in agriculture subject. Majority of the respondents 50.1 percent agreed and 43.3 percent strongly agreed that use of animations makes agriculture more interesting as compared to minority 0.4 percent that strongly disagreed and 6.2 percent that disagreed. Majority of the respondents agreed that use of ICTs can improve teaching of agriculture in secondary schools as compared to those that disagreed. Another minority of the respondents agreed that they prefer to get the school secretary to type for them lesson plans using a computer than do it themselves. Majority of the respondents strongly agreed and agreed that use of ICTs in teaching requires high administrative support and time. Majority of the respondents agreed and strongly agreed that use of open education resources in teaching of agriculture leads to greater student involment in teaching and learning process and finally minority of the respondents agreed and strongly agreed that they feel confident teaching their students using power point slides as compared to those who strongly disagreed and disagreed respectively. Minority of the respondents agreed that they have been trained in basic computer applications in teaching which they felt was not sufficient.

This finding revealed that few agriculture teachers use ICTs as a pedagogical tool in secondary schools since most of the items were confirmed as disagree and strongly disagree. The most agreed item was that the use of ICTs in teaching requires high administrative support and time. This confirms that most agriculture teachers in Bungoma County are not prepared to use ICTs in teaching and learning and improve their pedagogy.

Conclusions and Recommendations

From this study the following conclusions were drawn:

The study found out that the perception of agriculture teachers towards teaching and learning is positive in the sampled schools in Bungoma County.

The following are the recommendations for further study emanating from the study findings:

Efforts should be made by the teachers' service commission in organizing for relevant in-service programmes for teachers of agriculture in secondary schools where they would update their ICTs skills.

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