EFFECTS OF E-LEARNING SYSTEM ON TEACHER ORIENTATION
PROGRAMS: A CASE STUDY OF KENYA INSTITUTE OF EDUCATION

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A Thesis Submitted to the Graduate School in Partial Fulfillment of the
Requirements for the Conferment of Master of Information Systems Degree

KISII UNIVERSITY

NOVEMBER, 2013
DECLARATION AND APPROVAL

DECLARATION
This thesis is my original work and has not been presented for an award of a degree in any other university known to me.

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MIN14/20014/11

APPROVAL
This thesis has been submitted for examination with our approval as the University supervisors.

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Signature__________________________ Date ______________________

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Lecturer, Kisii University
DEDICATION

To my loving family: Betty, Godwin, Lydia and Gideon for their encouragement, prayers and relentless support throughout my studies.
ACKNOWLEDGEMENTS

I am greatly indebted to my supervisors Mr. B. Kyambo and Mr. F. Obegi for their guidance and support during this study. My sincere appreciation also goes to all the members of the Faculty of Information Science and Technology, Kisii University. My thanks goes to Kenya Institute of Education (KIE) Director, Dr. Lydia Nzomo and members of staff for their assistance during the data collection process. Teachers in the orientation program were very helpful in providing insight into what they face while using the e-learning system. Finally, I would like to extend my gratitude to my colleagues who provided the much needed support and positive criticism.
ABSTRACT

Tremendous advances in computer technology and the evolution of the Internet have led to new approaches in learning and training which are summarized under the term e-Learning. This research studied the effects of e-learning system on teacher orientation programs conducted by Kenya Institute of Education. KIE, which is a National Curriculum Development and Research Centre, offers online teacher orientation courses using Elimika Learning Management System. The objectives of this study were to establish the extent of use of e-learning system by teachers in curriculum orientation programs, assess teachers’ perceptions, identify challenges and establish possible mechanisms that can be put in place to encourage teachers to use e-learning system in curriculum orientation programs. Theoretical framework for the study was Technology Acceptance Model which postulates that a person’s behavioural intention to use e-learning is determined by perceived usefulness and ease of use. The population consisted of 800 primary school teachers enrolled in Elimika e-learning system and 124 curriculum developers working at KIE. Stratified random sampling was used to select a sample of 214 teachers and 110 curriculum developers. The teachers who responded to the questionnaire were 198 and curriculum developers were 80 representing a response rate of 92.52 percent and 72.73 percent respectively. Data was collected using questionnaires and analyzed using Statistical Package for Social Sciences version 19. The study found out that e-learning system features such as ease of use, interactivity and flexibility had significant total effects upon usage by teachers in curriculum orientation. Also teachers’ perceptions on the appropriate content, saving on time and effort, learning enhancement and enjoyment had a significant effect on intention to use Elimika system. The study also identified various challenges encountered by teachers and some mechanisms that can be put in place to encourage teachers to use e-learning system. Slow internet connectivity, network downtime and lack of computers were the main challenges encountered by teachers when using Elimika e-learning system.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADDIE</td>
<td>Analysis, Design, Development, Implementation, and Evaluation</td>
</tr>
<tr>
<td>CBT</td>
<td>Computer-Based Training</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Compact Disc-Read Only Memory</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Video Disc</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>KIE</td>
<td>Kenya Institute of Education</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management System</td>
</tr>
<tr>
<td>LTSM</td>
<td>Learning and tutoring support management</td>
</tr>
<tr>
<td>TPD</td>
<td>Teacher Professional Development</td>
</tr>
<tr>
<td>SCORM</td>
<td>Sharable Content Object Reference Model</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
</tr>
<tr>
<td>TSC</td>
<td>Teachers Service Commission</td>
</tr>
<tr>
<td>WBT</td>
<td>Web-Based Training</td>
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The technological revolution in information technology has led to rapid growth in all fields of knowledge making it an imperative requirement for educational institutions to improve learning environments as well as cope with the ever increasing demand for education and training. A study by Kumari (2004), indicated that e-learning can provide an effective way of equipping curriculum implementers with critical and analytical tools that lead to improved instructional delivery, a wider reach to all the clientele, better use of financial resources and a world of networking among users and experts.

Coldwell (2008) describes e-learning as the online learning and the networked learning. Through the use of the computer based education, computer based instruction, and computer supported learning, the distance or obstacles in education are not anymore part of the boundary that limits the professionalism. E-learning comprises all forms of electronically supported learning and teaching. It covers a wide range of instructional material that can be delivered on a CD-ROM or DVD, over a local area network (LAN), or on the Internet. It includes Computer-Based Training (CBT), Web-Based Training (WBT), distance or online learning and online tutorials. It uses a variety of media like audio, text, virtual environments, video, and animation hence makes learning interesting, interactive and informative.

The use of ICT is well captured in Kenya’s Vision 2030 (Republic of Kenya, 2007). Kenya vision 2030 wishes to see Kenya embrace Technology and produce citizenry that have skills and levels of living which are globally competitive. The Government of Kenya also lays a lot of emphasis on integration of technology in teaching (Republic of Kenya, 2005).
Kenya Institute of Education (KIE) is a State Corporation under the Ministry of Education established through Legal Order 120 of 2010 under the State Corporation Act CAP 446, of the Laws of Kenya. KIE history dates back to 1968 when it was first established by Education Act, Cap 211, of the laws of Kenya. The Institute’s core function is to conduct research and develop curricula for all levels of education below the university. The Institute also develops print and electronic curriculum support materials, initiates and conducts curriculum based research, organizing and conducting in-service and orientation programs for curriculum implementers. It also evaluates, vets and approves the curricula and curriculum support materials, as well as offering curriculum based consultancy services in basic and tertiary education and training.

KIE offers online teacher orientation courses using Elimika Learning Management System (LMS) that is being used to host the courses. The system allows for interactivity through discussion forums, chats and e-mail, testing and feedback in form of answers as well as grading. It integrates an intelligent tutoring system, a computer instruction management system and a set of cooperative tools.

1.2 Statement of the Problem

Tremendous advances in computer technology and the evolution of the Internet have led to new approaches in learning and training which are summarized under the term e-Learning. Great deal of time and money is spent on the pursuit of providing technology tools to teachers and learners. This leads to an expectation that teachers will use these technologies in teaching and learning in an effective way (Jones, 2001). In Kenya, curriculum implementers who are teachers and education officers are critical to the effective delivery of the curriculum. A lot of research done indicates that several factors determine whether teachers will adopt e-learning technologies. Such factors include: teacher’s attitudes, availability of effective software, unreliable internet, lack of enough time and inability for the teachers to effectively integrate technology, infrastructure, intrinsic and extrinsic factors such as subject matter, cost, time available, personal traits of the teacher (Kotrik & Redmann, 2005; Kumari, 2004). Attributes of the technology
(relative advantage, compatibility and complexity) also influence teachers’ use of technology (Rogers, 2003). Moreover, the use of e-learning as a supplement to the traditional teacher orientation programs produces greater effects as compared to those obtained with traditional means alone (Charalambos & Glass, 2005). However, the effects of a purely online system for curriculum orientation without the inclusion of the traditional means was neither explicitly emphasized nor researched. This study, therefore, endeavored to find out the effects of e-learning system on teacher orientation programs.

1.3 Objectives of the Study

The general objective was to examine the effects of e-learning system on teachers’ orientation programs, identify challenges and provide possible solutions.

The specific objectives of this study were:

i. To establish the extent of use of e-learning system by teachers in curriculum orientation programs.

ii. To assess teachers’ perceptions on the use of e-learning system in curriculum orientation.

iii. To identify the challenges encountered by teachers when using e-learning system in curriculum orientation programs.

iv. To establish possible mechanisms that can be put in place to encourage teachers to use e-learning system in curriculum orientation programs.

1.4 Research Questions

The study was guided by the following research questions:

i. What is the extent of use of e-learning system by teachers in curriculum orientation programs?

ii. What are the main perceptions of teachers using e-learning system?

iii. What are the challenges faced by teachers when using e-learning system for curriculum orientation?
iv. How can teachers be motivated to use the e-learning system for curriculum orientation?

1.5 Assumptions of the Study

The study assumed that:

i. The respondents had access to computers and internet connection to access the e-learning system.

ii. The respondents were frank in responding to researcher’s questions.

1.6 Significance of the Study

The findings from this study provided insight into the situation on the ground on extent of use, perceptions, challenges and recommendations on how to motivate teachers to embrace e-learning system for curriculum orientation.

The study also provided useful information that would assist stakeholders in the education sector to better design and implement e-learning strategies. The Government of Kenya, through the Ministry of Education, would be able to use the findings of this study to formulate policies governing e-learning programs targeting teachers and other curriculum implementers.

The findings and recommendations from this research would add to the field of knowledge on e-learning technology and utilization. The research findings could also serve as baseline survey for future studies on the effect, roles or impact of e-learning technologies in various levels of education.

1.7 Scope of the Study

The research targeted primary schools teachers enrolled for Elimika LMS and curriculum developers working at Kenya Institute of Education (KIE).
1.8 Limitations of the Study

This study was limited to primary school teachers enrolled in the online curriculum orientation programs. Involvement of secondary school and tertiary institution teachers may be investigated in future research.

1.9 Operational Definition of Terms

**Computer Based Instruction** - it is an instruction performed by the computer and its associated consoles.

**Computer-Based Training** - is the use of computers and related software and hardware in imparting training, monitoring learners’ progress, providing feedback and assessing final results. It is fixed in its format and content unlike Web Based Training (WBT) which is regularly updated and is available in several formats.

**Curriculum** - means and materials with which learners interact for the purpose of achieving identified educational outcomes.

**E-learning** - is the use of electronically supported media to access information for knowledge delivery.

**Elimika** - KIE’s e-learning management system for teachers’ orientation. Elimika is a Kiswahili word meaning “get educated”.

**Information and Communication Technology (ICT)** - includes technologies that are intended to fulfill information processing and communications functions.

**Internet** - is a global system of interconnected computer networks.

**Kenya Institute of Education (KIE)** - is a national curriculum and research Institute that conducts research, develops curricula, curriculum support materials and carries out in-
service and orientation programs for curriculum implementers for all levels of education below the university.

**Learning** - acquisition of knowledge, skills and attitudes that results in observable change in behavior or capability.

**Learning Management System** - a software application for administration, documentation, tracking, reporting and delivery of e-learning educational courses or training programs.

**Local Area Network (LAN)** - is a computer network that interconnects computers in a limited area such as a home, school or office building.

**Orientation** - activity or process that introduces a new situation, set of ideas, course or environment.

**System** - a set of interacting or interdependent components forming an integrated whole.

**Teacher** - a person who provides education for pupils (children) and students (adults).

**Website** - is a set of related web pages served from a single web domain accessible via a network such as the Internet or a private Local Area Network.

**Web-Based Training** - is custom tailored training delivered through a web browser over any network such as Internet, intranet and Local Area Network.
CHAPTER TWO

LITERATURE REVIEW

2.1 Meaning of Term E-learning

E-learning has been defined in different ways. For example, Urdan and Weggen (2000) define e-learning as the delivery of content via all electronic media, including the internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM. According to Meyen et al. (2002), e-learning can be defined as the “acquisition and use of knowledge distributed and facilitated by electronic means”. However, it is noteworthy that these definitions introduce e-learning as a way of transferring the content to the learner through the electronic media. E-learning is defined as learning facilitated and supported through the utilization of information and communication technologies (Jenkins & Hanson 2003). Thus, e-learning includes the use of ICT tools such as Internet, computer and content created with technology to support teaching and learning activities.

According to Jorge (2006), e-learning is the use of Internet technologies to enhance knowledge and performance. E-learning technologies offer learners control over content, learning sequence, pace of learning, time, and often media, allowing them to tailor their experiences to meet their personal learning objectives. Khan (2005) also defines e-learning as an innovative approach for delivering well-designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for open, flexible, and distributed learning environment.
2.2 Features of E-learning

According to Clark and Mayer (2007), e-learning has the following features:

i. Includes content relevant to the learning objective.
ii. Uses instructional methods such as examples and practice to help learning.
iii. Uses media elements such as words and pictures to deliver the content and methods.
iv. May be instructor-led (synchronous e-learning) or designed for self-paced individual study (asynchronous e-learning).
v. Builds new knowledge and skills linked to individual learning goals or to improved organizational performance.

2.3 Components of E-learning

Jorge (2006) explains that creating e-learning material involves several components. Once content is developed, it must be managed, delivered, and standardized. Content comprises all instructional material, which can range in complexity from discrete items to larger instructional modules. A digital learning object is defined as any grouping of digital materials structured in a meaningful way and tied to an educational objective. Learning objects represent discrete, self-contained units of instructional material assembled and reassembled around specific learning objectives, which are used to build larger educational materials such as lessons, modules, or complete courses to meet the requirements of a specified curriculum. Examples include tutorials, case-based learning hypermedia, simulations, and game based learning modules. Content creators use instructional design and pedagogical principles to produce learning objects and instructional materials.

Content management includes all the administrative functions such as storing, indexing and cataloging needed to make e-learning content available to learners. Examples include
portals, repositories, digital libraries, learning-management systems, search engines, and e-Portfolios. A learning-management system, for example, is internet-based software that facilitates the delivery and tracking of e-learning across an institution. A learning-management system can serve several functions beyond delivering e-learning content. It can simplify and automate administrative and supervisory tasks, track learners’ achievement of competencies, and operate as a repository for instructional resources twenty-four hours a day (Jorge, 2006).

Content delivery may be either synchronous or asynchronous. Synchronous delivery refers to real-time, instructor-led e-learning, where all learners receive information simultaneously and communicate directly with other learners. Examples include teleconferencing (audio, video, or both), internet chat forums, and instant messaging. With asynchronous delivery, the transmission and receipt of information do not occur simultaneously. The learners are responsible for pacing their own self-instruction and learning. The instructor and learners communicate using e-mail or feedback technologies, but not in real time. A variety of methods can be used for asynchronous delivery, including email, online bulletin boards and newsgroups (Jorge, 2006).

2.4 Previous Studies on E-learning Systems

A study by Ham (2002) focused on the perception of students on web-based courses. The purpose of the study was to investigate student satisfaction levels with their web-based learning experience. Two hundred sixty nine students enrolled in 40 graduate-level, web-based courses in 3 sites were surveyed. The study found out that there was a significant relationship between satisfaction and self-efficacy as well as between self-efficacy and interpersonal control at two sites. Likewise, the study also revealed that there was a significant relationship between available technical support and the students’ overall success in their courses.

The study found out that there was a significant relationship between satisfaction and level of communication. On its conclusions, the study stated that the attitude of the students towards the Web were positively correlated to both their satisfaction and success
at one site while the second site attitudes towards the Web were positively correlated only to satisfaction with the course. Nevertheless, the study also stated that there existed no significant relationship between students’ participation in collaborative activities and satisfaction.

A study by Lesh (2001), evaluated the effectiveness of web-based education using multilevel evaluation. The objectives of the research were to show that students enrolled in a web-based course would have a positive reaction and to acquire knowledge from asynchronous learning experience as well as to demonstrate effective and efficient on-line pedagogical strategies. Students’ reaction to learning, achievement and cost-effectiveness related to asynchronous learning environments were measured. The analysis stated that the student reaction to learning was found to be significantly lower for web-based students compared with lecture-based students. Achievement was successful for both groups; nonetheless, no significant difference was identified between the performance levels of the two groups. It also revealed that cumulative time demands for an experienced instructor to design and deliver a web based asynchronous learning experience were comparable to the time demands of a lecture based synchronous counterpart. The study also stated that web-based learning environment is equally effective as a lecture-based environment in terms of the learner achievement and faculty workload time demands.

Another study by Coleman (2011), focused on how the adoption of e-learning among Ghanaian universities could be assessed. A structured questionnaire was administered to a sample of 103 persons comprising of students, university lecturers and management authorities of four selected universities which use e-learning in their educational curriculum. Based on an analysis of the obtained data, the major findings showed that university managements and lecturers had not established broader e-learning facilities that would trigger students to adopt e-learning course. The study also found that the facilities being used were insufficient. Although, some of the universities had made provision for several e-learning delivery modes, students and lecturers were not familiar with them. Hence, most of the delivery modes were not being used at all. On its
conclusion, the study stated that students’ level of access to computers, internet connectivity, and the lack of regular electric power supply on campus were the major factors negatively impacting on students to hinder them from attending e-learning courses. It was also found out that the most important barriers likely to affect the implementation of e-learning included poor internet connectivity fear of failure in internet/e-learning services, fear of internet fraud and the low internet speed.

2.5 E-learning Standards

In addition to establishing, managing, and delivering content, a fourth component is part of the e-learning equation. It is becoming increasingly clear that standards are needed for the creation of new e-learning material. Such standards promote compatibility and usability of products across many computer systems, facilitating the widespread use of e-learning materials (Jorge, 2006).

Several organizations have been engaged in creating broad e-learning standards. Although not specifically designed for education, these standards offer educators important advantages. The most well-known set of standards is the Advanced Distributed Learning: Sharable Content Object Reference Model (SCORM). SCORM is a group of specifications developed through a collaborative effort of e-learning organizations funded by the United States Department of Defense. SCORM specifications prescribe the manner in which a learning-management system handles e-learning products. E-learning material built to SCORM specifications will interact with a conformant learning management system, allowing for the prescription of the learning experience and tracking of learner performance (Jorge, 2006).

2.6 Learning Management Systems

Usually e-Learning systems have been understood as Learning Management systems (LMS) which mainly focus on administrative aspects of learning and content delivery and support. LMS have evolved from the early days of Computer Based Training (CBT),
which only presented the learning content. LMS offer support for planning, organizing and managing learning such as course catalogues and registration, event schedules, assessment services, keeping learner records, organizing group and individual learning paths. In addition to that they have often been extended by functions for skill and competency management for tracking and controlling the personal development of employees and by modules for resource management to organize trainers, rooms and other types of resources for instructor-led trainings (Jorge, 2006).

2.7 Model for Designing E-Learning Systems

There are many e-learning models of designing, but the most common model is the ADDIE model. ADDIE refers to the first letters of the five major processes involved in this model, which are Analysis, Design, Development, Implementation, and Evaluation (Hodell, 2005) as shown in the following figure:

![ADDIE Model](image)

**Figure 2.1: The ADDIE Model Five Major Processes (Hodell, 2005)**

Most models are derived from ADDIE model, sometimes with some differences depending on the purpose the model is being used for (Hodell, 2005). Accuracy, clarity, and easy usage are all factors that make instructional design the right choice. Moreover,
this design takes into account aspects such as students’ characteristics, teaching techniques and feedback strategies. The model involves the following five stages:

i. **Analysis stage**: this stage refers to the accurate description of the elements that constitute the system, including the criteria of every individual element, and its exact function. The stage includes need analysis, analysis of aims, analysis of teaching unit, analysis of learners’ characteristics, analysis of learning and training environment.

ii. **Preparation stage**: this stage involves designing the appropriate strategy to complete the job, the selection of the suitable learning sources and other supporting items including the preparation of the place. It includes selection of the method of teaching, preparation of learning aids, preparation of the electronic resources, and preparation of evaluation tools.

iii. **Try out stage**: at this stage an initial trial will be made to make sure that the system is working as required and things are progressing according to the plan. Then after making the necessary corrections and amendments it will be ready for use. This stage includes an individual try out and tries out involving a small group.

iv. **Implementation stage**: it involves the application of the system. This stage usually comes after the try out process.

v. **Evaluation stage**: This stage refers to the evaluation of the system’s practicability after the try-out stage and after actual implementation. It also involves the evaluation of learners’ achievements.

### 2.8 Benefits of E-learning

Given its many benefits and advantages, e-learning is considered among the best methods of education. These benefits have been referred to by a number of researchers (Marc, 2002; Klein & Ware, 2003; Hameed, Badii & Cullen, 2008). Some of these advantages are the following:
i. It focuses on the needs of an individual learner as an important factor in the educational process rather than on the needs of the instructors, or the educational institution.

ii. Flexibility in terms of time and place, where every student chooses the time and place that suits him.

iii. Enhancing the efficiency of knowledge and qualifications through accessibility to a vast amount of information, including access to expertise featuring global universities.

iv. E-learning is cost effective as learners do not need to travel, which insure more costs if they do. It also provides learning opportunities for a maximum number of learners without the need for more buildings.

v. Provides opportunities for interaction between learners through discussion forums and through eliminating the barriers that might hinder participation such as fear to talk to others.

vi. E-learning always takes into account the differences between individual learners. For example, some learners prefer to focus on certain parts of the course, while others are ready to review the whole course.

2.9 Challenges of E-learning

However, despite the above advantages, e-learning as any other educational approach has its negative side. The disadvantages include the following (Marc, 2002; Klein & Ware, 2003; and Hameed, Badii & Cullen, 2008):

i. In e-learning the learner might suffer from introversion, isolation and lack of social interaction. Therefore, the learner needs a strong motivation and skills with regard to time management to reduce this effect.

ii. E-learning might have negative impact on the development of communication skills of learners. In other words although a learner might have acquired an
excellent academic knowledge, and yet he might not have the skills to deliver this knowledge to others.

iii. E-learning might be less effective than traditional learning in terms of clarification and explanation as the learning process becomes easier through face to face encounter.

iv. In e-learning cheating cannot be regulated as assessment tests could possibly be done by proxy.

2.10 Factors Affecting Use and Adoption of E-Learning Systems among Teachers

i) Teacher Perceptions

Teachers play an important role in the implementation of ICT into schools and their attitudes are major predictors of the utilization of technologies in instructional settings (Al-Zaidiyeen, 2010). Positive attitudes often encourage less technologically capable teachers to learn the skills necessary for the implementation of technology-based activities in the classroom. Teachers’ perception of technology use also is affected by their belief about the way the subject content should be taught (Mumtaz, 2000). Therefore, if teachers want to successfully use technology in their classes, they need to possess positive attitude to use technology. Such attitude is developed when teachers are sufficiently comfortable with technology and are knowledgeable on its use.

However, according to Ajelabi and Agbatogun (2010) teachers strongly perceive that, e-learning for instruction in the schools should be introduced as soon as possible for the improvement of instruction and noted that there is no significant gender difference in teachers’ perceptions.
ii) Teacher Training

A commonly cited obstacle to ICT integration is lack of teachers’ content, technology and pedagogical knowledge. Because of a lack of pedagogical knowledge, teachers often fail to take advantage of what technology affords and instead use computers to teach in traditional ways (Charalambos & Glass, 2005). There are many efforts towards training teachers to integrate technology both at the pre-service and in-service. However most of the teacher training preparation programs at the pre-service offer one course in educational technology or an ICT unit which may not be adequate to prepare teachers to integrate technology. At the in-service, the concentration is on training them on basic skills like computer literacy, exposure to email, search engines and usually takes place over a few days and sometimes in form of a workshop and offered at inconvenient times (Tina, 2004).

iii) Pedagogical Factors

Pedagogy is the process or strategies of teaching or instruction. How teachers view the role of e-learning technology in the classroom depends on their beliefs about how people learn and is based on different learning perspectives such as behaviorist, cognitivist, constructivist and social-psychologists (Heinich et al, 2001). Deaney & Hennessy (2007) on technology assisted classroom practice, found that pedagogical approaches to using new technologies proved to be robust over time and spreads from the subject teachers and is integrated into the departmental schemes of work though this depended on whether there was adequate access to reliable resources and other organizational factors and also teachers’ confidence, skills and motivation.

iv) Availability of Time to Experiment, Reflect and Interact

The time factor surrounding the implementation process is viewed by teachers as being a major barrier in their using technology for teaching. Teachers need large blocks of time
to gain initial familiarity with new hardware and software, learning, experimenting, practicing for sustained periods and also there are demands on the curriculum coverage (Deaney & Hennessy, 2007). Adding to this, there are many software available in the market and teachers need time to make a good choice and to observe an experienced user model, time for group reflection on a recently tried application and even time for teachers to organize sharing of the equipment and for even students to log in (Vijay, 2006). Granger et al. (2002) singled out lack of time as a problem by teachers in their technology mediated teaching. They are often loaded with too many teaching hours or other activities outside their teaching responsibility, so they hardly have time to plan, prepare and develop their technology mediated teaching.

v) Availability of Hardware

Provision of quality hardware is one of factors that facilitate teachers’ adoption of technology in teaching. Teachers are more likely to integrate ICTs into the classroom if they have access to adequate equipment and a solid technology infrastructure (Charalambos & Glass, 2005). However, Balanskat et al. (2006) argues that the provision of ICT equipment does not necessarily mean that there is higher use by teachers because there is limited access to the ICT equipment.

vi) Software Issues and Appropriate Content

Hardware for instructional technologies may be availed to teachers. However, the presence of hardware must be accompanied by appropriate software and content. There is no doubt that the ultimate power of technology is the content and the communication. In Africa, most of the content is not relevant but developed elsewhere though; software developers and publishers in the developed countries have been trying for long to develop software and multimedia (Tina, 2004). Use of inappropriate software distracts both teachers from the learning and teaching process and therefore does not enhance a lesson (Balanskat et al., 2006).
vii) Leadership Factor

Another factor that affects use and adoption of instructional technologies among teachers is the leadership provided. Leaders in schools are the head teachers, administrators or ICT coordinators. They represent the policy makers. Most projects that succeeded appear to have dedicated champions who provide visionary leadership and possess good leadership skills (Tina, 2004).

School leadership is also a factor influencing adoption of technology as administrators should encourage teachers to continue developing technology based skills, provide time for them to acquire skills by in-building it within the school timetable, provide finance to purchase the hardware and software and also discuss their school vision of integration of technology with the teachers as well as providing incentives and recognition to those who successfully complete computer training programs (Kumar et al., 2008).

Similarly, leadership is a critical predictor of ICT integration, since it focuses on promoting the use of ICT at a strategic and action level: ‘school principals who wish to nurture a technology culture need to join in rather than sitting by the side’ (Tina, 2004). Therefore, school leaders should be a role model and should make ICT a tool in their everyday life by adopting strategies that make ICT a part of daily routine or tasks of the teachers.

viii) Financial Considerations

For successful integration of e-learning system technology, the financial factor is also important. Rogers (2003) talks of one attribute of relative advantage to determine diffusion of an innovation which is the economic aspect. He explains that for an innovation to be embraced, it should be economical, time and cost saving. Therefore, funding should be sustainable and a framework for sustainability should be designed at the inception stage. The cost of ICT equipment, maintenance and software licenses are
high and should be well planned because they inhibit successful integration of instructional technologies in schools (Balanskat et al., 2006).

2.11 Overview of Elimika Learning Management System at KIE

Curriculum implementers must be equipped with critical and analytical tools necessary to live and flourish in information saturated environment. Curriculum is dynamic and changes are inevitable. This is because there is need for regular review of the same to include emerging and contemporary issues that may affect the curriculum. Face to face orientation is almost impossible because of the huge number of workforce in the teaching profession. To ensure that curriculum implementers are in tandem with the dynamic nature of curriculum itself there is need to use technology which ensures that content is regularly updated and that implementers are regularly in serviced on new and emerging issues within the existing curriculum. It is with this realization that the Kenya Institute of Education (KIE) has set up a Learning Management System known as Elimika and whose main aim is to increase access to information on issues relating to the curriculum and curriculum delivery (Kenya Institute of Education, 2011).

The Elimika system is the vehicle through which Kenya Institute of Education (KIE) delivers its courses. The name Elimika is a Kiswahili word meaning “get educated” which was coined to capture the idea behind online training and also give it a Kenyan identity. The Learning Management System (LMS) is supported by a community of experts and is always under review to be in tandem with the ever changing technology. This aspect makes it an appropriate means to deliver e-learning because it is regularly updated. The platform allows development of content within it and also allows importation of content authored in other software. The exe authoring tool is used to develop content which is then loaded onto the LMS. The system is a Web 2.0 enabled rapid application development framework for creating web applications that are platform independent, browser independent and can use a number of common databases. It also accommodates the use of multimedia such as illustrations, animations, photographs and videos which enhance interactivity. Other tools within the system which enhance
interactivity include discussion forums where the participants discuss various issues
guided by the online tutors, chats, internal mail and announcement/pin boards where
announcements concerning the courses are made including the term dates, exams and
blogs.

The institute’s clientele accesses these products through the institute’s and the system’s
websites. Due to poor connectivity in most parts of the country the developed content is
also packaged into CD-ROMs for access to those with no or challenged connectivity
(Kenya Institute of Education, 2011).
It is expected that after going through Elimika course the teacher will be able to:

i. Interpret the syllabus correctly
ii. Embrace innovation and creativity in their teaching
iii. Select appropriate and relevant resources
iv. Select and use varied, appropriate and relevant teaching and learning methods
v. Design varied and appropriate tools for assessment.

The course comprises eight modules namely; Mathematics, English, Science, Creative
Arts, Teacher Professional Development (TPD), Kiswahili, Life skills and Social Studies.
Each module comprises of a team of experts cutting across the different sections of
curriculum development (research, resources and e-learning). The course takes
approximately 6 months with each module taking 3 weeks. The course is supported by
expert online tutors who assist the participants throughout the program. Certification is
awarded upon successful completion of the course (Kenya Institute of Education, 2011).

2.12 Benefits of Elimika LMS to KIE and its Stakeholders

Through this program, Kenya Institute of Education has greatly benefitted in that it has
saved a lot of resources both financially and man hours. Whereas the Institute only
managed to organize a few workshops for its clientele with limited numbers due to
financial, time and human resource constraints, now it can run more intense programs targeting a big number of clients over a long period of time. This ensures flexibility in learning. It also saves a lot of finances since less travelling is done thus saving costs in travel and accommodation. Since the LMS is free, there are no license costs.

Online tutoring creates a virtual environment where the curriculum personnel at KIE interact with the teachers and education officers in the field enabling exchange of information where issues are discussed. For the courses being offered, there is an online tutor throughout who takes the participants through the course virtually. Online examinations are conducted with a certificate at the end of the course which is very motivating for the participants. Teachers are also able to share experiences through the available interactive tools in the system. They organize chats to address challenging areas as well as post discussions on the system in various areas. They also communicate through internal mails with their fellow participants as well as with the course managers and the tutors. This further enhances the course as new ideas are inbuilt thus enriching the course. Synergies and team building are also enhanced through the system as group works are encouraged across board. The system has ensured flexibility and accessibility of learning whenever and wherever.

The government has also benefitted from the venture. It has saved a lot of resources in terms of time and finances in getting learning materials to the Education centres. Through the program, the government has realized equity and access in Education. Where connectivity is okay, learning has been delivered through the Elimika online program. In places where connectivity is a challenge, the content is packaged in DVDs and delivered to these areas, thus accessing the same content as it is online format (Kenya Institute of Education, 2011).

Even though the teachers are spread out in various counties, they undertake the same course online and access the same tutors. This ensures that the desired output is maintained across the work force. Finances are saved as they do not have to travel to a common place to undertake the training. The trainings are done at the flexibility of the participants and the
school. The system allows for tracking of the participants online and giving them a test which is graded by the system. This makes the training component for teachers effective and efficient. If there are challenging areas during the training, they are handled through the chat forum thus all getting synchronized information thereby avoiding work place conflicts.

The system allows for effective monitoring of the orientation programs. Monitoring through the LMS is achieved through different levels which include monitoring of the content that is disseminated to the user through administering an evaluation tool after every course. This is achieved by receiving constructive feedback from the users. Tests and examinations are also administered through the system hence evaluating the users’ acquisition of the required competencies. The system is also evaluated using a systems tool which details the effectiveness of system to deliver the content, the ease of navigation and the user friendliness of the system among others (Kenya Institute of Education, 2011).

2.13 Operations of Elimika LMS

The operations of Elimika are run in such a way that there is a Project Management Team which oversees the activities of the project as well as give policy direction. The team also ensures that quality of the products is enhanced and maintained. This team is supported by the following:

i. **Project Coordinator**: charged with the responsibility of coordinating all the activities carried out in the project.

ii. **Overall Content Manager**: charged with the responsibility of coordinating all online content to be developed.

iii. **Online Support Manager**: ensures that the clients are attended to by the respective content tutors as well as ensuring quality of the tutoring process and advice accordingly.
iv. **Systems Administrator:** the role involves administration and management of the system that runs the content.

v. **Implementation team:** Once the course is ready and certified by the project team, it is handed over to the implementation team (Kenya Institute of Education, 2011).

**2.14 Structure of Elimika LMS**

Elimika is a web based system that can be launched from a browser from any location globally ([www.elimika.ac.ke](http://www.elimika.ac.ke)). Authentication of the site can be activated as per the clients’ choice. The following is the structure the system:

a. The system’s Internal Administration portal provides the user with the privilege to manipulate and customize the system settings accordingly.

b. It provides for a centralized learner management.

c. The LMS is SCORM (Sharable Content Object Reference Model) compliant and accepts materials from various authoring tools.

d. The System contains a personalized Grade Book that helps compute and keep track of the marks/points allocated after all the assessments. Within the grade book the user is able to view the following:
   i. Closing Date- whether or not the assessment is closed for submission.
   ii. Assessment Type & Title- Points out the exact assessment done.
   iii. Class Average- The average performance of an individual compared to other class members.
   iv. Year Mark & Final Mark- The year and final make as set by the administrator/course tutor to be computed by the system.
   v. User Details – Such as name and contact details.

e. The e-Tutor/Course Administrator is in a position to view the class performance by accessing all the grades and trend reports for all the members of his class.
f. Elimika Calendar is set to display all the planned learning activities set to take place during the study period. This tool acts as a guide or reminder to all learners using this system as it doubles as a course timetable.

g. Elimika Chat Rooms enable learners to discuss on various course issues in real time. Various chat rooms are created according to the topic of discussion hence allowing online learners to attend to a topic of their choice. (www.elimika.ac.ke)

h. Using the Elimika Forums, learners can hold conversations in the form of posted messages. They differ from Elimika chat rooms in that messages are at least temporarily archived. Also, depending on the access level of a user and the forum set-up, a posted message might need to be approved by a moderator before it becomes visible (Kenya Institute of Education, 2011).
Figure 2.2: Elimika Learning Management system structure (Kenya Institute of Education, 2011)
2.15 Theoretical Framework

A theoretical framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. A theoretical framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this (Reichel & Ramey, 1987).

This study used Technology Acceptance Model (TAM) as its theoretical framework. The TAM model was developed by Davis (1991) cited in Saade, Nebbe and Tan (2007). TAM model was built upon Fishbein and Ajzen’s (1975) Theory of Reasoned Action (TRA) which postulates that beliefs could influence attitudes, which lead to intention to use and finally actual usage behavior. TAM as proposed by Davis (1991) describes that a person’s behavioural intention to use e-learning is determined by perceived usefulness and perceived ease of use. Although TAM’s ultimate goal is actual usage, it could also be used to explain why individuals may accept or not accept a particular technology such as e-learning (Jung, 2008). This research on the effects of e-learning system on teacher orientation programs was therefore applicable to this model as it deals with user perception and usage of the system.

The Technology Acceptance Model specifies the causal relationships between system design features, perceived usefulness, perceived ease of use, attitude toward using, and actual usage behaviour. Saade, Nebebe and Tan (2007) had noted that individuals will use technology when they perceive that the technology will enhance their performance. Overall, the TAM provides an informative representation of the mechanisms by which design choices influence user acceptance, and should therefore be helpful in applied contexts for forecasting and evaluating user acceptance of information technology.
TAM has been extended by the addition of other constructs such as gender, culture, trust, experience, social influence (Chiru, Davis & Kauffman, 2000); computer self-efficacy (Parzinger, Reeves & Welch, 2006); and internet self-efficacy (Ma & Liu, 2005). Among these constructs, self-efficacy is recognized to be more important one. However there has been less attention on specific self-efficacy and e-learning. Chau (2001) studied the effect of computer attitude and self-efficacy on IT usage behaviour with the sample of 360 business students. He found that self-efficacy has a relatively small, but negative effect on perceived usefulness and no significant effect on perceived ease of use.

However, Roca (2006) attempted to understand e-learning continuance intention and the result showed that computer self-efficacy and internet-efficacy have a positive effect on perceived ease of use. Lopez and Monson (1997) and Wu, et al. (2006) moreover, found that self-efficacy has a positive effect on perceived usefulness. Also Ong, Lai and Wang (2004) found that self-efficacy had positive effect on perceived usefulness and perceived ease of use.

The model as it is, does not present all the important components for the acceptance, adoption and usage of e-learning system for curriculum orientation. The researcher therefore proposed that the Technology Acceptance Model be adjusted to include components of ease of adoption, access to infrastructure and experiences. The new proposed framework is as shown in figure 2.4.
Figure 2.4: Modified Technology Acceptance Model for E-learning System, adapted from Davis (1991) by Researcher

In this proposed modified TAM model, ease of adoption refers to the ease at which teachers will accept the system for curriculum orientation. External variables include access to infrastructure such as computers and improved bandwidth. Experiences refer to prior computer or technical skills which may be influenced by age, gender and teaching experiences and may influence intent to use e-learning system.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

A research design is the plan and structure of investigation so conceived as to obtain answers to research questions. It is the ‘glue’ that holds together all the elements in a research project (Kombo and Tromp, 2006). This study employed a descriptive survey design. A survey is essentially an appraisal study seeking to reveal the present truth and suggest a possible course of action for the phenomenon observed. Mugenda (2008) states that survey designs are used to collect information that describe, explore and help the researcher to determine cause and effect between variables such as in this study which sought to find out if the e-learning system has had an effect on the teachers’ orientation programs conducted by Kenya Institute of Education. This was made possible by the use of questionnaires for teachers and curriculum developers which produced both quantitative and qualitative data.

3.2 Study Area

This study was carried out in Kenya Institute of Education (KIE). KIE is located in the Desai Rwathi, off Muranga Road, Nairobi County. The researcher had advance knowledge on the Institution and this made collection of data easy and more efficient.

3.3 Target Population

The target population was made up of primary school teachers enrolled in Elimika e-learning system and curriculum developers working at KIE. It comprised of 800 primary school teachers enrolled in the Elimika LMS and 124 curriculum developers (Kenya Institute of Education, 2011).
3.4 Sample Size and Sampling Procedure

Sampling is a process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group (Orodho and Kombo, 2002). According to Webster (1995), a sample is a finite part of a statistical population whose properties are studied to gain information about the whole.

Stratified random sampling was used to select primary school teachers enrolled in Elimika e-learning system and KIE curriculum developers. In stratified random sampling technique, a population is divided into subgroups called strata and a random sample is selected from each stratum (Mugenda, 2008).

The sample size was calculated using the following formula by Calmorin, et al. (2008).

\[
SS = \frac{NV + [Se^2(1-P)]}{NSe + [V^2 x P(1-P)]}
\]

Where SS - sample size

N - total number of population
V- the standard value of 2.58
Se - sampling error of 0.01
P - the largest possible proportion of 0.50

From the teachers’ population of 800, the sample size was obtained as follows:

\[
SS = \frac{800 \times 2.58 + [(0.01)^2(1-0.50)]}{800(0.01) + [2.58^2 x 0.50(1-0.50)]}
\]

\[
= 214
\]

From the curriculum developers’ population of 124, the sample size was obtained as follows:

\[
SS = \frac{124 \times 2.58 + [(0.01)^2(1-0.50)]}{124(0.01) + [2.58^2 x 0.50(1-0.50)]}
\]

\[
= 110
\]
3.5 Data Collection Procedure

The main purpose of the data collection phase was to administer the questionnaires to the sampled respondents so as to generate data for this research. Questionnaires were distributed to Primary school teachers enrolled in the Elimika e-learning system and curriculum developers working at Kenya Institute of Education.

3.6 Instrumentation

The researcher used questionnaires in this study. The reason for choosing the questionnaires as the data collection instrument was primarily due to its cost effectiveness, practicability and applicability to the research problem and the size of the population. Furthermore, using questionnaires ensure that confidentiality is upheld; they save on time and have no interviewer bias (Kombo and Tromp, 2006).

The questionnaires used had both closed and open ended questions. The open ended questions allowed the respondents to give their opinions and suggestions on Elimika e-learning system.

3.6.1 Validity of Instruments

Validity in both quantitative and qualitative research is the degree to which data accurately test or gauge what one intended to measure (Gay et.al, 2009). In this study the trustworthiness of the study was guaranteed by using the triangulation in data collection and analysis. This was done by using both quantitative and qualitative approaches and crosschecking the questionnaires filled by teachers and curriculum developers.

3.6.2 Reliability of Instruments

Reliability for the collected data was expressed numerically as a reliability coefficient using Cronbach’s Alpha. George and Mallery (2003) identified an Alpha of $> 0.70$ as
being acceptable and an Alpha of $< 0.50$ as being unacceptable. In this study, reliability coefficient was found to be $0.762$.

3.7 Data Analysis and Presentation

Mugenda (2008) points out that data analysis is a process of bringing order, structure and meaning to the mass of information collected. Therefore, editing, coding, classifying and tabulating are the steps used to process the collected data for a better and efficient analysis. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 19. Data presentation was done using tables and charts. The Chi-square test and Correlation coefficient analysis were used to find the relation between variables wherever applicable.

Chi-square symbolically written as $X^2$ is a common test for analyzing data from surveys. It is an inferential statistical test that is used to examine relationship between variables with nominal or ordinal data. Correlation coefficient analysis is used to determine the degree to which two variables are associated. It varies from $-1$ to $+1$ where $-1$ indicates perfect negative correlation and $+1$ indicates perfect positive correlation (Vaughan, 2009).
CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Response Rate

Out of 214 primary school teachers and 110 curriculum developers sampled, 198 teachers and 80 curriculum developers responded, representing a response rate of 92.52% and 72.73% respectively. According to Creative Research Systems (2013) this response rate was acceptable for the research since the worst case scenario is a 50.00% response.

4.2 Gender Distribution

The respondents were asked to indicate their gender (Appendix II, item 1). Their responses are presented below.

Table 4.1: Gender Distribution of Respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (f)</td>
<td>164</td>
<td>114</td>
<td>278</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>58.99</td>
<td>41.01</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Figure 4.1: Gender distribution of respondents

As presented in Figure 4.1 above, Majority (58.99%) of the respondents were Males while 41.01% were of Female gender.

4.3 Age Distribution

The respondents were asked to indicate their age (Appendix II, item 2). Their responses are presented below.

Table 4.2: Age Distribution of Respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (f)</td>
<td>60</td>
<td>98</td>
<td>68</td>
<td>52</td>
<td>278</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>21.58</td>
<td>35.25</td>
<td>24.46</td>
<td>18.71</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Most of the respondents (35.25%) were aged between 30 and 39 years, followed by those aged between 40 and 49 (24.46%), 21.58% were aged between 20 and 29 years while a small percentage of respondents (18.71%) were over 50 years of age. See figure 4.2 below.
4.4 Academic Qualification of Respondents

The respondents were asked to indicate their highest academic qualification (Appendix II, item 3). Their responses are presented below.

Table 4.3: Respondents’ Highest Academic Qualification

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Certificate</th>
<th>Diploma</th>
<th>Bachelors</th>
<th>Masters</th>
<th>PhD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (f)</td>
<td>56</td>
<td>106</td>
<td>94</td>
<td>19</td>
<td>3</td>
<td>278</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>20.14</td>
<td>38.13</td>
<td>33.81</td>
<td>6.83</td>
<td>1.08</td>
<td>100.00</td>
</tr>
</tbody>
</table>

In terms of the academic qualifications of the interviewed teachers, only 1.08% had a PhD degree, 6.83% had a Masters degree, 33.81% had a Bachelors degree, greater percentage (38.13%) had a Diploma while 20.14% had a Certificate qualification.
The teaching experience of the respondents ranged from less than ten years to more than twenty years. 33.09% had experience of less than ten years, majority of teachers (37.41%) had teaching experience of between ten and nineteen years while 29.50% had taught for more than twenty years. Figure 4.4 shows the teaching experience of the respondents.
4.6 Ease of use of Elimika System

On whether respondents found Elimika e-learning system easy to use (Appendix II, items 5), the responses were as follows.

Table 4.5: Ease of use of Elimika System

<table>
<thead>
<tr>
<th>Ease of use</th>
<th>YES</th>
<th>NO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (f)</td>
<td>196</td>
<td>82</td>
<td>278</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>70.50</td>
<td>29.50</td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Figure 4.5: Ease of Use of Elimika System

As presented in figure 4.5, majority (70.50%) of the respondents indicated that they found Elimika e-learning system easy to use. However, only 29.50% of the respondents found Elimika system difficult to use.

Chi-Square test was used to check whether there is any relationship between the respondents’ characteristics and ease of use of Elimika e-learning system. The result is presented in table 4.6. It shows significant relationships for gender and teaching experience while age and highest academic qualification has little or no close association with ease of use of Elimika system.

Table 4.6: Relationship between respondent’s characteristics and ease of use of Elimika E-learning system

<table>
<thead>
<tr>
<th>Respondent’s Characteristics</th>
<th>Value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>2.905a</td>
<td>1</td>
<td>.088</td>
</tr>
<tr>
<td>Age</td>
<td>1.941a</td>
<td>3</td>
<td>.585</td>
</tr>
<tr>
<td>Highest Academic Qualification</td>
<td>3.911a</td>
<td>4</td>
<td>.418</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>8.036a</td>
<td>2</td>
<td>.018</td>
</tr>
</tbody>
</table>

df = degree of freedom, Sig. = Significance
4.7 Level of Use of Elimika E-Learning System for Curriculum Orientation

The respondents were asked to indicate their level of use of Elimika e-learning system for curriculum orientation (Appendix II, item 6) featuring a Likert scale that ranged from Very High (VH) to Very Low (VL). Their responses are presented below.

Table 4.7: Level of Use of Elimika System

<table>
<thead>
<tr>
<th>Level of use</th>
<th>VH</th>
<th>H</th>
<th>NS</th>
<th>L</th>
<th>VL</th>
<th>∑x</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (f)</td>
<td>34</td>
<td>94</td>
<td>34</td>
<td>76</td>
<td>40</td>
<td>3.02</td>
<td>278</td>
</tr>
<tr>
<td>Percentage (%)</td>
<td>12.23</td>
<td>33.81</td>
<td>12.23</td>
<td>27.34</td>
<td>14.39</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

VH = Very High, H = High, NS = Not Sure, L = Low, VL = Very Low
∑x = Weighted Average

Most of the respondents (33.81%) indicated that they had a high level of use of Elimika e-learning system, followed by 27.34% with low level of usage and 14.39% indicated very low usage. However respondents who had very high usage levels and the ones who were not sure, had percentages of 12.23% each. The weighted average of 3.02 rating indicates overall satisfactory level of usage of Elimika e-learning system by the respondents. See figure 4.6.
Chi-Square test was used to check whether there is any relationship between the respondents’ characteristics and level of use of Elimika e-learning system. The result presented in table 4.8 shows little or no close association between the two factors. This is because values for Gender (0.257), Age (0.505), Highest Academic Qualifications (0.923) and Teaching Experience (0.507) are above the significance of 0.05.

Table 4.8: Relationship between respondent’s characteristics and level of use of Elimika E-learning system

<table>
<thead>
<tr>
<th>Respondent’s Characteristics</th>
<th>Value</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>5.314(^a)</td>
<td>4</td>
<td>.257</td>
</tr>
<tr>
<td>Age</td>
<td>11.284(^a)</td>
<td>12</td>
<td>.505</td>
</tr>
<tr>
<td>Highest Academic Qualification</td>
<td>8.763(^a)</td>
<td>16</td>
<td>.923</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>7.279(^a)</td>
<td>8</td>
<td>.507</td>
</tr>
</tbody>
</table>

df = degree of freedom, Sig. = Significance
4.8 Interactivity of Elimika E-Learning System

The respondents were asked to indicate the extent to which they agreed with statements on interactivity of Elimika e-learning system (Appendix II, item 7) featuring a Likert scale that ranged from Strongly Agree (SA) to Strongly Disagree (SD). Their responses are presented below.

Table 4.9: Interactivity of Elimika System

<table>
<thead>
<tr>
<th>#</th>
<th>Interactivities</th>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
<th>(\sum x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>It is easy to read text in the system platform</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii</td>
<td>Listening to audio content is clear.</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td>Watching videos and animations is clear and interesting</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td>Practicing on topics taught and getting feedback is easy to perform</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v</td>
<td>I am able to communicate with my tutors and fellow students</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SA = Strongly Agree, A = Agree, NS = Not Sure, D = Disagree, SD = Strongly Disagree
f = frequency
\(\%\) = percentage
\(\sum x\) = Weighted Average
On interactivity of Elimika system, it is observed that majority of the respondents strongly agreed with the following three statements: It is easy to read text in the system platform (29.50%); watching videos and animations is clear and interesting (35.97%); I am able to communicate with my tutors and fellow students (31.65%). However, majority of the respondents agreed with the following two statements: Listening to audio content is clear (33.81%); practicing on topics taught and getting feedback is easy to perform (38.13%). From the calculations of the weighted average, text (3.35) and audio (3.43) has fairly moderate effect on interactivity while videos and animations (3.69), practicing and feedback (3.56) and the ability to communicate with tutors and fellow learners (3.54) had strong effect on Elimika system interactivity. See figure 4.7 below.

Numbers (i) to (v) represent the interactivities as stated in table 4.9
SA = Strongly Agree, A = Agree, NS = Not Sure, D = Disagree, SD = Strongly Disagree
Figure 4.7: Responses on the Interactivity of Elimika system

4.9 Perceptions of Elimika E-Learning System

The respondents were asked to indicate their perceptions on Elimika e-learning system (Appendix II, item 8) featuring a Likert scale that ranged from Strongly Agree (SA) to Strongly Disagree (SD). Their responses are presented below.

Table 4.10: Respondents’ Perceptions of Elimika System

<table>
<thead>
<tr>
<th>#</th>
<th>Perceptions</th>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
<th>Σx</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Using Elimika e-learning system for curriculum orientation is enjoyable</td>
<td>f</td>
<td>112</td>
<td>76</td>
<td>34</td>
<td>34</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>40.29</td>
<td>27.34</td>
<td>12.23</td>
<td>12.23</td>
<td>7.91</td>
</tr>
<tr>
<td>ii</td>
<td>I understand how Elimika system works</td>
<td>f</td>
<td>88</td>
<td>68</td>
<td>44</td>
<td>44</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>31.65</td>
<td>24.46</td>
<td>15.83</td>
<td>15.83</td>
<td>12.23</td>
</tr>
<tr>
<td>iii</td>
<td>It has proved to be an effective learning tool</td>
<td>f</td>
<td>88</td>
<td>76</td>
<td>44</td>
<td>36</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>31.65</td>
<td>27.34</td>
<td>15.83</td>
<td>12.95</td>
<td>12.23</td>
</tr>
<tr>
<td>iv</td>
<td>It can enhance my learning experience</td>
<td>f</td>
<td>112</td>
<td>70</td>
<td>42</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>40.58</td>
<td>25.36</td>
<td>15.22</td>
<td>10.87</td>
<td>7.97</td>
</tr>
<tr>
<td>v</td>
<td>It contains appropriate content for curriculum orientation</td>
<td>f</td>
<td>112</td>
<td>70</td>
<td>46</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>40.29</td>
<td>25.18</td>
<td>16.55</td>
<td>7.91</td>
<td>10.07</td>
</tr>
<tr>
<td>vi</td>
<td>It integrate different aspects of the curriculum</td>
<td>f</td>
<td>112</td>
<td>76</td>
<td>34</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>40.29</td>
<td>27.34</td>
<td>12.23</td>
<td>7.91</td>
<td>12.23</td>
</tr>
<tr>
<td>vii</td>
<td>Learning using Elimika e-learning system save money</td>
<td>f</td>
<td>100</td>
<td>70</td>
<td>40</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>35.97</td>
<td>25.18</td>
<td>14.39</td>
<td>12.95</td>
<td>11.51</td>
</tr>
<tr>
<td>viii</td>
<td>It save on time and effort compared with face-to-face orientation</td>
<td>f</td>
<td>100</td>
<td>94</td>
<td>28</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>35.97</td>
<td>33.81</td>
<td>10.07</td>
<td>10.79</td>
<td>9.35</td>
</tr>
</tbody>
</table>
It helps me to be more flexible with my schedule

The platform is easy to learn and navigate

The instructions on use are clear and detailed for me to understand

<table>
<thead>
<tr>
<th>SA</th>
<th>A</th>
<th>NS</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Not Sure</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>f = frequency</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>∑x = Weighted Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Table 4.10, it is observed that majority of the respondents strongly agreed with the following nine statements: Using Elimika e-learning system for curriculum orientation is enjoyable (40.29%); I understand how Elimika system works (31.65%); Elimika e-learning system has proved to be an effective learning tool (31.65%); Elimika e-learning system can enhance my learning experience (40.58%); Elimika e-learning system contain appropriate content for curriculum orientation (40.29%); Elimika e-learning system integrate different aspects of the curriculum (40.29%); Learning using Elimika e-learning system save money (35.97%); Elimika e-learning system save on time and effort compared with face-to-face orientation (35.97%); Elimika e-learning system helps me to be more flexible with my schedule (40.58%).

The majority of the respondents agreed with the following two statements: The Elimika e-learning system platform is easy to learn and navigate (40.29%); Instructions on use of Elimika e-learning system are clear and detailed for me to understand (30.22%). From the weighted average calculations, only two factors on understanding how Elimika system works (3.47) and clarity of instructions on usage (3.42) had < 3.50 rating which indicate moderate perceptions while all other factors depict strong perceptions by the users of Elimika e-learning system at > 3.50 rating. The complete chart showing perceptions of Elimika system is figure 4.8 below.
Numbers (i) to (xi) represent the perceptions as stated in table 4.10

SA = Strongly Agree, A = Agree, NS = Not Sure, D = Disagree, SD = Strongly Disagree
Figure 4.8: Respondents’ Perceptions of Elimika System

A Correlation test was used to check whether there was any relationship between the respondents’ gender, academic level, ease of use, interactivity and perceptions of Elimika system. The result is presented in table 4.11 below.

Table 4.11: Correlation coefficients between Gender, Academic Level, Ease of Use, Interactivity and Perceptions of Elimika E-learning system

<table>
<thead>
<tr>
<th>Variable</th>
<th>Spearman's Correlation Coefficient</th>
<th>Gender</th>
<th>Ease of use</th>
<th>Interactivity</th>
<th>Perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Level</strong></td>
<td>Correlation Coefficient</td>
<td>0.119*</td>
<td>0.054</td>
<td>-0.084</td>
<td>0.136*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>0.047</td>
<td>0.366</td>
<td>0.161</td>
<td>0.024</td>
</tr>
<tr>
<td><strong>Ease of use</strong></td>
<td>Correlation Coefficient</td>
<td>0.001</td>
<td>0.121*</td>
<td>-0.046</td>
<td>-0.016</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>0.986</td>
<td>0.045</td>
<td>0.447</td>
<td>0.794</td>
</tr>
<tr>
<td><strong>Interactivity</strong></td>
<td>Correlation Coefficient</td>
<td>0.040</td>
<td>-0.008</td>
<td>1.000</td>
<td>-0.146*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>0.505</td>
<td>0.893</td>
<td>.</td>
<td>0.015</td>
</tr>
</tbody>
</table>

**N=278

Gender has a strong relationship with academic level at 0.047 significance, which is below 0.05 thus strong association. The academic level of the respondents determines strong perceptions (0.024) of the respondents on Elimika e-Learning System. The fact that Elimika system is easy to use makes it useful for curriculum orientation as exhibited by significance of 0.045<0.05 which indicates a strong relationship. The Interactivity of the Elimika e-Learning system has a very strong bearing on the perceptions by the teachers and curriculum developers with significance at 0.015 with a negative skew.
4.10 Challenges Encountered When Using Elimika e-learning System

Respondents were asked to list challenges experienced when using the Elimika e-learning system (Appendix II, item 9). The data collected was collated and analyzed qualitatively. The findings are presented in table 4.12 below.

Table 4.12: Frequency Analysis of Challenges Encountered When Using Elimika System

<table>
<thead>
<tr>
<th>#</th>
<th>Challenges</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Slow internet connectivity</td>
<td>24</td>
<td>19.51</td>
</tr>
<tr>
<td>ii</td>
<td>Network down time</td>
<td>23</td>
<td>18.7</td>
</tr>
<tr>
<td>iii</td>
<td>Lack of computers</td>
<td>15</td>
<td>12.2</td>
</tr>
<tr>
<td>iv</td>
<td>The program is expensive in terms of internet charge.</td>
<td>10</td>
<td>8.13</td>
</tr>
<tr>
<td>v</td>
<td>Lack of adequate time to participate in Elimika program</td>
<td>9</td>
<td>7.32</td>
</tr>
<tr>
<td>vi</td>
<td>Limited time for orientation to Elimika platform</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>vii</td>
<td>Lack of electricity in some schools</td>
<td>8</td>
<td>6.5</td>
</tr>
<tr>
<td>viii</td>
<td>Unclear systems instructions</td>
<td>5</td>
<td>4.07</td>
</tr>
<tr>
<td>ix</td>
<td>Delays in getting feedback</td>
<td>4</td>
<td>3.25</td>
</tr>
<tr>
<td>x</td>
<td>Difficulties in communication when experiencing difficulties</td>
<td>4</td>
<td>3.25</td>
</tr>
<tr>
<td>xi</td>
<td>Challenge in loading content to platform</td>
<td>4</td>
<td>3.25</td>
</tr>
<tr>
<td>xii</td>
<td>Challenges in handling large number of participants during chats</td>
<td>4</td>
<td>3.25</td>
</tr>
<tr>
<td>xiii</td>
<td>Lack of appropriate content</td>
<td>3</td>
<td>2.44</td>
</tr>
<tr>
<td>xiv</td>
<td>Poor ICT infrastructure in the country</td>
<td>2</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table 4.12 shows that majority of the respondents submitted that they face a range of challenges in utilizing Elimika e-learning system for curriculum orientation. Slow internet connectivity (19.51%), Network down time (18.70%) and Lack of computers (12.20%) were the main challenges cited.

The respondents also cited the following challenges in diminishing order: The program is expensive in terms of internet charge (8.13%), Lack of adequate time to participate in Elimika program (7.32%), Limited time for orientation to Elimika platform (6.50%), Lack of electricity in some schools (6.50%), Unclear systems instructions (4.07%), Delays in getting feedback (3.25%), Difficulties in communication when experiencing difficulties (3.25%), Challenge in loading content to platform (3.25%), Challenges in handling large number of participants during chats (3.25%), Lack of appropriate content (2.44%) and Poor ICT infrastructure in the country (1.63%). See figure 4.9.
Numbers (i) to (xiv) represent the challenges as stated in the Table 4.12 above.

Figure 4.9: Challenges of Elimika System
4.11 Recommendations by the Respondents

Respondents were asked to suggest solutions to challenges encountered so as to motivate teachers to use Elimika e-learning system for curriculum orientation. (Appendix II, item 10). The data collected was collated and analyzed qualitatively. The findings are presented in Table 4.13.

Table 4.13: Frequency Analysis of Recommendations to Motivate Teachers to Use Elimika E-Learning System for Curriculum Orientation

<table>
<thead>
<tr>
<th>#</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Allow time for teachers to be able to handle both the lessons they are teaching and E-Learning programs</td>
</tr>
<tr>
<td>ii</td>
<td>An affordable internet connection should be availed to schools</td>
</tr>
<tr>
<td>iii</td>
<td>Instructions should be clear and detailed</td>
</tr>
<tr>
<td>iv</td>
<td>Add more content</td>
</tr>
<tr>
<td>v</td>
<td>The government should set aside funds to assist schools to source computers</td>
</tr>
<tr>
<td>vi</td>
<td>Elimika website to have simple interface for fast loading in slow connections</td>
</tr>
<tr>
<td>vii</td>
<td>More time for orientation to Elimika platform</td>
</tr>
<tr>
<td>viii</td>
<td>Regular upgrade and content revision</td>
</tr>
<tr>
<td>ix</td>
<td>Upgrade system to accommodate all multimedia elements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>53</td>
<td>30.99</td>
</tr>
<tr>
<td>ii</td>
<td>15</td>
<td>8.77</td>
</tr>
<tr>
<td>iii</td>
<td>13</td>
<td>7.60</td>
</tr>
<tr>
<td>iv</td>
<td>9</td>
<td>5.26</td>
</tr>
<tr>
<td>v</td>
<td>8</td>
<td>4.68</td>
</tr>
<tr>
<td>vi</td>
<td>8</td>
<td>4.68</td>
</tr>
<tr>
<td>vii</td>
<td>8</td>
<td>4.68</td>
</tr>
<tr>
<td>viii</td>
<td>7</td>
<td>4.09</td>
</tr>
<tr>
<td>ix</td>
<td>6</td>
<td>3.51</td>
</tr>
<tr>
<td></td>
<td>Improvement of Country’s ICT infrastructure</td>
<td>6</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------</td>
<td>----</td>
</tr>
<tr>
<td>x</td>
<td>The educational officers and the school administrators should be sensitized on the importance of the program</td>
<td>5</td>
</tr>
<tr>
<td>xi</td>
<td>Elimika portal should be up and running all the time</td>
<td>5</td>
</tr>
<tr>
<td>xii</td>
<td>Interface Elimika with cell phone alerts for effective communication</td>
<td>5</td>
</tr>
<tr>
<td>xiii</td>
<td>Link to TSC for promotion</td>
<td>5</td>
</tr>
<tr>
<td>xiv</td>
<td>Provide teachers with modems to save on internet down time</td>
<td>4</td>
</tr>
<tr>
<td>xv</td>
<td>Purchase computer before enrolling for Elimika</td>
<td>4</td>
</tr>
<tr>
<td>xvi</td>
<td>Provide adequate infrastructure to enable teachers utilize the training</td>
<td>4</td>
</tr>
<tr>
<td>xvii</td>
<td>Have a call centre for full time support</td>
<td>3</td>
</tr>
<tr>
<td>xviii</td>
<td>Build a redundant system with fail over strategies</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 4.13 shows that majority (30.99%) of the respondents recommended that there is need to allow time for teachers to be able to handle both the lessons they are teaching and E-Learning programs. The respondents also made the following recommendations in diminishing order: An affordable internet connection should be availed to schools (8.77%), Instructions should be clear and detailed (7.6%), Add more content (5.26%), The government should set aside funds to assist schools to source computers (4.68%), Elimika website to have simple interface for fast loading in slow connections (4.68%), More time for orientation to Elimika platform (4.68%), Regular upgrade and content
revision (4.09%), Improvement of Country’s ICT infrastructure (3.51%), Upgrade system to accommodate all multimedia elements (3.51%), The educational officers and the school administrators should be sensitized on the importance of the program (2.92%), Elimika portal should be up and running all the time (2.92%), Interface Elimika with cell phone alerts for effective communication (2.92%), Link to TSC for promotion (2.92%), Provide teachers with modems to save on internet down time (2.34%), Purchase computer before enrolling for Elimika (2.34%), Provide adequate infrastructure to enable teachers utilize the training (2.34%), Have a call centre for full time support (1.75%) and Build a redundant system with fail over strategies (1.75%). See figure 4.10 below.

![Bar graph showing responses in percentage for recommendations on use of Elimika System]

Numbers (i) to (xix) represent the recommendations as stated in the Table 4.1

**Figure 4.10: Recommendations on use of Elimika System**
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Key Findings

This study examined the effects of e-learning system on teacher orientation programs conducted by Kenya Institute of Education. The relationship between e-learning system and success in teacher orientation programs was revealed. Based on the data collected, the actual use of Elimika e-learning system has significant effect on teacher orientation programs.

The objectives of this study were to establish the extent of use of e-learning system by teachers in curriculum orientation programs, assess teachers’ perceptions, identify challenges and establish possible mechanisms that can be put in place to encourage teachers to use e-learning system in curriculum orientation programs. The summary of the key findings of the study are presented below under each objective:

5.1.1 Extent of Use of Elimika E-Learning System

This section provides an explanation to the objective which was stated as follows:

i. To establish the extent of use of e-learning system by teachers in curriculum orientation programs.

The findings obtained from this study show that Elimika e-learning system is extensively used by teachers for curriculum orientation. Most respondents perceived that the system is easy to use and interactive as it incorporates various multimedia elements such as text, audio, videos and animations. The results of study show that acceptance of e-learning depends on various critical factors. These are ease of use, level of use and interactivity of e-learning system. The study found out that majority (70.50%) of the respondents
indicated that they found Elimika e-learning system easy to use with only 29.50% indicating that they found the system difficult to use. The fact that Elimika system is easy to use makes it useful for curriculum orientation as exhibited by correlation coefficient significance of 0.045<0.05.

From the results of the Chi-Square test in chapter four, an analysis of relationship between the respondents’ characteristics and ease of use of Elimika e-learning system showed significant relationships for gender (0.088) and teaching experience (0.018) while age (0.585) and highest academic qualification (0.418) had little or no close association. This supports similar findings by Afari-Kumah and Achampong (2010) which found a positive relationship between experience and ease of use and no significant relationship with age and level of learners.

On interactivity of the e-learning system, most teachers felt that text, audio, videos, animations, practicing on topics taught, getting feedback and communication with tutors and fellow students was effective in curriculum orientation programs. This is probably as a result of Elimika platform’s ability to combine various multimedia elements which enhances interactivity and hence success of the system in curriculum orientation. These findings confirms the observation by Odhiambo (2009) that interactive components such as interactive quizzes, animations, audio and feedback features help learners to effectively interact with and participate in the e-learning process.

5.1.2 Teachers’ Perceptions of Elimika E-Learning System

This section provides an explanation to the objective which was stated as follows:

ii. To assess teachers’ perceptions on the use of e-learning system in curriculum orientation.

Teachers’ perceptions show that teachers found Elimika e-learning system enjoyable to use, understand how it works, is an effective learning tool, flexible, enhance learning
experience, contain appropriate content, and integrate different aspects of the curriculum, saves money, time and effort. Teachers also agreed that Elimika system platform was easy to learn and navigate and instructions on use of the system were clear and detailed to understand.

From the analysis of correlation coefficients, the highest academic levels of the respondents determines strong perceptions of Elimika e-learning system at 0.024<0.05. Also, the interactivity of the Elimika e-Learning system has a very strong bearing on the perceptions by the teachers and curriculum developers with significance of 0.015 with a negative skew.

The findings of the study therefore show that perception on Elimika e-learning system’s worth, ease of use, ease of adoption and actual use reflects on teacher’s understanding of curriculum. This is in agreement with Technology Acceptance Model (TAM) which postulates that a person’s behavioural intention to use e-learning is determined by perceived usefulness and perceived ease of use (Davis, 1991).

5.1.3 Challenges That Teachers Face When Using Elimika System

This section provides an explanation to the objective which was stated as follows:

iii. To identify the challenges encountered by teachers when using e-learning system in curriculum orientation programs.

The findings of this study revealed that teachers cited the following challenges that they encounter and therefore discourage some of them from using the Elimika system for curriculum orientation:

a. Slow internet connectivity. This is probably because of low internet bandwidth by service providers and expensive computers.
b. Lack of computers. Without computers to use, teachers are hindered from accessing Elimika e-learning system.

c. Network down time. The system sometimes becomes inaccessible due to missing link to the hosting website.

d. Limited time for orientation to Elimika platform. Inadequate time is allocated for orientation purposes.

e. Lack of adequate time to participate in Elimika program. The time allocated to complete the program is not adequate.

f. Lack of appropriate content. The content in the system may not be appropriate to some learners or not in line with their requirements.

g. The program is expensive in terms of internet charge. The cost of accessing internet is prohibitive to most users.

h. Lack of electricity in some schools. Electricity power is not connected to some schools hence teachers cannot access Elimika system.

i. Unclear systems instructions. Some instructions are not clear or understandable to some learners.

j. Delays in getting feedback. Sometimes receiving feedback through the system is delayed.

k. Difficulties in communication when experiencing difficulties. This is due to erratic internet connections.

l. Challenge in loading content to platform. Loading assignments, course content and feedback may be difficult for some teachers and curriculum developers.

m. Challenges in handling large number of participants during chats which overwhelm curriculum developers as well as teachers participating in the system.

n. Poor ICT infrastructure in the country. Undeveloped infrastructure in terms of networking, electricity and telecommunication links.

These findings support the study by Kotrik and Redmann (2005) which revealed several challenges facing teachers in adopting e-learning technologies which included unreliable
internet, availability of effective software, infrastructure, lack of enough time and inability for the teachers to effectively integrate technology. A study by Coleman (2011) also identified important barriers likely to affect the implementation of e-learning as poor internet connectivity, access to computers, lack of regular electric power supply, insufficient e-learning facilities, unfamiliar e-learning delivery modes, and low internet speed.

5.1.4 Mechanisms that can Encourage Teachers to Use Elimika System

This section provides an explanation to the objective which was stated as follows:

iv. To establish possible mechanisms that can be put in place to encourage teachers to use e-learning system in curriculum orientation programs

Numerous mechanisms to help encourage teachers to use Elimika e-learning system were suggested as follows:

a. Allow time for teachers to be able to handle both the lessons they are teaching and e-learning programs. This is probably due to huge workload in teaching their students and handling extra-curricular activities in schools.

b. An affordable internet connection should be availed to schools. This will enable teachers enrolled in Elimika programs to access the e-learning system in the comfort of their schools without the need to travel to nearby towns to visit cyber cafés.

c. Instructions should be clear and detailed. Clear and detailed instructions ensure that teachers understand how to use the e-learning system.

 d. Add more content. Additional content that adequately covers the subject areas of their study.

e. The government should set aside funds to assist schools to source computers. Funds could be channeled through free primary education program.
f. Elimika website to have simple interface for fast loading in slow connections. Current site takes some time to load as it contains a lot of multimedia elements such as videos, photographs and audio.
g. More time for orientation to Elimika platform. Before the start of lessons, there is need to allocate more time to enable the participants to get used to the system and also effectively navigate through and greatly benefit from the e-learning system.
h. Regular upgrade and content revision to ensure up to date content and robust e-learning system.
i. Upgrade system to accommodate all multimedia elements which include animations, audio, video, interactive games and quizzes.
j. Improvement of country’s ICT infrastructure. This is a long-term initiative that will ensure users access fast and reliable internet services.
k. The educational officers and the school administrators should be sensitized on the importance of the program so that they can embrace the Elimika system for curriculum orientation.
l. Elimika portal should be up and running all the time to ensure that teachers are not inconvenienced.
m. Interface Elimika with cell phone alerts for effective communication. This is because most users have mobile phones and these can be utilized for curriculum orientation alerts.
n. Link to Teachers Service Commission (TSC) for promotion. Once teachers have graduated from the Elimika program, there is need to provide a link to TSC to consider them for promotions.
o. Provide teachers with modems to save on internet down time. This is a short-term initiative to ensure uninterrupted internet connection.
p. Purchase computer before enrolling for Elimika to be able to connect to e-learning system and work on assigned activities in a convenient manner.
q. Provide adequate infrastructure to enable teachers utilize the training. Infrastructure includes computers, local area network and internet connection.
r. Have a call centre for full time support. A dedicated call centre will assist teachers and curriculum developers in case of any difficulties in using the system.

s. Build a redundant system with fail over strategies. Such a system will have backups and restore facilities and a similar stand by system in case of a disaster which may render the primary system un-operational.

5.2 Conclusion

The following are the conclusions based on the analyses of the collected data:

From the findings, Elimika e-learning system is extensively used by teachers for curriculum orientation. The system is also easy to use and interactive as it incorporates various multimedia elements such as text, audio, videos and animations. It saves money, time and effort; contains appropriate content and integrate different aspects of the curriculum.

Elimika e-learning system is enjoyable to use, understandable, effective and flexible. Its platform is easy to learn and navigate and instructions on use of the system are clear and detailed to understand. The findings indicate that Elimika system has a positive effect on the success of teacher orientation programs.

In spite of the benefits that will accrue to teachers and curriculum developers when e-learning is incorporated into teacher orientation programs, there are some challenges which need to be addressed. These include slow internet connectivity, network down time and lack of computers. Some recommendations put forward include provision of affordable internet connection, set aside funds for purchase of computers and allow time for teachers to be able to handle both the lessons they are teaching and E-Learning programs. Special efforts should also be made to target female students to use Elimika system for their curriculum orientation.
5.3 Recommendations

This study brought out a number of possible recommendations for future implementation:

The study found out that among the challenges encountered by teachers are slow internet connectivity, network down time and lack of computers. The government and other stakeholders can provide enough computers to schools to be used for e-learning. Moreover, they can provide teachers with fairly fast internet connection to be used for curriculum orientation. It is imperative to ensure that all schools are connected to electric power to facilitate use of computers and its associated accessories.

Allow time for teachers to be able to handle both the lessons they are teaching and E-Learning programs. A study leave given to teachers can go a long way in enabling teachers to have ample time to concentrate on curriculum orientation programs.

To solve the problem of unclear systems instructions and slow feedback mechanism, KIE should ensure that online help and user guides are provided as well as clear and detailed instructions on the platform. A dedicated call centre for full time support should also be availed.

Regular system upgrades, content revision and interfacing Elimika with mobile phone alerts will also have a positive impact on the success of Elimika e-learning system.

5.4 Extensions to the Study

The researcher recommends that extensions to this study be conducted in the following areas:

i. Effectiveness of using e-learning system and traditional learning on teachers' perceptions and attitudes.

ii. Impact of e-learning system on learning outcomes in national examinations.
REFERENCES


APPENDICES

APPENDIX I: INTRODUCTION LETTER

GEOFFREY ROTICH,
KISII UNIVERSITY,
NAIROBI CAMPUS,
MARCH 2013.

Dear Respondent(s),

RE: COLLECTION OF RESEARCH DATA

I am a student at Kisii University currently pursuing a Master of Information Systems degree. I am carrying out a study on ‘Effects of E-Learning System on Teacher Orientation Programs: A case study of Kenya Institute of Education’.

I am requesting your assistance and facilitation to be able to complete my course. Information provided is for academic purposes only and the information collected will be used as such. Your response and any additional information provided will be highly appreciated and utmost confidentiality is guaranteed. Thank you in advance.

Sincerely,

........................................

GEOFFREY ROTICH
MIN14/20014/11
APPENDIX II: QUESTIONNAIRE FOR PARTICIPANTS OF ELIMIKA E-LEARNING SYSTEM

Dear Respondent,

This questionnaire is designed to collect data from curriculum developers and teachers enrolled in Elimika e-learning system and to study ‘Effects of E-Learning System on Teacher Orientation Programs: A case study of Kenya Institute of Education’. The data collected is for academic purposes only and the information collected will be used as such. Your response will be highly appreciated and utmost confidentiality is guaranteed. Thank you in advance.

1. What is your gender?
   Male [ ] Female [ ]

2. What is your age bracket?
   20 - 29 [ ]
   30 - 39 [ ]
   40 - 49 [ ]
   50 and above [ ]

3. Your highest academic qualification:
   Certificate [ ] Diploma [ ] Bachelors [ ]
   Masters [ ] PhD [ ]

4. What is your teaching experience?
   Less than 10 [ ]
   10 - 19 [ ]
   20 and above [ ]

EXTENT OF USE

5. Do you find Elimika e-learning system easy to use?
   Yes [ ]
   No [ ]
6. How would you describe your level of use of Elimika e-learning system for curriculum orientation? Please select one.

Very high = 5 [ ]  High = 4 [ ]  Not sure = 3 [ ]  Low = 2 [ ]  Very Low = 1 [ ]

7. In terms of interactivity of Elimika system, indicate whether you: Strongly Agree (SA = 5), Agree (A = 4), Not sure (NS = 3), Disagree (D = 2), Strongly Disagree (SD = 1) on the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>NS</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. It is easy to read text in the system platform</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Listening to audio content is clear.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. Watching videos and animations is clear and interesting</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. Practicing on topics taught and getting feedback is easy to perform</td>
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</tr>
<tr>
<td>v. I am able to communicate with my tutors and fellow students</td>
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</table>

PERCEPTIONS OF ELIMIKA E-LEARNING SYSTEM

8. With regard to perceptions of Elimika e-learning system, please, circle the option that best reflects how you feel about each of the following statements.

Rating Scale: Strongly Agree (SA = 5), Agree (A = 4), Not sure (NS = 3), Disagree (D = 2), Strongly Disagree (SD = 1)

<table>
<thead>
<tr>
<th>Statement</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Using Elimika e-learning system for curriculum orientation is enjoyable</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>ii. I understand how Elimika system works</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>iii. Elimika e-learning system has proved to be an effective learning tool</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>iv. Elimika e-learning system can enhance my learning experience</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>v. Elimika e-learning system contain appropriate content for curriculum orientation</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
vi. Elimika e-learning system integrate different aspects of the curriculum

vii. Learning using Elimika e-learning system save money

viii. Elimika e-learning system save on time and effort compared with face-to-face orientation

ix. Elimika e-learning system helps me to be more flexible with my schedule

x. The Elimika e-learning system platform is easy to learn and navigate

xi. The instructions on use of Elimika e-learning system are clear and detailed for me to understand

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>vi. Elimika e-learning system integrate different aspects of the curriculum</td>
<td>5</td>
</tr>
<tr>
<td>vii. Learning using Elimika e-learning system save money</td>
<td>5</td>
</tr>
<tr>
<td>viii. Elimika e-learning system save on time and effort compared with face-to-face orientation</td>
<td>5</td>
</tr>
<tr>
<td>ix. Elimika e-learning system helps me to be more flexible with my schedule</td>
<td>5</td>
</tr>
<tr>
<td>x. The Elimika e-learning system platform is easy to learn and navigate</td>
<td>5</td>
</tr>
<tr>
<td>xi. The instructions on use of Elimika e-learning system are clear and detailed for me to understand</td>
<td>5</td>
</tr>
</tbody>
</table>

CHALLENGES
9. What are some of the challenges you face when using Elimika e-learning system?

__________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

SOLUTIONS
10. Suggest solutions to the challenges in 9 above so as to motivate teachers to use Elimika e-learning system for curriculum orientation

________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________
APPENDIX III: SNAPSHOT OF ELIMIKA LMS WEBSITE