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THE IMPACT OF E-LEARNING ON ACADEMIC PERFORMANCE: A CASE STUDY OF GROUP LEARNING SETS

BY

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DECLARATION

This research project is my original work and has not been submitted for any award in any university.

Sign…………………………………Date………………….

Odhiambo Stephen Owino

This research project has been submitted for examination with my approval as the university supervisor.

Sign…………………………………….. Date…………………

Professor Edward K. Mburugu

DEDICATION

This work is in memory of my late father Michael Odhiambo and mother Angeline Atieno both of who believed in the value of education and inspired me to pursue a lifelong quest for learning and research..

ABSTRACT

This study focused on the impact of e-learning on academic performance. The study relates to a level one undergraduate module delivered using traditional lectures and e-learning based methods. E-learning has been revealed in this study not to have a positive impact on academic achievement contrary to the expectations of this study.

The paper also examines the data for the presence of interaction effects between e-learning study hours and socio-demographic characteristics. This is undertaken to identify whether or not personal-characteristic-related learning style differences influence the extent to which students benefit from e-learning. It is found that, after controlling for other factors, female students benefited less from e-leaning material than their male counterparts.

The methodology that was employed in this study was systematic random sampling for students under traditional study mode and purposive sampling in identification of students under the e-learning study mode.

It is concluded that in order to improve teaching effectiveness and academic achievement, higher education should consider aiming to develop e-learning teaching strategies that encourage greater engagement and also take into consideration the different learning styles found within the student body.

The study recommends that critical factors such as institutional issue, management issue, pedagogical factors, technological issue, interface design issue, evaluation issue, and resource support issue and the factors within each issue have not yet been investigated with detail coverage. It further suggests that there is need to carry out detail research involving case studies based on survey questionnaires involving various learning institutions which will ultimately give a better understanding of impact of e-learning aspects within implementation process.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Education is a key factor for sustainable development (Chimombo 2005). The significance of education, especially in developing countries, is increasing because of progressing pressure to catch up with the developed world regarding, for example, global competitiveness (Hawkins 2002). Predictably, educational settings are different in developing countries than in developed countries, such as low quality of education and narrow possibilities in attending schools in rural areas because of far distances and high opportunity costs (Ibid 2005). Chimombo, 2005 opines that country-specific circumstances have to be improved regarding compulsory and free education to foster general access to education. In *Article 26 of the 1948 UN universal declaration of human rights* the right of obligatory and free education for everyone is already committed (UN Human Rights 1948).

Every year, more of the world's people become connected to the network, its bandwidth increases and its use becomes more integrated to all that happens in the globe. Connectivity to this network has becomes key to opportunity, success and fulfillment for individuals. Kenya has defined a national ICT policy with a view of creating an e-enabled and knowledge-based society by the year 2015. Just like the technology has changed the world, it is now changing the learning and teaching environment.

A broad range of learning approaches exists already, for example, e-learning, blended learning (Maier, 2007), and distance learning which utilize information and communication technology (ICT). The use of ICT can benefit, for example, students in rural areas by having them attend classes as distance learners and motivating them to learn like the "Group Learning Sets" (GLS) initiative offers. Regarding this, the potential of e-learning seems very assuring, but because of gaps between developed and developing countries knowledge transfer is not only difficult but also costly.

E-learning denotes the use of ICT by teachers and learners. Schmidt 2005 holds that e-learning consists of conventional training, such as courses, ad-hoc training, selected learning objects, formalization through document collections and community formation which can be achieved via social software.

According to case studies, there are already a number of e-learning programs offered in developing countries (Kohn et al. 2008). These programs are developed by various national and international initiatives, for example, the group learning sets initiated by Computer Aid International in collaboration with Kenyatta University. The growth of e-learning programs according to Lockwood and Gooley, 2002 is driven by the need for and potential of providing education in less expensive ways, increased access to information, effective learning and greater flexibility.

Stephenson, 2001 posits that there is little systematic research into the overall effectiveness of e-learning as a learning medium despite the great interest in it. He

acknowledges that while there is much more work to be done, a variety of e-learning courses aimed at making sustainable development a reality have been developed and demonstrate how e-learning can reach thousands if not millions of minds and potentially plant the seeds of change.

1.1.1 Electronic Learning (E-learning)

Fry 2000 and Wild et al. 2002 describe E-learning as the delivery of training and education via networked interactivity and distribution technologies. Other authors notably Roffe, 2002; Schank, 2002; and Sambrook, 2003 see e-learning simply as learning and communication exercises across computers and networks or for that matter any other electronic sources.

Khan (2005) pointed that E-learning has been described in various ways as learning using a number of different technologies and methods for delivery e.g. Computer Based Training (CBT), Internet-based training (IBT), Web-based instruction (WBI), advanced distributed learning(ADL), distributed learning (DL), distance learning, online learning (OL), mobile learning (or m-learning) or remote learning and learning management systems (LMS).

In the 70s and 80s distance learning became popular and was done via mail until the rise of Internet usage. In late 90s the digital learning environment was heightened and World Wide Web started as a distributed learning mechanism to support on campus student and distance learners. With the use of this delivery technology learners can get a range of

resources like discussion forums, multimedia, chat, video conferencing and electronic black boards (Gulatee and Combes, 2007).

In E-learning system, students are able to interact anytime from wherever with different instructional material (text, sound, pictures, video and so on) through Internet. In addition, learners can communicate with teachers and classmates both individually and as a group discussion with the use of message boards, instant message exchanges and video conferencing (Al-Ammari and Hamad, 2008).

Khan 2005suggests that e-learning system is used for an open, flexible, and diverse E-learning environment. Moreover E-learning system can be analyzed as an inventive approach for delivering, learner-centered, interactive, and facilitated learning environment to anyplace, anyone, anytime by utilizing the features and resources of different digital technologies along with other types of learning materials suited for an open, distributed, and flexible learning environment (Ibid, 2008).

1.1.2 Group Learning Sets

Computer Aid provided over 1,500 PCs to Kenyatta University. Many of these computers are being used for the university's cutting edge e-learning project, which is enabling rural students to pursue university courses remotely. Kenyatta University has made its courses accessible to people living and working in those communities. In particular, the university is targeting people who are already engaged in work that is vital to the social and economic development of rural and marginalised areas. These 'key workers' include

nurses, teachers, entrepreneurs and agricultural advisors. The University is encouraging students to study together and benefit from each other. In order to facilitate this collaborative learning, the University through the help from ComputerAid further put in place mechanism of providing students with computers. Students are encouraged to form small learning groups of five or six students called Group Learning Sets (GLS).

1.2 Problem Statement

The importance of education is increasing because of increasing pressure to catch up with the developed world regarding, for example, global competitiveness (Hawkins 2002). Before the introduction of e-learning many people who wanted to obtain university degree had to compete for the few places that were offered by the public universities. Those offered places had to apply for study leave as they had to go through the traditional learning system. This kind of further education system was characterized by limited number of students that could be absorbed per an academic year and consequent removal from their places of work for the duration of their study.

From the reviewed literature, it can be deduced that there seems to be no research studies on the joint contributions of e-learners' socio-demographic, hours spent online/offline and prior computer skills variables to their academic performance. Whereas, researchers and theorists (Coldeway, 1986; Calvert, 1986; Garrison, 1987; Kumar, 2001) have stressed the need for a comprehensive approach, taking into account all the experiences of e-learners as well as the unique aspects of e-learning environment. In addition, it has also been observed that little research has been devoted to exploring factors that predict

the academic performance of e-learners (Cookson, 1989) while those that even exist concentrated largely on demographic correlates as a component in their studies (Kumar, 2001).

Several studies have been carried out on academic performance especially on conventional students, but not much on e-learning students within the Kenyan educational system. The need to sever this ground so as to extend the frontier of knowledge in order to help improve the unimpressive e-learners' academic performance necessitates and serves as the motivating factor for undertaking the present piece of research so as to fill the existing important research gap.

This study sought to establish whether the "Group Learning Sets" offer its beneficiaries ability to develop the associated concepts; does e-learning help the students improve their grades, skills, values, procedures and technology necessary to apply in their jobs. The study endeavored to answer the following questions, what role does prior computer skills play in improving student's performance: In so doing, the study sought to measure the ability of the students to use e-learning tools such as internet/intranet, computers, and software for particular purposes. What is the role of personal characteristics on academic performance? To measure personal characteristics the study sought to identify variables such as gender, students with special needs, gifted students, and religion these helped the researcher know such personal issues that may influence a student's usage and acceptance of the technology as may be informed by individual's socialization. Lastly, what is the impact of hours spent online/offline has on students?

1.3 Research Questions

 i. To what extent do prior computer skills play in academic performance?

 ii. To what extent do socio-demographic characteristics influence academic achievement?

 iii. To what extent does the level of engagement (hours online/offline) in the e-learning process affect academic achievement?

1.4 Objectives of the Study

1.4.1 General Objective

The general objective of this study was to establish the impact of e-learning on academic performance

1.4.2 Specific Objectives of the Study

 i. To establish the role prior computer skills play academic performance.

 ii. To determine the impact of socio-demographic characteristics on academic achievement.

 iii. To establish the impact of number of hours spent online/offline (Time management) on academic achievement.

1.5 Justification of the Study

Web Based Training and its newer and more general synonymous term e-Learning are two of today's buzz-words in the academic world. Decision-makers associate with its new ways of learning that are more cost efficient than traditional learning strategies and which allow students to better control the process of learning because they can decide

when, where and how fast to learn.The emergence of e-leaning has tremendously transformed information – handling and management in academic environments (Ani and Ahiauzu, 2008). A number of e-learning initiatives have been put in place to assist in the development training and use of electronic resources in a number of academic institutions.

These initiatives notwithstanding, some inadequacies in the development provision and utilization of electronic resources have been identified in a number of academic institutions. A number of studies have been made with a view to proffering solutions to problems encountered in the development of electronic information resources. However, little or no efforts have been recorded in the identification of influence and impact of e-learning on academic performance of student in higher learning institutions. As the use of e-learning is becoming more and more widespread in higher education it has become increasingly important to examine the impact that this teaching style has on student performance. This study will therefore help add information on the role of e-learning on academic performance.

1.6 Significance of the Study

The present study has great significance. First of all, the study findings provide an idea about the e-learning aspects and academic performance in order to provide key information to further research work in such areas. In the same way, the study provides knowledge and guidelines to that may be of help to policymakers. The research is

therefore of importance for planners, and other social scientists. Finally, this study provides an input to the students, teachers and researchers in the areas of e-learning.

Research works are embarked upon with a view to extending the frontier of knowledge. The present study was therefore carried out with this same objective, especially in the field of e-learning. It has therefore, contributed to the extension of the frontier of knowledge in the following ways. First, the study has shown the predictive power of the selected factors, especially socio-demographic factors, prior computer skills and time management status in the determination of the academic performance.

1.7 Limitations of the Study

The present study reflects a number of limitations. Firstly, the student models of learning were identified on the basis of a specific sample comprising those under e-learning study model and those under the traditional study model. Secondly, the theoretical nature of this study limits its direct relevance for the educational praxis. Therefore, it is hoped that future research may additionally focus on how student cognitions about learning are influenced in the context of everyday learning environments. The results could enable educational practitioners to encourage the adoption of student learning models which invoke a deep oriented and self-regulated study strategy.

This study did not consider all the aspects e-learning influences but instead was restricted to those elements of e-learning that affect performance in one way or the other. The study

did not also consider all students studying through the e-learning mode but only focused on the Kenyatta University students and specifically those who benefited from the Computiuter Aid initiative.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews various studies which have shown the inter-relationships among the measures of e-learning inputs pertinent to academic achievement. A more specific model will be developed for the present study.

2.2 The Role of E-Learning on Academic Performance

Attitudes concerning e-learning, echoed by scholarly and academic reviews, range from neutral to positive. On one hand, it is noted that e-learning is at least as effective as traditional instructional strategies (Rosenberg, Grad and Matear, 2003), and that there are no major differences in academic performance between the more traditional and more technology-oriented modes of instruction (Cavanaugh, 2001). On the other hand, many reviews go further, reflecting a principally positive attitude towards the impact of e-learning (Mayer, 2003). The current piece sought to demystify e-learning by concentrating on how specific e-learning factors (socio-demographic characteristics, hours spent on-line and prior computer skills) influence individual academic performance.

There is a considerable body of evidence to suggest that different teaching delivery styles can have different degrees of success; as measured in terms of academic results (Emerson & Taylor, 2004). In relation to online teaching, some studies indicate that this medium of delivery has a positive impact on performance, for example, Smith and Hardaker (2000).

Other studies however, find that greater online teaching has a negative impact on performance (Johnson, 2005).

Benefits include offering a variety of new possibilities to learners (Breuleux, Laferrière, & Lamon, 2002), in addition to having a positive effect on students' achievement in different subject matter areas (Chambers, 2003). Other benefits of electronic education include increases in enrollment or time in school as education programs reach underserved regions, broader educational opportunity for students who are unable to attend traditional schools, access to resources and instructors not locally available, and increases in student-teacher communication. According to Barker & Wendel (2001) students in virtual schools showed greater improvement that their conventional school counterparts in critical thinking, researching, using computers, learning independently, problem-solving, creative thinking, decision-making, and time management. A study by Calderoni (1998) revealed that academic advantages over traditional classroom instruction were demonstrated by students in Mexico's Telesecundaria program, who were "substantially more likely than other groups to pass a final 9th grade examination" administered by the state; by students taking a chemistry by satellite course (Dees 1994); and by students learning reading and math via interactive radio instruction (Yasin & Luberisse 1998).

Electronic education is not the most effective choice in all situations. Students may feel isolated, parents may have concerns about children's social development, students with language difficulties may experience a disadvantage in a text-heavy online environment,

and subjects requiring physical demonstrations of skill such as music, physical education, or foreign language may not be practical in a technology-mediated setting. Bond (2002) found that distance between tutor and learner in an online instrumental music program has negative effects on performance quality, student engagement, and development and refinement of skills and knowledge. Virtual school students show less improvement than those in conventional schools in listening and speaking skills (Barker & Wendel 2001). Highly technical subjects have also proven to be difficult to teach well online. The Alberta Online Consortium evaluated student performance on end-of-year exams among virtual school students across the province, and found that virtual school student scores in mathematics, and the sciences lagged significantly behind scores of non-virtual school students (Schollie, 2001).

Kearsley (2000) notes that given instruction of equal quality, groups of students learning online generally achieve at levels equal to their peers in classrooms. Equality between the delivery systems has been well documented over decades for adult learners. Evidence to date convincingly demonstrates that when used appropriately, electronically delivered education—'e-learning'— can improve how students learn, can improve what students learn, and can deliver high-quality learning opportunities to all children" (NASBE, 2001).

A primary characteristic that sets successful distance learners apart from their classroom-based counterparts is their autonomy (Keegan 1996) and greater student responsibility as is noted by Wedemeyer (1981). A second characteristic that differentiates successful

distance learners from unsuccessful ones is an internal locus of control, leading them to persist in the educational endeavor (Rotter 1989).

2.3 The Role of Prior Computer Skills on Performance in E-Learning Setup

Some learners are better prepared than others to use e-learning technologies to facilitate their educational progress; individual "readiness" seems to be a crucial factor in accounting for the success of e-learning applications in education. Looker and Thiessen (2002), in their paper noted that digital divide for Canadian youth, remarked that access to, and experience with, computer technology determines "computer competency", and that this competency is generally associated with urban residents of higher economic status.

Levin and Arafeh (2002) remarked on the differences between students who are highly gifted in the internet usage and those who have had little opportunity to develop their experience with networking tools. Dewar and Whittington (2000) concluded that adult learners' learning styles (as indicated by Myers-Briggs personality types) can predict the pattern of their participation in online courses.

It is interesting to note however, that a key learning-style related factor may in fact be the student's familiarity with the technology. A number of studies have shown that computing experience is a strong predictor of attitudes towards, and also use of, computers and the internet (Atkinson & Kydd, 1997). In effect, the student's learning style may adapt and improve as familiarity with the e-learning medium increases.

2.4 The Role of Socio-Demographic Characteristics on Academic Achievement

There have been numerous studies on the relationship between socio-demographic characteristics and academic performance. Some studies focused on specific socio-demographic Variables and e-learners' academic performance, characteristics or areas such as gender and learning styles (Blum, 1999; Shaw & Marlow, 1999; McLean & Morrison, 2000), ethnicity and learning styles (Jaju, Kwak&Zinkham, 2002), academic performance and learning styles in both Information Technology (IT) and non-Information Technology (non-IT) subject areas and in distance and contact courses (Aragon, Fowler, Allen, Armarego& Mackenzie, 2000; Papp, 2001; Johnson &Shaik, 2002; Neuhauser, 2002; Zywno&Waalen, 2002), level of educational attainment, number of children in the family, full-time work experience, family income level (Abdul-Rahaman, 1994; Parker, 1994; Whittigton, 1997), age, marital status, employment status (Woodley & Parlett, 1983; Chacon-Duque,1985; Powell, Conway & Ross, 1990), number of hour employed per week, distance traveled to study centre, learners' previous educational level (Wang & Newlin, 2002).

Studies above established divergent findings. For example, for first year programming courses, Thomas, Ratcliffe, Woodbury and Jarman (2002) reported that there was a relationship between student learning style and academic performance, while Byrne and Lyons (2001) established that no such relationship exists. Also, Woodley and Parlett (1983) found that previous educational level, gender, age and occupation were associated with persistence and academic performance. Similarly, Powell et al. (1990) established that marital status, gender and financial stability contributed significantly to distance

learners' academic performance. Conversely, Chacon-Duque (1985), Wang and Newlin (2002) and Ergul (2004) found that educational level, age, gender, employment status and number of children in the family were not significant predictors of distance learners' academic performance. Based on the findings from above studies on the relationship between socio-demographic characteristics and academic performance, it appears the issue remains inconclusive.

Cuneo, Campbell & Harnish (2002) list several individual characteristics that may determine the outcomes of technological interventions: motivation, computer skills, literacy skills, communication skills, and learning styles. Cuneo and Harnish (2002) point out that "quasi-open computer-mediated environments are not safe places for students unsure of their writing skills and knowledge, online learning might not be appropriate for all students". Looker and Thiessen (2002) in their survey of Canadian high school students indicated that females demonstrated less interest (and less confidence) in achieving computer competency. Bryson, Petrina and Braundy (2003) studied "gender-differentiated participation" in British Columbia schools; they noted that the percentage of girls enrolled in technology-intensive courses remains extremely low, while performance data indicate that those female students who participate in these courses do better, on average, than male students in these courses.

Li (2002) observed that, female students tend to initiate conversations, while male students are more likely to enter the dialogue at later stages and respond to previous discussions. Individual metacognitive factors are also implicated in student success as

Karsenti (2001) points to the relevance of self-direction and self-regulation in university students, concluding, "The main difficulty encountered by students seemed to be their lack of autonomy or the trouble they had in learning by themselves, in managing their own learning" (p. 33).

2.5 Student Engagement (Hours Spent Online/Offline)

Research suggests that student academic performance may be affected by both engagement effects and learning-style effects. Carini et al (2006) found that, although in general, the relationship between engagement and performance is complex, engagement is positively correlated with student performance. Their conclusion is supported by a number of empirical studies: Rodgers and Ghosh (2001) identified that 'effort' (or engagement) levels were highly significant in determining student examination performance. Although, another study made in an e-learning context (Davies and Graff, 2005) found that online engagement had no statistically-significant impact on examination performance. Additional studies in this area have examined the issue of what determines the amount of time that a student spends on e-learning. Arbaugh (2000) argues that this will depend on the student's attitude to the perceived usefulness, and also the ease of use, of this delivery medium. It is suggested that students who spend more time on internet-based courses tend to be the ones who take more ownership of the learning process, and as a consequence receive the greatest learning benefit (good performance as measured by grades). From this it can be inferred that we might expect to find a significant, and positive, relationship between the level of e-learning engagement and academic performance.

The ability to effectively manage learning time is an important element in of electronic learner success (Kearsley, 2000). Palloff and Pratt (1999) hinted that interacting in a Web-based course can require two to three times the amount of time investment than in a face-to-face course. Roblyer (1999) pointed that students who have difficulty managing time are more likely to achieve less in a distance course or drop out altogether. Gibson (1998) pointed out that a key construct relating to distance learners' persistence is their self-efficacy for learning at a distance and that personal perceptions of competence (self-efficacy) are related to learners' perceptions of their ability to manage time effectively. Students who use their time efficiently are more likely to learn and/or perform better than students who do not have good time management skills. Zimmerman and Risemberg, (1997) opine that self-regulated learners know how to manage their time because they are aware of deadlines and how long it will take to complete each assignment. They prioritize learning tasks, evaluating more difficult from easier tasks in terms of the time required to complete them. They are aware of the need to evaluate how their study time is spent and to reprioritize as necessary.

The other key performance-influencing issue relates to differences in student learning styles. These may result in differences in the effectiveness of e-learning delivery methods for individual sub-groups within the student body. Within the learning-styles literature the notion that different learners have different cognitive styles has been widely examined (Klob, 2000). In addition to be general indication, there is a considerable support in the literatures for the suggestion that there are identifiable variations in the learning styles of sub-groups within the student population.

2.6 Theoretical Framework

The focus of this study is built upon the various learning styles theories of online learning, and how learners gain knowledge differently. Facilitation theory and constructivist theory are two popular learning theory concepts which are used as a representation as a taxonomy for learning (Etmer & Newby, 1993). According Eccles (1999) developing a system of best practices built around these learning theories can assist teachers in encouraging improved student preparedness and instruction presented within an online learning environment of higher education.

2.6.1 Constructivism Theory

Constructivism is the theory that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When learners encounter something new, they reconcile it with previous knowledge and experience. They may change what they believe, or they may discard the new information as irrelevant. To be active creators of their knowledge however, they must be able to ask questions, explore and assess what they know. In the classroom, the constructivist view of learning means encouraging students to use active techniques such as experiments and real-world problem solving using authentic data if possible, and to create knowledge and reflect on their understanding.

Constructivism modifies the role of the teacher so that teachers help students to construct knowledge rather than reproduce a series of facts. The constructivist teacher provides

tools such as problem-solving and inquiry-based learning activities like in e-learning setup so that students can formulate and test their ideas, draw conclusions and inferences, and convey their knowledge in a collaborative learning environment. The teacher must understand the students' preexisting conceptions and guide the activities to address this knowledge and then build on it. Constructivist teachers encourage students to assess how the activity is helping them gain understanding. By questioning themselves and their strategies, students become expert learners as they learn how to learn, with the use of computers online and/or offline. The students then have the tools necessary to become life-long learners.

The teaching-learning method in e-learning is assumed to be self-directed learning (SDL), which is supported by the educational philosophy of constructivism. According to constructivism theory, e-learning is an active information process because knowledge generation is accomplished through individual experience, maturity and interaction with one's environment. Due to this point of view, the educational philosophy of constructivism is distinguished from objectivism in that the learner is regarded as a passive recipient of information (Rovai, 2004).

Learning performance in regards to e-learning is possibly lower than a crammed educational style based on objectivist educational philosophy, with the exception of a strategic approach relating to the efforts and studies for the pleasure of the self-learner. Lee et al., (2007) point that the SDL teacher is available as an assistant and guide for learning, not as a unilateral knowledge source and messenger.

Learners take the lead in self-regulated learning for the development of a total learning process that involves problem perception, adoption, and assessment of alternatives (Lee, 2004). Learners play the same roles that the producers do by organizing or re-organizing knowledge like a consumer, by selecting knowledge and using it practically (Thatcher& Pamela, 2000).

E-learning must be considered as one of many SDL strategies. The reason is that an e-learner attends a lecture only to register the time, place, subject, and to alter the order of attending lectures. Proper monitoring of the learner is difficult in comparison with the off-line education already being used, not only because the learning progress method of evaluation is being altered, but because personal meetings with the teacher are also no longer part of the process. Therefore, it is important to manage one's ability to organize self-learning time, process information, plan data, and control data.

2.6.2 Facilitation Theory (The Humanist Approach)

Learning theory developed by Carl Rogers. One of the basic premises of this theory is that learning is possible because human beings have a "natural eagerness to learn" and they are responsible for and at the center of the learning process (person-centered learning). E-learning is possible only because individuals signed up in it are self-driven and eager to learn despite their location in relation to learning institutions. The role of the teacher is to act as a facilitator- no amount of effort on the part of the teacher can guarantee success, unless the learner has a desire and predisposition to learn.

An interesting contribution of Rogers's Facilitation Theory is the notion that learning involves changing one's self-concept. Such changes may involve discovering one's strengths or weaknesses. Learners in the e-learning setup have to perceive the possibility that there is in the e-learning system for knowledge acquisition. A freshly perceived self-concept has a consolidating impact on learning in that it allows the learner to attack a target skill with confidence or with an adjusted 'updated' approach.

Implicit in the non-direct facilitative approach is the assumption that learners can find the information by themselves (teachers merely *facilitate* that process), an assumption which downplays the role of information transmission and underestimates the contribution of teaching. Such a teaching model is obviously an idealization which is rarely found in its pure form in practice.

2.7 Conceptual Framework

Moderating Variables

| Student – Teacher contact |

| Prior computer skills |

| Socio-demographic Characteristics |

| Academic performance |

Dependent Variable

| Hours spent online |

| Attitudes towards education |

Independent Variables   **Intervening Variables**
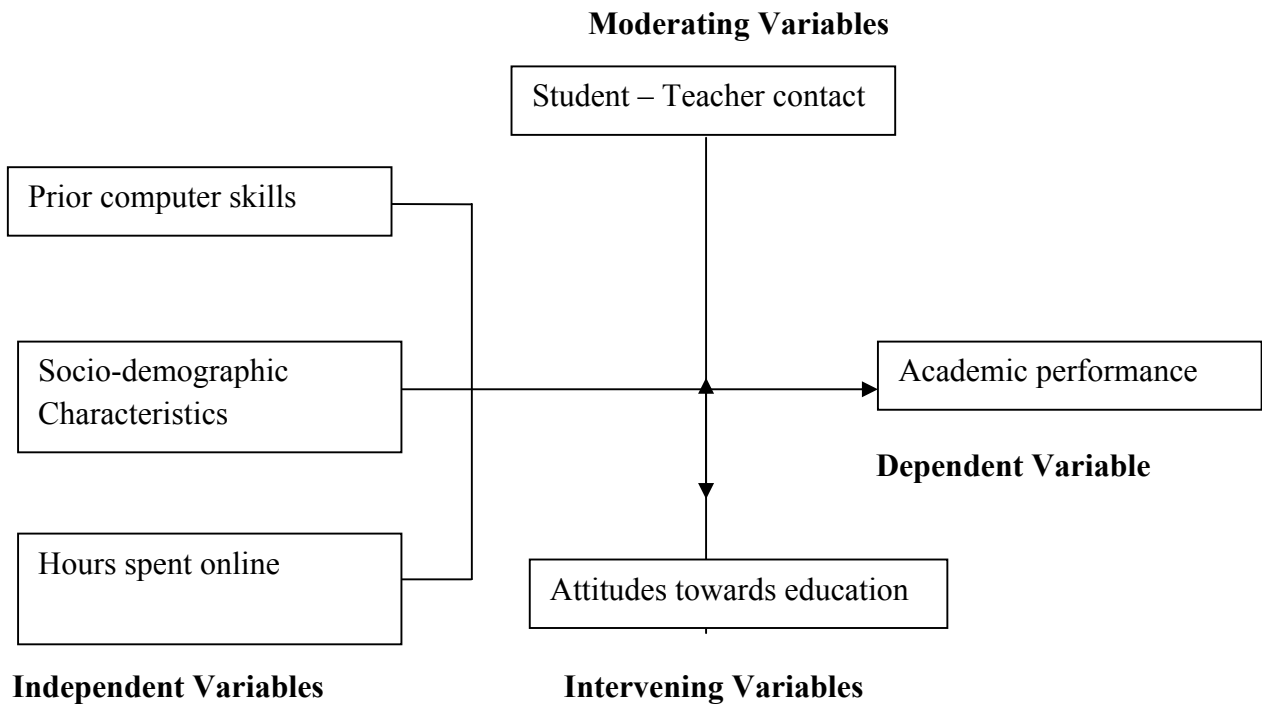
Figure 2.1: Conceptual Framework

Source (Author 2012)

The above conceptual framework was used in this study, the independent variables are prior computer skills, socio-demographic characteristics and hours spent online/offline that may influence the academic performance of individual. Prior computer skills are thought to make it easy for students to use computers and computer software that are used to deliver academics; socio-demographic characteristics include elements such as gender, number of children and marital status which play a role in academic performance, does the number of children influence academic performance, how does the married individuals academic performance compare to that of unmarried individuals.

Academic performance is the dependent variable in this study, how does academic performance vary based on the independent variables. Attitude which deals with the overall perception of the learner about learning style and hence influencing performance is the intervening variable. Regardless of the variance of the independent variables, the intervening variable's influence is constant. Teacher – student contact is the moderating variable that provides the interaction effect where it moderates the relations between the independent variables. Academic performance in an e-learning setup can be influenced by varied variables either positively or negatively.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Introduction

This chapter describes the methods that were used in the study. It explains the research design, the study population, sampling method and procedures, data collection procedures and instruments, data analysis, reporting and ethical issues.

3.2   Research Design

The research design was an analytical survey. Analytical surveys also referred to as diagnostic studies attempt to describe and explain *why* certain situations exist. In this approach two or more variables are usually examined to test research hypotheses. The results allow researchers to examine the interrelationships among variables and to draw explanatory inferences. In this study, the researcher sought to establish the relationship between prior computer skills; socio-demographic characteristics; and level of student engagement effect on academic attainment.

3.3 Unit of Analysis

According to Mugenda and Mugenda (2003) units of analysis are units that are designed for purposes of aggregating their characteristics in order to describe some larger group or abstract phenomenon. Nachmias and Nachmias (1996) describe the units of analysis as the most elementary part of the phenomenon to be studied. To Singleton et.al (1988; 69) they are "what or whom to be analyzed". In this study, the unit of analysis was the different categories discussed in this paper as the 'study modes' (e-learning and conventional).

3.4 Unit of Observation

The unit of observation in this study was the individual students whose performance was aggregated to inform category performance.

3.5 Study Population

In this study, the population of interest is beneficiaries of the 1500 computers that were provided by ComputerAid international. Each computer was to be used by five e-learning students. The total population of the beneficiaries is (1500 * 5) 7500 students. An equivalent population was targeted for students under the conventional learning mode so as to avoid overrepresentation of one category. The total population in this study was thus fifteen thousand, (7500 * 2 = 15000) being seven thousand five hundred on the e-learning program and seven thousand five hundred on the conventional study mode. From the total population, a sample of one hundred and fifty students' constituting seventy five on e-learning mode and seventy five on the conventional study mode was targeted. This is a total sample population of 150 which is 1 percent of the total population. The sample 75 for each category was guided by Dr. John Curry Professor of Educational Research,

North Texas State University (now retired), who provided his research students (fall, 1984) with the "rule of thumb" on sampling (Gay, 1987) presented in the table 3.1 below. The sample size was also deemed appropriate when it was noted that the beneficiaries of the group learning sets are spread across the country, time and finances did not allow for inclusion of a bigger number. On the same note, in the bid to have equal representation, the number seventy five was settled for students under traditional learning mode.

Table: 3.1 Population sample size

Size of population	Sampling percent
0-100	100%
101-1,000	10%
1,001-5,000	5%
5,001-10,000	3%
10,000+	1%

Source Gay (1987)

3.6 Sampling Method and Procedures

Through a systematic random sampling procedure where a neutral start point was identified by the researcher where the first student was identified randomly, within the study location. It was key to consider gender parity in the study, as such for those under conventional study mode, if a male student was picked the next was to be a female respondent. Identification of the starting point was done at the gate of Kenyatta University, the data collection was done on one side of the road towards the administration block, upon reaching the administration block, and the other side of the road was taken towards the gate. After identification of the first respondent, five students were past then the sixth was included in the study, if the sixth student was not of the opposite gender, five more students were past till the opposite gender was found. The process was repeated until seventy five respondents were interviewed.

To identify e-learning respondents, a list of students was obtained from the institution, systematic random sampling was then used to select seventy five students. A starting point was first randomly picked then every fifth name in the list was included in the sample. Questionnaires were then sent online to the selected seventy five students.

3.7   Data Collection Procedures and Instruments

The main instrument of data collection in this study was questionnaires. The items in the questionnaire were structured (closed ended) and unstructured (open ended). The structured questions measured the subjective responses to clarify the objective responses and at the same time, enhance formulation of recommendations of the study. The researcher used trained research assistants to collect data.

3.7.1   Reliability

According to Devellis (1991), as cited by Mugenda, (2004) reliability is the proportion of variance attributable to the time measurement of a variable and estimates the consistency of such measurement over time from a research instrument. It is a measure of the degree to which a research instrument would yield the same results or data after repeated trials. In order to ensure reliability the researcher issued the questionnaires to the respondents, collected them and checked on the responses. After two weeks the questionnaires were re-tested by administering it at again to respondents with the same characteristics. This ensured internal consistency of the questionnaire and affirmed the responses from the selected sample.

3.7.2 Validity

Validity establishes the relationship between the data and the variable or construct of interest. Its estimates how accurately the data obtained in a study represents a given variable or construct in the study Mugenda, (2004). To ensure accuracy of the data the researcher pre-tested the questionnaires and analysed the results and made corrections on the questions that were not clear.

The questionnaires provide accurate data due to the process of pre-testing in the selected sample to maintain validity. The researcher visited the sampled student's to make them aware of the need of the study. This ensures validity of the data collected.

3.8   Data Analysis and Reporting

According to Miles and Huberman (1994) data analysis is an iterative process. Data analysis consists of three activities: Data reduction, Data display, and Conclusion drawing/verification".

Data reduction, this process is applied to qualitative data and focus remains on selection, simplification and transformation of data. In this continuous process the data is organized throughout the research to draw and finalize a conclusion (Miles and Huberman, 1994). In this research, the data was reduced from critical elements in implementation of E-learning to students' academic performance.

In data display the data is displayed in an organized form or the data has to be put into an order to easily draw the conclusion. Tables and graphs are used to indicate distinct frequencies of various factors of E-learning implementation and academic performance.

3.9 Ethical Issues

Confidentiality: The participants were guaranteed that the identifying information will not be made available to anyone who is not involved in the study and it will remain confidential for the purposes it is intended for.

Permission: The researcher sought permission to carry out the research from the University

Informed consent: The prospective research participants were fully informed about the procedures involved in the research and were asked to give their consent to participate.

Anonymity: The participant remained anonymous throughout the study and even to the researchers themselves to guarantee privacy.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the data analysis techniques and interpretation of the findings of the impact of e-learning on academic performance. The finding was intended on answering the study's research objectives. Data composed was collated and reports were produced in form of tables and figures and qualitative analysis done in prose.

4.2 Questionnaire Return Rate

The study response rate was 67% as shown in table 4.1 below majority of the completely filled questionnaires were by the students under the conventional study mode, only 42% of the completely filled questionnaires were by students under e-learning mode.

Location Response Rate			
	Frequency	Percent	Valid Percent
E-learning students	58	38.0	58.0
Traditional Mode	42	29.0	42.0
Invalid	50	33.0	
Total	**150**	**100.0**	**100.0**

4.3: Socio Demographic Characteristics

This section presents the socio-demographic information of the respondents presented in bar graphs, charts and tables. The study found it crucial to ascertain the said information since it was deemed that such information was a clear indicator of factors that may influence one's academic performance. The analysis relied on this information of the respondents so as to categorize the different results according to their acquaintance and responses.

4.3.1 Distribution by Gender

The study sought to establish the distribution by gender of the respondents in selection of the sample. It was observed that majority (58%) of the respondents were male while 42% of the sample were female. The findings shows that a majority of the respondents were male (58 percent), this was interpreted to mean that more males than females are admitted in higher learning institutions.

4.3.2 Marital Status

Table 4.1 depicts the findings on the marital status of the respondents that participated in the study.

Table: 4.1Marital Status

Marital status	Frequency	Percent
Married	46	46.0
Widowed	3	3.0
Separated	4	4.0
Never married	47	47.0
Total	**100**	**100.0**

The study sought to establish the marital status of the respondents, the findings reveal that most of the students (47%) had never been married and were in the conventional learning system, 46 percent had been married and were in the e-learning study mode, 4 percent were separated, while 3 percent were widowed. The respondents who had never married were mostly those under the conventional learning mode. The majority of those married were under e-learning study mode. The findings revealed that marital status was a big determinant on one's choice of mode of study as it was found that the married category mostly constituted those who were on the e-learning mode of study who by extension had a family to attend to besides school.

4.3.3 Marital status versus academic performance
Table 4.2 is a presentation of the findings on the academic performance of the students based on their marital status.

Table 4.2: Average score for college courses according to marital status

Marital status	Average score for college courses			Total	
	A	B	C	N	Percentage
Married	22	17	61	46	100
Never married		79	21	47	100

The study sought to compare the academic performance of married and unmarried students table 4.2 shows that on average, more married students 22 percent scored A while none of the unmarried students scored A, however, the unmarried students scored more B's than the married, 79 percent of the unmarried scored B compared to 17 percent of the married students. More married students scored an average of C's as compared to the unmarried students who had only 21 percent scoring an average of C. The findings can be deduced to mean that despite the married students having the majority scoring an average of A, the unmarried students still performed better than the married students.

4.3.3 Family Size

Figure 4.1 depicts the findings on the family size of the respondents that participated in the study

Figure: 4.1 Distribution by number of children
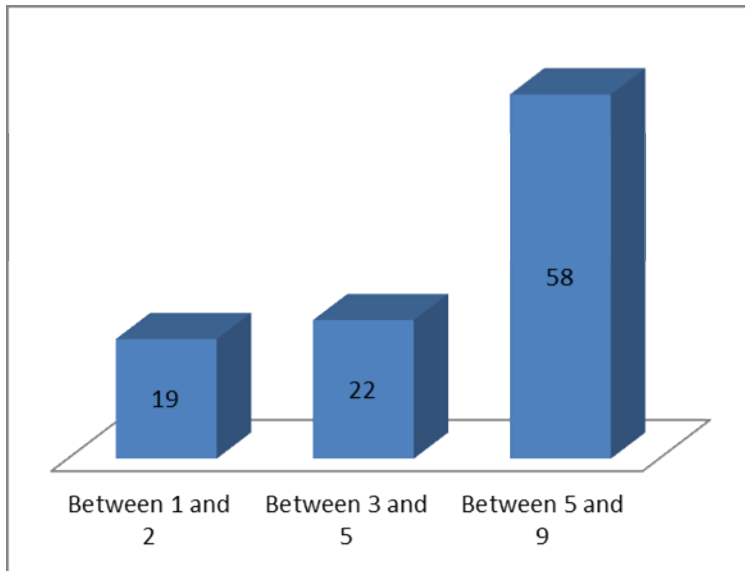
The respondents were asked to provide data on the number of children. The number of children is a pointer to responsibility level that in the researchers view has a role on the level of commitment to one's education. Figure 4.1 reveal that, 19 percent of the respondents had 1 – 2 children, 22 percent had 3 – 5 children, while the majority 58 percent had between 5 – 9 children. Number of children was found to influence the study time of parents, the level of responsibility of those with more children is higher and hence eats into the time of the students under e-learning program. It was of interest to note that those with large families were on the e-learning study mode while those who were unmarried mostly constituted students under the conventional study mode.

4.3.4 Students Average Scores

Figure 4.2 is a presentation of the findings on the average performance of the respondents that participated in the study.

Figure: 4.2 Average score for college courses
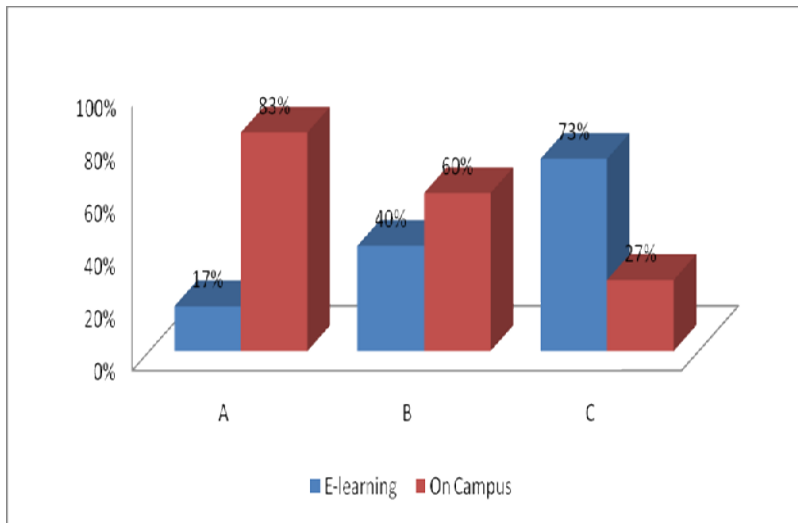
The study sought to establish the average scores of the students, figure 4.2 is a presentation on the students' performance[1], the average score for the pupils was distributed as shown in the figure, of the A's scored 83 percent was by those under conventional study mode and 17 percent under e-learning system, 40 percent and 60 percent of the students who scored B were on e-learning and conventional study mode respectively, for the C's recorded 73 percent and 27 percent respectively was by students on e-learning and conventional study modes respectively. From the figure above, it can be deduced that the performance of students under the conventional study mode was better than those under e-learning mode, this they (e-learning students) said was due to the responsibilities they have making them not to fully concentrate on studies.

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[1] The scores are as stated by the respondents and were not confirmed by the examination department as such information could only be given to the students themselves

4.3.5 Online Study Hours

The study sought to establish the number of hours students spent studying online. Figure

4.3 depict the findings as revealed by the respondents that participated in this study.

Figure: 4.3 Hours dedicated for online studies per day
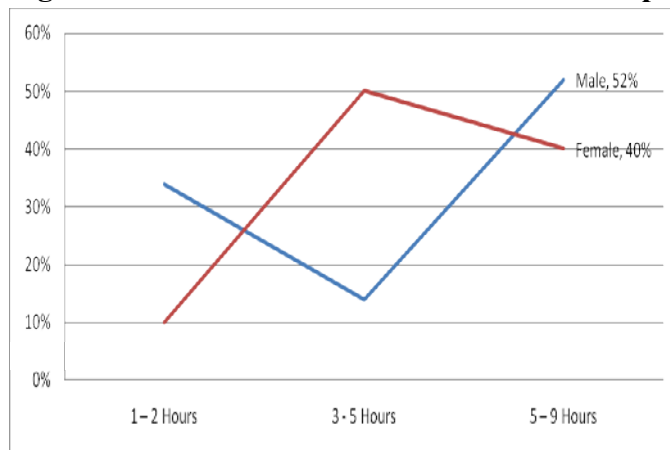
Data presented on Figure 4.3 shows that 34 percent and 10 percent of male and female

respectively constituted those who study for 1-2 hours. 14 percent and 50 percent of those

who study for between 3-5 hours were male and female respectively, 52 percent and 40

percent of male and female respectively indicated that they study for between $5 - 9$ hours.

The findings reveal that male students on e-learning mode spent more hours studying a

day than their female counterparts. One female respondent had this to say "*masomoni*

mazuri, lakini kazi za nyumbani pia lazima tuyafanye, kwa hivyo inabidi tujipange"

meaning, in as much as studying is OK, we must also do household chores, we therefore

must manage out time well. The female graph is seen to rise towards 5 hours spent a day

in studies the falls drastically, this is explained by the number of duties women have to

attend to in a day limiting the number of hours they spend studying. The male graph on

the other hand shows a different behavior where towards 9 hours a day spent on studies

the graph rise meaning that the male have more hours of study as compared to their female counterparts.

4.4: Study Hours Impact on Academic Performance
This section presents the impact of study hours on one's academic performance

4.4.1 Study Hours in a Day
Figure 4.5 depicts the findings on the number of hours students dedicated for their studies per day.

Figure: 4.4 Study Hours in a Day
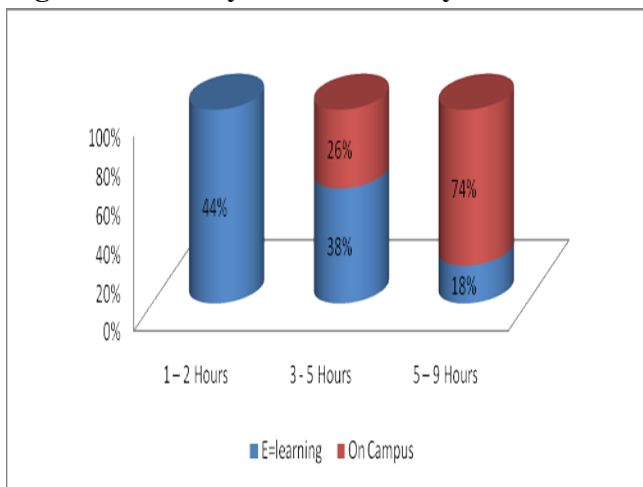
The study sought to establish the number of study hour's students under e-learning system and those in conventional study mode employ in a day. Most (44 percent) of students in e-learning mode studied for between 1 and 2 hours a day, figure 4.4 reveal that 38 percent and 26 percent of e-learning and conventional mode students respectively spent between 3 and 5 hours a day studying. Of those who study for between 5 – 9 hours a day, 18 percent and 74 percent were on e-learning and conventional study mode

respectively. The findings reveal that students under the conventional study mode spend more hours a day studying than their counterparts on e-learning study mode. It can therefore be deduced that students under conventional study mode are likely to perform better than those under e-learning mode considering the time both sets dedicate to studies.

4.4.2 Impact of study hours on academic performance
Figure 4.5 is a presentation of the findings on the impact of the number of hours the students spent studying on their performance.

Figure: 4.5 Impact of study hours on grade scored
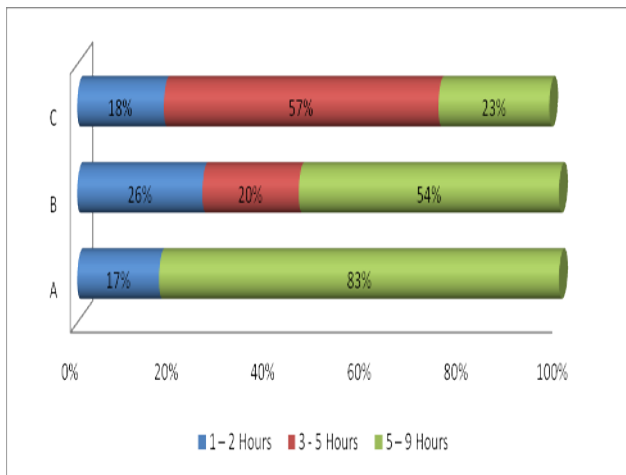
The study sought to establish the impact of study hours in a day on academic performance; Figure 4.5 reveal that those who spent between one and two hours accounted for 17 percent, 18 percent and 18 percent, of the students scoring A's, B's and C's respectively. Those who spent between three and five hours accounted for 20, 58 percent of the students scoring B's and C's respectively. Those who spent between five and nine hours accounted for 83 percent, 54 percent and 23 percent of the students

scoring A's, B's and C's respectively. From the revelation, it can be deduced that the more hours students spent studying the better their performance in academics regardless of whether the students are under the conventional study mode of e-learning mode of study.

4.4.3 Ease in Keeping Up with Reading Hours Required for Online Courses

Figure 4.6 depicts the findings on the respondents ease in keeping up with the reading hours required for online hours.

Figure 4.6 Ease in keeping up with reading required for online courses
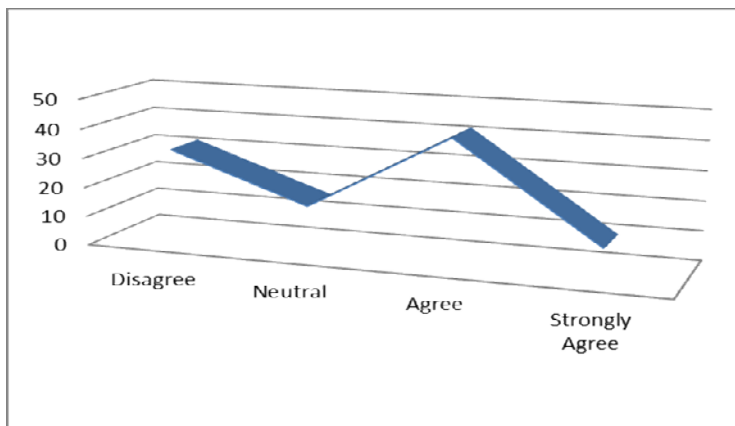
The study sought to establish whether the students in e-learning mode of study found it easy studying online; Figure 4.6 reveal that 32 percent of the respondents indicated that they found difficulty studying online, 16 percent were not sure, while 42 percent indicated that they found no difficulty studying online, only10 percent of the students on e-learning strongly agreed that studying online was easy to keep-up with. This can be

deduced to mean that the performance of e-learning students may be affected negatively by the fact that not so many easily adhere to the study hours required by the program.

4.4.4 Ease in finding time to complete online courses
Figure 4.7 presents the findings of the respondents' ability to easily find time to do their studies

Figure: 4.7 Ease in finding time to complete online courses
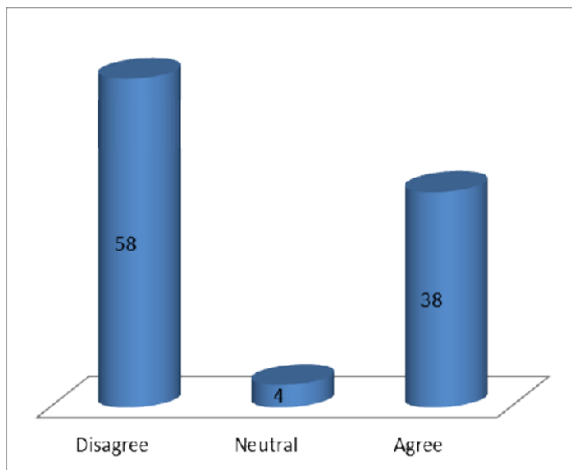
The study sought to establish whether the students found time to do their studies online; Figure 4.7 reveal that 58 percent of respondents reported that it was not easy finding time for online studies, 4 percent were undecided while only 38 percent indicated that they found time to study online. It can be deduced that not so many e-learning students find study time; this may be reflected in their performance.

4.5: Impact of Prior Computer Skills on Performance

This section presents the impact of computer skills on academic performance of students on e-learning mode of study.

4.5.1 Anxiety while using computers

Figure 4.8 is a presentation of the findings on whether students were anxious while using computers

Figure: 4.8 Anxiety while using computers
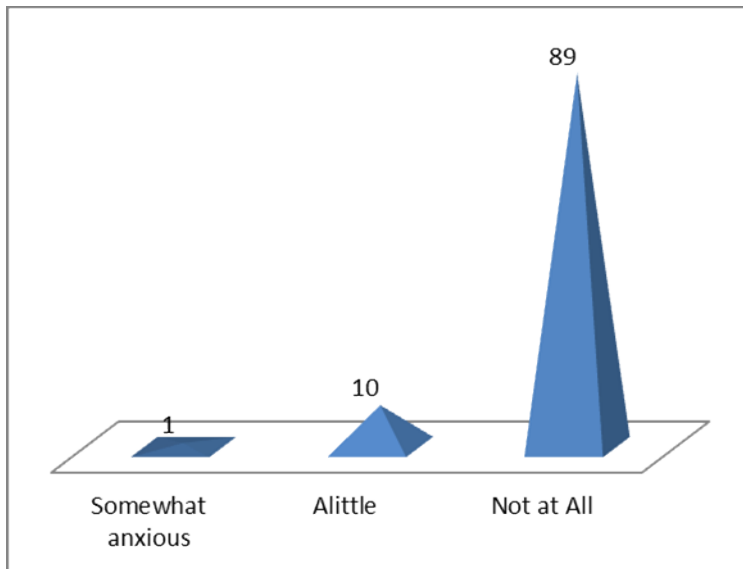
The study sought to establish whether the students were anxious while using computers, Figure 4.8 reveal that 1 percent of the respondents indicated that they were somewhat anxious, 10 percent of the respondents were found to be a little anxious, the majority 89 percent however indicated that they were never anxious while using computers. The findings as indicated in the figure below reflect that majority of the students had prior computer skills and hence did not exhibit any form of anxiety while using the computers.

Anxious students may not be comfortable using computers and hence are likely to perform dismally.

4.5.2 Impact of Anxiety on Academic Performance

Figure 4.9 shows the findings on whether anxiety while using computers had an impact on the participants' academic performance

Figure: 4.9 Impact of anxiety on academic performance
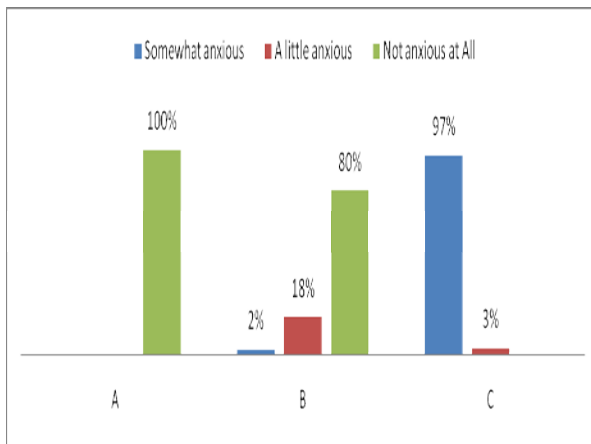
The study sought to establish the impact of anxiety while using computers on academic performance. Figure 4.9 reveal that 100 percent of students who scored an average of A in their courses indicated that they were never anxious while using computers, majority (80 percent) that scored an average of B were never anxious, 18 percent who scored B were a little anxious, majority (97 percent) who scored an average of C were somewhat anxious. The result indicate that the level of anxiety in using computers among the students on e-learning program influenced the overall performance of the students. It can

therefore be concluded that prior computer skills which reduces the level of anxiety is an indicator of a student's performance.

4.5.3 Dramatization of Computer Situation in Mind

Figure 4.10 is a presentation of the findings on whether the participants in this study dramatized computer situations in their mind

Figure: 4.10 Dramatization of computer situation in mind
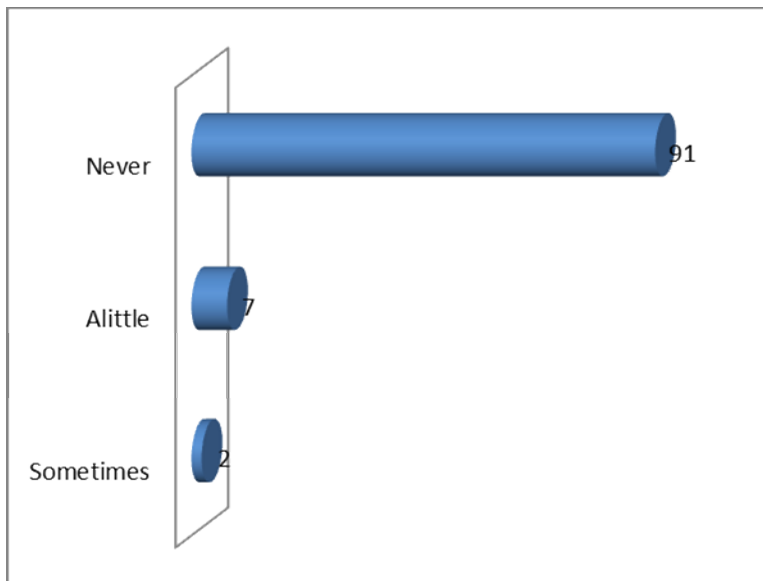
The study sought to establish whether students dramatized computer situation in their mind even when not using computers. This was intended to know whether the students had prior computer skill or not. Figure 4.10 reveal that 2 percent and 7 percent of the respondents indicated they sometimes, and occasionally respectively dramatized computer situations in their mind, 91 percent of the respondents never dramatized

computer situations in their mind, this indicate that the majority were comfortable with computers reflecting that they had previously used computers.

4.5.4 Difficulty in Using Computers
Figure 4.11 is a presentation on the findings on whether the participants in this study had difficulty in using computers

Figure: 4.11 Difficulty in using computers
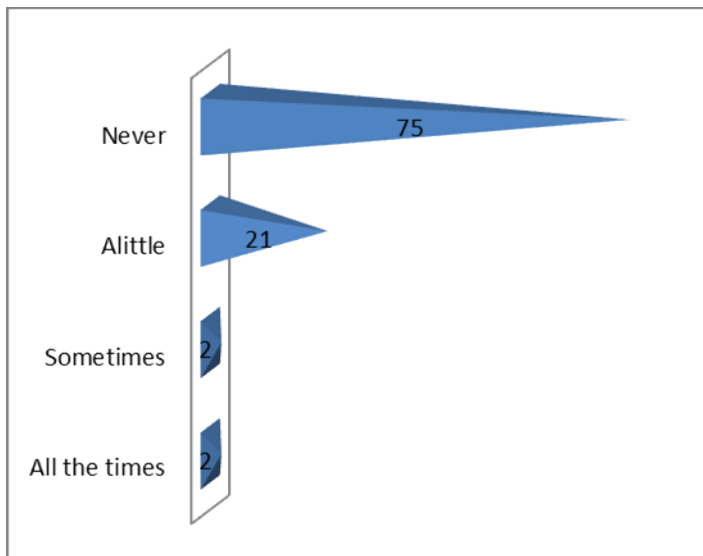
In the bid to measure prior computer skills, the study sought to establish whether the respondents had any difficulty in using computers; Figure 4.11 reveal that 2 percent of the respondents indicated they had difficulty in using computers all the time, a similar percentage indicated they sometime had difficulty in using computers. It was noted that 21 percent of the respondents indicated they had a little difficulty using computers. The majority (75 percent) of the respondents as shown in the diagram above indicated that they never experience any difficulty using computers.

4.5.5 Comparison between Difficulty in Using Computer and Average College Score

Figure 4.12 is a presentation of the findings on the comparison between average performance and difficulty in using computers

Figure: 4.1 Difficulty in using computer and average college score
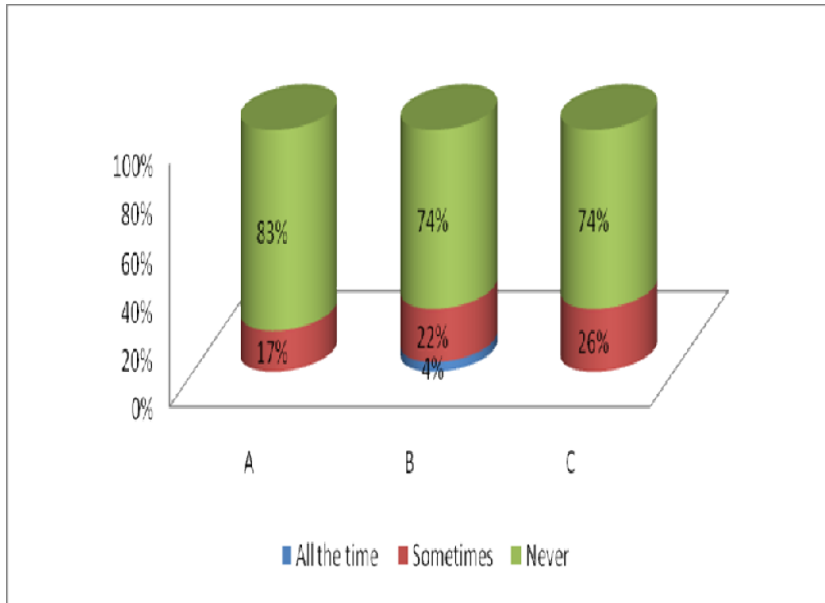
The study sought to establish the impact of difficulty in using computers on average college score. Figure 4.12 reveal that majority (83 percent) of students who scored an aggregate of A in their studies never experienced difficulty in using computers, only 17 percent who scored A had difficulty in using computers. The majority (74 percent) of those who scored B had no difficulty using computers, 22 percent who scored B sometimes had difficulty using computers while 4 percent who scored B had difficulty using computers. It was noted that 74 percent of those who scored C on average had no difficulty using computers, 26 percent sometimes had difficulty using computers. It can be deduced that the more the difficulty in using the computer the higher the chances of

performing poorly in academic performance. One is likely to have difficulty using computers when they have no prior skills in computers. It can be concluded that prior computer skill has a positive impact on academic performance for students on e-learning program.

4.5.6 Action in Case of Computer Complication

Figure 4.13 is a presentation of the findings on what the respondents' do incase of computer complication

Figure: 4.13 Action in case of computer complication
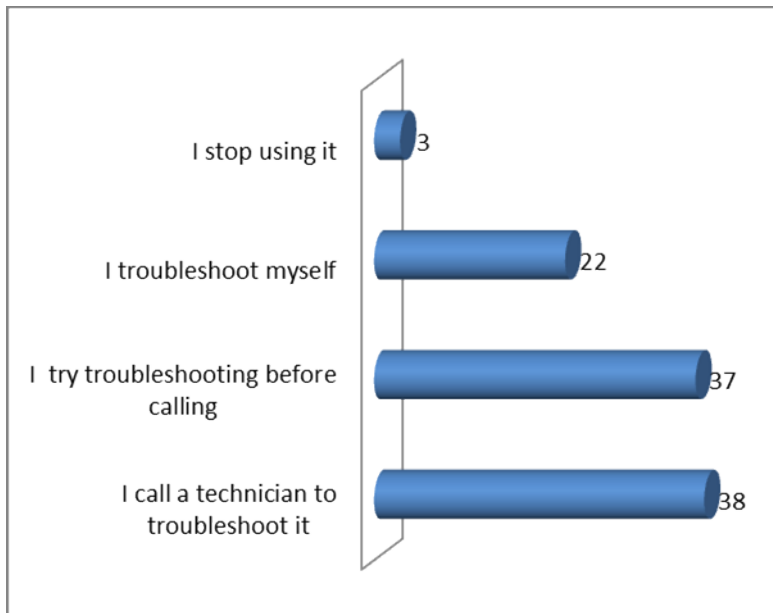
The study sought to establish the actions the students took in case of computer breakdown, figure 4.13 above reveal that 38 percent, 37 percent, 22 percent and 3 percent of the respondents indicated that incase of computer breakdown they would call a technician to troubleshoot, try to troubleshoot before calling a technician, troubleshoot

themselves and stop using the computer respectively. This shows that about 50 percent had skills of troubleshooting a strong indication of prior computer skills.

4.6 Inferential Analysis

The section below presents coefficient of correlation, coefficient of determination, ANOVA and regression coefficient. Coefficient of correlation shows the relationship between the dependent variable and the independent variables, coefficient of determination shows the contribution of independent variables to the dependent variable, ANOVA tests the significance of the regression model while the regression coefficient shows the effect of unit increase independent variable to the independent variable.

4.6.1 Coefficient of Correlation

To compute the correlation (strength) between the study variables and their findings the study used the Karl Pearson's coefficient of correlation (r). The findings as shown in Table 4.1 below revealed that there was a positive correlation between academic performance and hours spent online as shown by a correlation figure of 0.557, even though the correlation is positive, the relationship between academic performance and hours spent online is not significant. It was also clear that there was a positive correlation between academic performance and gender with a correlation figure of 0.512, even though the correlation is positive, the relationship between academic performance and gender is not significant. It was also revealed that there was a positive correlation between academic performance and location of setting with a correlation figure of 0.52, likewise even though the correlation is positive, the relationship between academic performance and location setting is not significant. Finally, a positive correlation between academic performance and subject with a correlation value of 0.538 was realized. Even

though the correlation is positive, the relationship between academic performance and subject is not significant. This shows that there was a moderate correlation between academic performance and hours spent online, gender, location setting and subject. The lack of significance in the individual relationships could be due to interactive effects with the other variables.

Table 4.3 Coefficient of Correlation

		Academic Performance	Hours spent online	Gender	Location setting	Subject
Academic Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
Hours spent online	Pearson Correlation	0.557	1			
	Sig. (2-tailed)	0.3079				
Gender	Pearson Correlation	0.512	.320	1		
	Sig. (2-tailed)	0.1855	0.0194			
Location setting	Pearson Correlation	0.520	0.1846	0.1107	1	
	Sig. (2-tailed)	0.0023	0.1857	0.4300		
Subject	Pearson Correlation	0.538	0.0072	0.2335	0.1027	1
	Sig. (2-tailed)	0.0422	0.9591	0.0925	0.4642	

4.6.2 Coefficient of Determination

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of

variation in the dependent variable (academic performance) that is explained by all the five independent variables (hours spent online, gender, location setting and subject).

From the findings, 54.5 percent academic performance is attributed to combination of the four independent factors (hours spent online, gender, location setting and subject) investigated in this study. A further 45.5 percent academic performance is attributed to other factors not investigated in this study. Therefore, there is a dare need for further research that should be conducted to investigate the other factors (45.5 percent) that contribute to the academic performance.

Table 4.4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.738	0.545	0.214	0.160

4.6.3 ANOVA

In trying to establish significance of the model the study employed ANOVA. From table 4.3 the significance value is 0.009 which is less that 0.05 thus the model is statistically significance in predicting how hours spent online, gender, location setting and subject impact to academic performance. The F critical at 5 percent level of significance was 2.70. Since F calculated is greater than the F critical (value = 9.793), this shows that the overall model was significant.

4.6.4 Regression Coefficient

Table 4.5: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.624	4	3.156	9.793	.009
	Residual	30.616	95	.322		
	Total	43.240	99			

a. Predictors: (Constant), Action in-case of computer complication, Difficulty in using computers, Study hours in a day, Mode of study

b. Dependent Variable: Average score for college courses

Multiple regression analysis was conducted as to determine the relationship between academic performance and the four variables. As per the SPSS generated table 4.4 the equation

$(Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon)$ becomes:

$Y = 1.180 + 0.0498 + 0.017 X_2 + 0.3209 X_3 + 0.2527 X_4$

The regression equation above has established that taking all factors into account (hours spent online, gender, location setting and subject) constant at zero, academic performance will be 1.180. The findings presented also shows that taking all other independent variables at zero, a unit increase in hours spent online will lead to a 0.0498 increase in academic performance; a unit increase in gender will lead to a 0.017 increase in academic performance; a unit increase in location setting will lead to a 0.3209 increase in academic performance and a unit increase in subject will lead to a 0.2527 increase in academic

performance. This infers that location setting contribute most to academic performance followed by subject then hours spent online while gender contributed the least to academic performance.

Table 4.6: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.180	0.3303		0.5449	0.5881
Hours spent online	0.541	0.1530	0.0498	0.3731	0.0201
Gender	0.507	0.1658	0.0170	0.1210	0.0262
Location setting	0.518	0.1502	0.3209	2.4461	0.0252
Subject	0.528	0.1398	0.2527	1.9406	0.0223

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECCOMENDATIONS

5.1 Introduction

This chapter summarizes the whole research process. A brief summary of the whole study is given. It also provides a summary of the main findings of the study, conclusions of the study, recommendations and suggestions for further research.

5.2 Summary of Findings

The majority of the respondents in this study were male (52 percent), indicating that more male than female are admitted in higher learning institutions. The findings of the study show that majority of students (47 percent) have never been married and are in the conventional learning system, on the other hand 46 percent of students on e-learning program are married. The findings also show that 19 percent of the respondents had between 1 – 2 children, 22 percent had between 3 – 5 children, while the majority 58 percent had between 5 – 9 children.

On comparison, students on conventional learning mode performed highly as compared to those on e-learning, of the students who scored A's, 83 percent were on the conventional learning system, those on e-learning program was only 17 percent of the total A's scored. Conversely, majority of the students who scored C's were those on e-learning (74 percent) mode of study.

It was revealed that gender was a factor that influenced the number of hours the respondents studied. Majority (52 percent) of those who studied for 5- 9 hours were male while the majority (50 percent) of those who studied for 3 – 5 hours were female. It was revealed that male who studied for 3 – 5 hours were only 14 percent of the population.

On comparing the study hours students under e-learning and those on–school program spent studying per day, it was found that majority of 44 percent of the student on e-learning mode studied for less than 2 hours a day while the majority (74 percent) of those under the conventional learning program spent between 5 – 9 hours studying a day. It was further revealed that study hours per day significantly influence the academic performance of students, students who spent between 5 – 9 hours a day accounted for 83 percent of the total A's scored.

To measure the impact of prior computer skills on academic performance, the study sought to know whether the students were anxious while using computers, 1 percent of the respondents indicated that they were somewhat anxious, 10 percent of the respondents were found to be a little anxious, the majority 89 percent however indicated that they were never anxious while using computers. As for the extent of anxiety, only 2 percent of the respondents indicated that they are somewhat anxious, however 10 respondents are a little anxious whereby out of this 10, 9 scored an average score of B representing 9 percent of the total respondent who are a little anxious the remaining respondents scored an average score of C, hence all the 12 respondents who scored an average score of A are not anxious at all, and 40 and 37 respondents who are not anxious

at all scored an average score of B and C respectively. The findings can be deduced to mean that the more anxious a student gets while using computers the higher the chances of not performing well for the students on e-learning mode.

The study sought to know whether students dramatized computer situation in their mind even when not using computers. This was intended to know whether the students had prior computer skill or not. Two percent and 7 percent of the respondents indicated they sometimes, and occasionally respectively dramatized computer situations in their mind, 91 percent of the respondents never dramatized computer situations in their mind, this indicate that the majority were comfortable with computers reflecting that they had previously used computers.

Further the study sought to know whether the respondents had any difficulty in using computers, two percent of the respondents indicated they had difficulty in using computers all the time, a similar percentage indicated they sometime had difficulty in using computers. Twenty one percent of the respondents indicated that they had a little difficulty using computers. The majority (75 percent) of the respondents indicated that they never experience any difficulty using computers.

Majority of respondents never find it difficult using a computer giving a total count of 75 of the respondents which gives a percentage of 75 percent of the respondent, however breaking this down to the average score, 37 percent respondents scored B's 28 percent scored C's and 10 percent scored A's. out of the total of 100 respondents, 21 responded

representing 21 percent of the total number of respondents found it a little difficult using computers breaking this down to scores we find that 22 percent scored B's 21 percent scored C's and 2 percent scored A's.

5.3 Conclusion

This short study highlights the impact of electronic learning on academic performance of students. Many students are not well prepared to take the challenge of studying through e-learning, because of the unexpected complexities of the application of IT as a learning tool that requires commitment as there is no strict rules on the learning times.

The perception is that the world has become smaller as a result of the immense progress made in the field of information and communication technologies. IT is accessible to all across the continents and the oceans through the satellites, cables, and other such devices that have made man more independent and have increased his mobility by making distances shorter and communication faster.

As the analysis of data gathered on a small sample of a hundred people, has shown that, there are still many issues that need to be closely considered before we can safely state that e-learning and other related learning methods have contributed to the enhancement of the performance of students at the higher levels of our education system, irrespective of individual differences due to heredity and/or environment. It can be confidently said that there is still a long way to go before we can make the whole world harvest the benefits from the progress of science and technology.

5.4 Recommendations for Further Reading

This research elicited and examined a number of extreme points of views about the impact of E-learning on academic achievement. Although it was discovered that certain issues have not yet been properly addressed to E-Learning implementation processes, as the prime focus of the research was on prior computer skills, number of hours individual spend studying and socio-demographic characteristics. The following are the recommendations of this study:

    i. Critical factors such as institutional issue, management issue, pedagogical factors, technological issue, interface design issue, evaluation issue, and resource support issue and the factors within each issue have not yet been investigated with detail coverage.

   ii. The need to carry out detail research involving case studies based on survey questionnaires involving various learning institutions which will ultimately give a better understanding of impact of e-learning aspects within implementation process.

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APPENDIX 1: QUESTIONNAIRE

Socio-Demographic Characteristics

1. What is your gender?

○ Female

○ Male

2. Which category below includes your age?

○ 17 or younger

○ 18-20

○ 21-29

○ 30-39

○ 40-49

○ 50-59

○ 60 or older

3. Which of the following categories best describes your employment status?

○ Employed, working 1-39 hours per week

○ Employed, working 40 or more hours per week

○ Not employed, looking for work

◉ Not employed, NOT looking for work

○ Retired

○ Disabled, not able to work

4. Marital status

   ○ Married

   ○ Widowed

   ○ Divorced

   ○ Separated

   ○ Never married

5. Do you have a family?

   ◉ Yes

   ○ No

6. How many children do you have?

   ○ A.   1 - 2

   ○ B.   3 - 5

   ○ C.   5 - 9

   ○ D.   10 and above

7. Do you have difficulty understanding concepts?

   ○ A.   Yes

   ○ B.   No

8. Do you have any physical deformations that make it difficult to use computers?

   ○ Yes

   ○ No

9. What is your mode of study?

○   Online

◉   On-Campus

10. What is your average score for your college courses?

○   A

○   B

○   C

○   D

○   E

11. It is easy for me to keep up with the reading required for my on-line courses

○   Strongly disagree

○   Disagree

○   Neither agree nor disagree

○   Agree

○   Strongly agree

Time Management

12. It is easy for me to find time to complete my on-line courses

○   Strongly disagree

○   Disagree

○   Neither agree nor disagree

○   Agree

○   Strongly agree

13. How many hours in a day do you do your studies on the computer?

○   A.   1 – 2 Hours

○   B.   3 - 5 Hours

○   C.   5 – 9 Hours

14. Do you study with your group members?

○   A.   Yes

○   B.   No

15. How many times in a week?

○   1 – 2 Times

○   3 - 5 Times

○   5 – 9 Times

16. Do you enjoy studying online?

○   Yes

○   No

Prior computer skills

17. Do you feel anxious when you think of computers?

○ Yes

○ No

18. If Yes, above, how anxious do you feel when you think about computers?

○ Extremely anxious

○ Very anxious

○ Somewhat anxious

○ A little

○ Not at All

19. Here, give your first, instinctive answer to the question:
Out of 10 how serious is your computer phobia?

○ 9 or 10

○ 7 or 8

○ 5 or 6

○ 3 or 4

○ 1 or 2

20. Do you dramatize situations involving computers in your mind... Do you see pictures or movies, or hear self-talk or other dialog in your mind?

○ All the time

○ Sometimes

○ A little

○ Never

21. Do you find difficulty using computers?

○ All the time

○ Sometimes

○ A little

○ Never

22. Does the use of computers scare you?

○ Yes,

○ Sometimes

○ A little

○ Never

23. When the computer develops complications what do you do?

○ I call a technician to troubleshoot it

○ I try troubleshooting before calling a technician

○ I troubleshoot it myself

○ I stop using it

24. It is easy for me to complete on-line courses with my level of computer skills

○ Strongly disagree

○ Disagree

○ Neither agree nor disagree

○ Agree

○ Strongly agree

APPENDIX 2: TIME FRAME

The time for data collection is based on the assumption that 100 respondents would be conducted including the pre- testing group and that each would need half an hour and that traveling and searching for them will take 1.5 hours. For 100 respondents this works to 200 hours which is equivalent to 25 days assuming an 8 hour working day or 4 respondents per day, thus the following table is a summary of the time frame.

Activity	July	Aug	Sept	Oct	Nov
Proposal writing and defense	███	███	███		
Data collection			███		
Data sorting, analysis and compilation			███	███	
Report writing and defense				███	
Corrections				███	███
Preparation for graduation					███