



**STUDENTS SATISFACTION OF E-LEARNING METHODOLOGY
CASE OF RWAMAGANA SCHOOL OF NURSING AND MIDWIFERY**

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By

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DECLARATION

I do hereby declare that this thesis submitted in fulfillment of the Requirements for the Master of Science degree in Health Informatics at the University of Rwanda, is my original work and has not been previously submitted elsewhere. I do declare that a complete list of references is provided indicating all the resources of information quoted or cited

HARELIMANA INGABIRE ELIANE

DEDICATION

To Almighty GOD who create, guide and help me to accomplish this work

To my beloved family for your usual support

ACKNOWLEDGEMENT

I express my deep gratitude to the UR's administration and post graduate directorate for their support.

My heart left thankful goes to my supervisor Dr Santhi KUMARAN who despite her responsibilities committed with energy and her time to accomplish this work. Her great helps, encouragement, advices and support helped me to elaborate this work.

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ABSTRACT

Background

There have been three levels of training for nurses in Rwanda—A2, A1, and A0. A2 level nurses were trained to the secondary school level. A1 nurses possess an advanced certificate in nursing obtained after three years of nursing school. A0 nurses possess a bachelor's degree. Rwanda's revised nursing norms call for widespread efforts to upgrade A2 nurses to the A1 level. The overwhelming majority of nurses are A2. Currently, A1 nurses represent less than 10% of the total pool of nurses. A2 nurses are relatively evenly spread throughout the country, in order to bring up the number of qualified nurses and midwives for the government of Rwanda through ministry of health e-learning programme. The objective of the MoH when introducing e-learning in schools of nursing and midwifery was to improve nurses and midwives' competences using the modern methods of teaching and learning. The quality of nursing and midwifery health services are promoted in Rwanda and to equip different health settings with well trained and qualified nurses and midwives and those nurses will contribute to the reduction of infant and maternal mortality rate as referred to MDG # 4 & 5 hence improving the quality of care

Objective

The objective of this study was to assess the extent to which students are satisfied by e-learning methodologies as an active teaching and learning process.

Methodology

This study was conducted at Rwamagana School of nursing and midwifery located in Rwamagana district eastern province. The study was conducted on a total number of 100 students. It used quantitative cross sectional study design and the data was analyzed using SPSS computer program.

Results

The results of this study showed that 64% of students at Rwamagana school of nursing and midwifery are satisfied with the e-learning teaching methodology.

Recommendations

It was recommended to organizer computer training for students and teachers and to gather all necessary efforts so that the e-learning platform can be reusable again.

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LIST OF SYMBOLS AND ABBREVIATIONS/ ACRONYMS

ICT : Information communication technology

MOH : Minisrty of Health

RSNM : Rwamagana School of Nurses and Midwifery

MOE : Ministry of Education

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CHAPTER 1. INTRODUCTION

1.1 DEFINITION OF KEY TERMS

E-teaching: is a process which Involves the use of electronic instructional materials in both face-to-face and virtual classroom situations, and often nurtures interaction with information, materials, and ideas (Frehywot et al. 2013).

Blended learning is a teaching process that mix different learning environments and approaches that often includes both face-to- face classroom methods and computer mediated activities in and/or outside the classroom (Frehywot et al. 2013).

Distance education / Distance learning / Distributed learning is a field of education that focuses on teaching methods and technology for students who are not physically present in a traditional educational setting such as a classroom. Blended learning and pure e-learning can be thought of as examples of distance education. Distributed learning, although it tends to be used interchangeably, implies a more learner centered approach to the design of instruction (Frehywot et al. 2013).

Video Teleconferencing (VTC) is a way to engage people at different locations in synchronous interaction. VTC includes video and audio feeds streaming in real time. Virtual classrooms can be conducted using VTC tools that allow for live teacher instruction and feedback via audio/video interactions, whiteboard sharing, polling and breakout sessions (Frehywot et al. 2013)

E-learning process: is defined as use of instructional material presented by means of a computer or computer system to enhance instruction and facilitate interactive learning (Frehywot et al. 2013).

Computer literacy is difined as an understanding of the concepts, terminology and operations that relate to general computer use(Button et al. 2013).

Student satisfaction: is defined as the sum of a student's behavioral beliefs and attitudes that result from aggregating all the benefits that a student receives from using the blended system (Sinclair 2010)

In this research the student satisfaction is defined as a sum of student's behavioral beliefs and attitudes that result from their perception of the e-learning environment.

The determinant of student's satisfaction in this study are infrastructure used in e-learning (computer labs, computers, Televisions internet connection, electricity and e-learning equipment), e-learning delivering mode(sound, image, course content and instructor performance) and the ability of student to use ICT facilities,

1.2. BACKGROUND TO THE STUDY

Worldwide, having qualified and very well trained nurses is a priority because this will contribute to the improvement of the quality of care and well being of the population. A report published by WHO shows that the ratio of nurses and midwives per population is one quota in the ideal situation and this is not achieved even in developed countries (Duffield & O'Brien-Pallas 2003). The shortage of nurses and midwives are even observed in developing countries. The statistics continue to be worse when we come to African countries (Koch 2014). To address the issue of shortage of nurses different countries have adopted several strategies and e-learning methodology were identified as a strategy to train more nurses in rural areas. , E-learning has been identified as a flexible education and reach remote students (Ali 2011)

Shortage of nurses and midwives in Rwanda is at a ratio of 1/1291 and the government of Rwanda has a target to reduce that up to 1/1000 in 2015 (MOH 2011). In order to reach that target, the government of Rwanda through ministry of health has started an education program in 5 schools of nursing to increase the number of nurses and midwives (MOH 2011).

Historically, there have been three levels of training for nurses in Rwanda—A2, A1, and A0. A2 level nurses are trained to the secondary school level. A1 nurses possess an advanced certificate in nursing obtained after three years of nursing school. A0 nurses possess a bachelor's degree. Rwanda's revised nursing norms call for widespread efforts to upgrade A2 nurses to the A1 level. The overwhelming majority of nurses are A2. Currently, A1 nurses represent less than 10% of the total pool of nurses. A2 nurses are relatively evenly spread throughout the country, though there are still disparities between districts, with a number of under-served districts in the South, West and Northern Provinces. On average there is about 1 nurse for a population of 1,500.(MOH 2012). If those A2 nurses are going to leave their work place for studies, they won't have replacement and the quality of care will continue to be lower than why the MoH decide to introduce the program of e-learning.

The objective of the MoH when introducing the e-learning in schools of nursing and midwifery was to improve nurses' and midwives' competences using the modern methods of teaching and learning so that the quality of nursing and midwifery health services are promoted in Rwanda and to equip different health settings with well trained & qualified nurses and midwives and nurses to contribute to the reduction of infant and maternal mortality rate as reverred to MDG # 4 & 5 so as to improve the quality of care

In Rwanda the use of ICT is very high nowadays in such a way that every discipline is using technology (MINEDUC 2008). The advance of science and technology has brought about significant diversity in education as well as in teaching methodology; these can be seen by the introduction of one laptop per child project in primary school, they are encouraging students to start using technology at a low age so that they become familial as they are growing up. It is not only in primary schools where the use of technology is seen but also in secondary school and high learning institutions (Kanyesigye, 2013). When we say use of technology and introduction to ICT we do not mean only learning of how to use a computer or internet but also how to use technology in teaching and learning. Emerging technologies have made education more productive and more customized, have given instruction a more scientific basis and have made it more powerful. E-learning involves an alternative way to provide education (Han & Umani 2012). E-learning includes many components that are familiar from traditional learning, such as: presentation of ideas by the students, group discussions, arguments and many other forms of conveying information and accumulating knowledge (Rashty 1995). The traditional teaching-learning approach focuses on face to face meetings and total organizational control over the process .Technologies have made education more productive and more individual have given instruction a more scientific basis and have made it more powerful. Learning is more immediate and access is more equal . Learning should not stop at the end of class, classroom will continue to serve a critical function in any learning strategy. It provides a place where students, teachers can interact, experiment, collaborate and create (Al-hassan 1998).

At Rwamagana School of Nursing and Midwives, in their program of E-learning, face to face constitute 40% where by all students are required to come to school for 2 weeks and have lectures and at the end of that period they are given assignments to go and do in off campus time which represents 60% of the total time of the module. During this time a student is asked to do

his or her assignments and submit, to contact the lectures or discuss with other students using internet via a platform called moodle, which is designed in English.

A study done in Pakistan shows that there are obstacles which e-learning program can face which includes more time for attending class and completing assignments than any traditional classroom course (Ali 2011). This means that students have to be highly motivated and responsible because all the work they do is on their own. Learners with no motivation or bad study habits may fall behind, It also needs to have good writing and communication skills because when instructors and other learners do not meet face to face, it is possible to misinterpret what was meant, It is difficult to manage computer files and on line-learning software, For learners with beginner-level computer skills it can sometimes seem complex to keep their computer files Organized Without good computer organizational skills, learners may lose or misplace reports causing to be late in submitting assignments Some of the students also may have trouble installing software that is required for the class (Han & Umani 2012).

Health care education is an important component, with exposure to patients in clinical settings creating an environment for clinical practice that cannot be replicated in a classroom (Baldry-Currens et al. 2000). However, clinical practice is also challenging as the healthcare practitioner must review and re-prioritize poorly defined clinical problems in an enterprise of active interpretation during the management of the patient (Rowe et al. 2012).

In the small number of studies that looked at the development of students' clinical competencies as a result of implementing e-learning strategy, there were clear improvements. These did not always manifest in better grades but did address clinical competencies that were highlighted as being important for the development of practice knowledge, including improved reflective skills and clinical competencies, clinical reasoning and bridging of the gap between theory and practice (Rowe et al. 2012). The combination of face to face or ordinary teaching method and e-learning teaching method known as blended learning seems to be better and provide a practical benefit in clinical education among healthcare students (Rowe et al. 2012).

1.3. PROBLEM STATEMENT

In order to achieve the Millennium Development Goals (MDGs), Rwanda health sector put in place some target such as reducing by two third , by 2015, the under-five mortality rate enhance immunisation services, to combat diarrhoea through Oral re-hydration therapy (ORT), provide early treatment for killing diseases such as malaria and childhood pneumonia , reducing by three quarters the maternal mortality ratio and contribute to the national efforts to halt the spread of HIV and AIDS by 2015. This can not be achieved without having enough qualified health workers. The MoH to overcome the shortage of qualified health workers, especially those in rural areas, put in place an e-learning program; the objective was to help a considerable number of nurses A2 to upgrade to A1 and give to them knowledge and competences so that they can be able to improve quality of health care to reach the MDGs. Another reason was the shortage of qualified health instructors which will be answered through e-learning program due to the fact that a small number can teach a big number via technology in education .

This study will look at the student satisfaction towards e-learning methodology to see the successfulness of the program at RNMS. Since it is even not known whether RSNM students are satisfied with e learning or not as there is no any published information with regards to satisfaction with e learning methodology in Rwanda.

1.4. OBJECTIVES OF THE STUDY

MAIN OBJECTIVE

The purpose of this study is to assess the extent to which students are satisfied with e-learning methodologies as an active teaching and learning process.

SPECIFIC OBJECTIVES

1. To describe students satisfaction on used e-learning infrastructure (computer labs, computers, , internet connection, electricity and e-learning equipment) at RSNM
2. To describe students' satisfaction on e-learning teaching delivery (sound, image, course content and instructor performance) at RSNM
3. To identify factors associated with e-learning students' satisfaction at RSNM

1.5. RESEARCH QUESTION

Are the students of RSNM satisfied on the e-learning delivering mode and e- learning infrastructures if so what are the factors which contribute to student satisfaction?

1.6. SIGNIFICANCE OF THE STUDY

Introduction of e-learning program by the MoH in Rwanda have the objective of helping a good number of nurses A2, especial those who are working in rural areas to upgrade to the level of A1 without leaving their working place, so that they can continue working and gaining knowledge and competences to provide and improve the quality of care. Effective e-learning program ensure active participation of both student and teachers, it assure that student and teaches are equipped to the extent that teaching and learning process is effective. And this cannot be achieved without student satisfaction in terms of available e-learning teaching facilities, how courses are being delivered and the ability of student at RNMS to use ICT facilities. the satisfaction of student will contribute to the improvement of the program, therefore this study will provide information regarding students satisfaction towards e-learning program at RNMS, and the results will help the U-R/ CMHS School of nursing to know its effectiveness towards improvement of quality of education and hence the quality of health care.

1.7. SUBDIVISION OF THE PROJECT

This project is divided into 6 Main chapters which are: Introduction, Literature review, Methodology and Annexes ,Result presentation, Discussion of the results and Conclusion and recommendations

CHAPTER 2. LITTERATURE REVIEW

2.1. DEFINITION

E-learning is also called Web-based learning, online learning, distributed learning, computer-assisted instruction, or Internet-based learning (Blake et al. 2013) Historically, there have been two common e-learning modes: distance learning and computer assisted instruction.(Blake et al. 2013) Distance learning uses information technologies to deliver instruction to learners who are at remote locations from a central site (Button et al. 2013). Computer assisted instruction (also called computer-based learning and computer based training) uses computers to aid in the delivery of stand-alone multimedia packages for learning and teaching. These two modes are subsumed under e-learning as the Internet becomes the integrating technology (Ruiz et al. 2006).

2.2. E-LEARNING INFRASTRUCTURES

E - Learning is described as a method of receiving or sending an instructional materials or message through electronics means (Elango et al. 2001). In order wards, it means delivery of teaching and learning through the use of electronic media. E–Learning is also a method of accessing academic or non -academic messages through the use of multimedia technologies such as tape, CD- Rom, radio, internet, intranet etc (Allison & Allison 2014). e-learning may involve the use of some, nor all, of the following technologies: desktop and laptop computers software, including assistive software, interactive white boards, digital cameras, mobile and wireless tools, including mobile phones, electronic communication tools, including email, discussion boards, chat facilities and video conferencing, Virtual Learning Environments (VLEs), learning activity management systems (Allison & Allison 2014). E-Learning can cover a spectrum of activities from supporting learning, to blended learning (the combination of traditional and e-learning practices), to learning that is delivered entirely online (Elango et al. 2001). Whatever the technology, however, learning is the vital element. e-Learning is no longer simply associated with distance or remote learning, but forms part of a conscious choice of the best and most appropriate ways of promoting effective learning (Pedró 2005).

Having this equipment and software will help the e-learning program to become:

Wide opportunities where e – Learning could always affords opportunities especially where it concern the syllabus and curriculum content, to provides opportunities for learning beyond the

classroom. With e – learning one can learn from the comfort of his/her bedroom, market, and workplace (Mcveigh 2009).

Affordability where e- Learning affords the learners a very good convenient way of making payments. You can spend little money in buying instructional materials like tape, CD-Rom and flash drive (Mcveigh 2009).

Flexibility where the flexibility of e – learning is one of the most important aspect in the sense that you can learn any place, anywhere in respect of location, time. That is why they call it virtual classroom (Mcveigh 2009).

Users interaction where the interactive nature of the e – learning parameter makes the assessment more independent in nature. One can sit down in the comfort of his room and follow his audio tutor and write his exams. You don't need a lecturer to guide you because your online tutor will guide you anytime and anywhere (Mcveigh 2009).

Encouragement where in e – learning platform, there are a lot of tools that can support the learner. Example: the online tutor is always there to assist if you follow the instruction.

Uniform Learning where e- Learning platforms encourage uniformity in learning.

Every tutorial given will be exactly the same in every centre (Mcveigh 2009).

Big Classes where it is easier to manage many students in an e- learning classes compared to normal classroom platform.

Development of professional students where Professional development of learners is easily guaranteed through e – Learning platform (Allison & Allison 2014).

Availability of the equipment and the advantages it offer can contribute to the students satisfaction towards the program of e-learning.

E-learning ability is also reliant on access and availability of the technology. A wider access to educational opportunities using e-learning highlights obvious inequalities for students unable to afford a computer (Nurse et al. 2007). Moreover continual and rapid changes in the technology with increasingly sophisticated equipment and software also impacts on accessibility, the implications of which can be reflected in financial costs, time management, student frustration and motivation (Olmsted & Ph 2008). The cost implication also impacts on educational establishments in terms of keeping up to date with the technology to support e-learning. Increasing use of e-learning may lead to inequalities in education and the potential for the

development of a two tier system where students without access to the Internet or whose lecturer chooses not to utilize e-learning methods are disadvantaged (Mcveigh 2009).

2.3 E-LEARNING TEACHING DELIVERY

Effective e-learning is dependent on the level of computer literacy (Sinclair 2010). The use of computer technology has become established within society, evidence indicates that there is significant variance in levels of computer literacy and skill much has been promised about the potential of technology to revolutionize learning, with benefits identified in six key dimensions: (Arabasz 2003).

Connectivity – access to information is available on a global scale,

Flexibility – learning can take place any time, any place

Interactivity – assessment of learning can be immediate and autonomous

Collaboration – use of discussion tools can support collaborative learning beyond the classroom

Extended opportunities – e-content can reinforce and extend classroom-based learning

Motivation – multimedia resources can make learning fun in addition, there are benefits to practitioners in the increased efficiency of tracking and monitoring learners' progress (Arabasz 2003). Yet despite these potential benefits, e-learning is still not uniformly adopted across the sectors, or even within individual institutions (Arabasz 2003). Making the move towards new technologies presents practitioners with a complex set of challenges, they may need to develop new skills, embrace changes in the nature of their role and then reassess the pedagogies they employ (Nurse et al. 2007).

2.4 ABILITY TO USE ICT FACILITIES

Common perspectives that influencing e-learning are Levels of computer literacy and skill, Computer accessibility and availability and time and flexibility.

Computer literacy and skills

Effective e-learning is dependent on the level of computer literacy. Many studies note that Computer illiteracy, associated anxiety, lack of confidence and a lack of knowledge in using the Web are key factors associated with computer avoidance and barriers to learning (Mcveigh 2009). Age and gender were all cited as possible causal links. Gender variance indicating women

were less likely to use computers particularly in relation to levels of assertiveness, resistance to computer based methods. The issue of gender preference in adoption of e-learning is clearly significant to a profession which proportionally employs predominantly female personnel (Radovi 2010). The age influenced computer usage because functional capability might be adversely affected by the number of years since formal education. Although a lack of confidence may often be replaced by positive enthusiasm following initial experience of e-learning (Roach & Lemasters 2006).

The benefits of computer usage can be seen in increased access to and use of research-based evidence, improved comprehension of information and subsequent empowerment of students' evidence supports suggestions that students who are comfortable with technology may learn more efficiently and effectively; nevertheless this is linked to effective self-directed capability which will be variable for individual students (Roach & Lemasters 2006). Increased individual responsibility is also reliant on levels of confidence and motivation to learn. It is suggests that the clinical focus of nurse education may be incongruent with these self-directed concepts (Mcveigh 2009).

Time and flexibility

The flexibility of e-learning revealed some disparity of opinion. The advantages of studying at self-directed pace, the place and for the amount or time students want are advocated as favourable motivators in support of e-learning. Learners' concerns frequently concentrate on time management and specifically a perceived increase in the amount of time needed for e-learning (Mcveigh 2009). Time spent in excess of that expected was a factor cited as adversely affecting dropout rates on courses. There is potential incompatibility of convenience versus self-discipline, where competition for computer access conflicts with elements such as family members, telephone line connection and work priorities (Hoadley 2010).

Accessibility and availability

E-learning ability is also reliant on access and availability of the technology. A wider access to educational opportunities using e-learning highlights obvious inequalities for students unable to afford a computer.(Mcveigh 2009) Moreover continual and rapid changes in the technology with increasingly sophisticated equipment and software also impacts on accessibility, the implications

of which can be reflected in financial costs, time management, student frustration and motivation. The cost implication also impacts on educational establishments in terms of keeping up to date with the technology to support e-learning.(Mcveigh 2009)

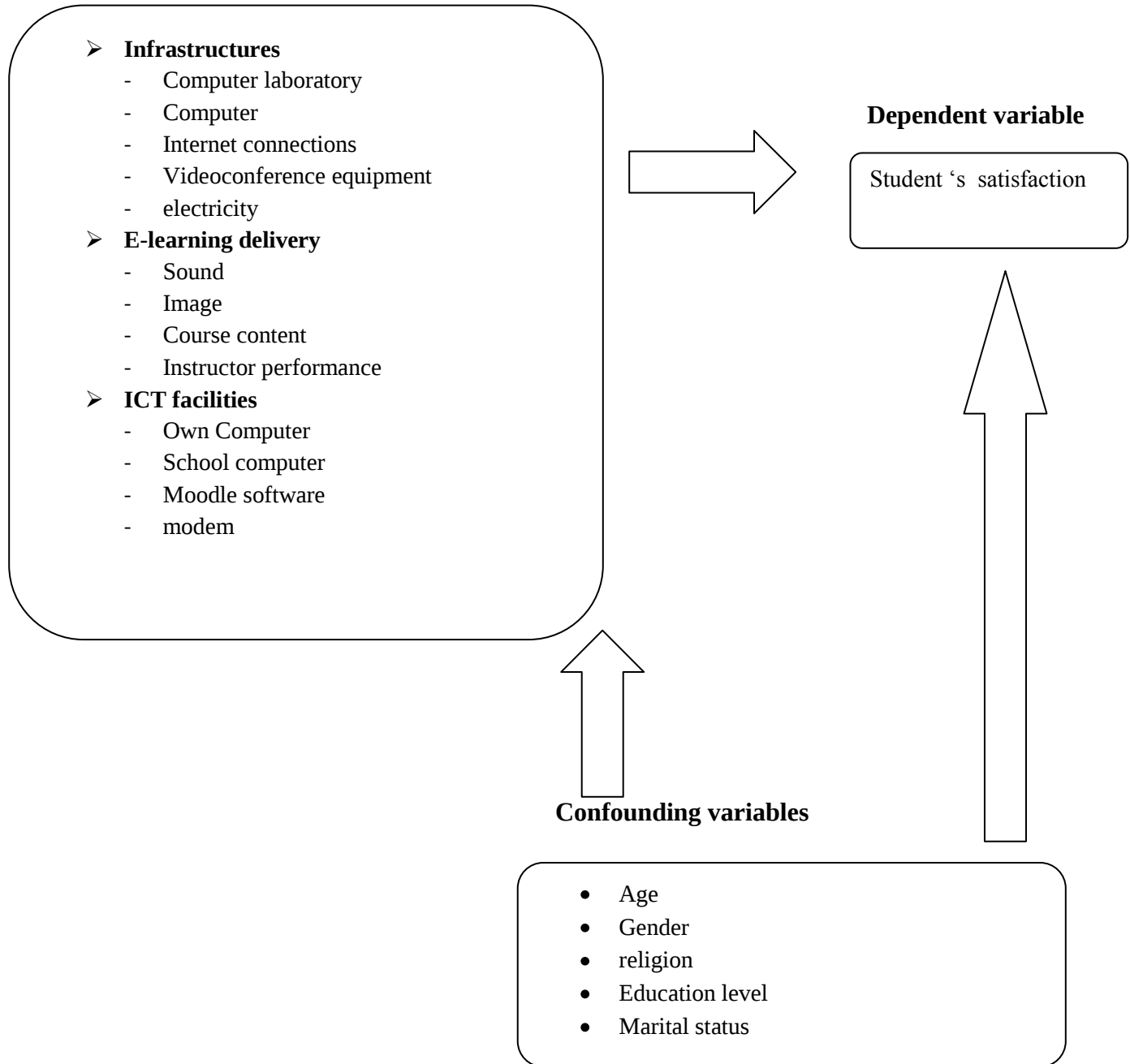
2.5 STUDENTS SATISFACTION

Students' satisfaction could be measured in distance learning. The results of this study done in Pakistan shows that there are three dimensions of distance learning satisfaction, which are student-instructor interaction, instructor's performance, and course evaluation (Kejuruteraan 2011). These dimensions can be understood as the way the course content is delivered, feedback and interactions take place with instructors, effectiveness of instructors, students learning experiences, workload and evaluation criteria in their distance courses, and convenience of the means of communication, the ease of system operation for the learners, and the quality of content the students receive (Han & Umani 2012). The result of that study indicated that the majority of the students showed high levels of satisfaction regarding student-instructor interaction, instructor's performance and course evaluation. This reveals that just like in traditional education, in distance learning education, enough interaction takes place between students and their instructors, courses are up to date and well designed, instructors are devoted, motivated and equipped with the required skill and knowledge (Han & Umani 2012). Furthermore, the availability of distance education in Pakistan, increasing number of degree programs offered and the increasing number of students enrolled, all speak for students' satisfaction and the effectiveness of distance learning education. This implies that the faculty is delivering distance learning courses that meet the students' needs in regard to students-instructor interaction, instructor performance, and course evaluation (Han & Umani 2012).

After the findings of this research study, it would not be logical to presume that distance learning students do not perform as well as traditional students. Moreover, the research team hopes that these findings may change the pessimistic perceptions of those people in Pakistan, who perceived distance learning as poor in quality (Han & Umani 2012).

2.6 CONCEPTUAL FRAMEWORK

Independent variables



CHAPTER 3. METHODOLOGY

In this chapter we would describe the methodology that to be used in the research and the technique to be used for data collection;

3.1 STUDY AREA

This study was conducted at Rwamagana School of nursing and midwifery located in Rwamagana district eastern province. RNMS was established in 1962 by “les soeurs de Bernardine” (in French) in collaboration with the government of Rwanda, the school started training what was called auxiliaries de santé who worked as nurses by that time, in 1963. “Les soeurs de bernardinne” introduced A3 nurses and later on A2 nurses started and all those nurses who were trained at the school were competent and was serving the country with effective and efficiency. The school continued to train A2 nurses until 2007 when the government of Rwanda phased out the program of A2 nurses and started training A1 nurses. Since then, the RSNM was under the supervision of MOH and later in 2013 all nursing schools including RSNM, were put under the Ministry of Education (MOE).

In other to support all A2 nurses who were working all over the country to upgrade to the level of A1. The government of Rwanda in collaboration with 5 nursing schools RSNM included, started the program of E-learning and RSNM started with 55 students. By 2012 when the program of e-learning was established, they were approximately 6700 nurses who were working all over the country and who needed to be upgraded to the level of A1.

Some details in the above paragraphs are not necessary, only put the information that justifies why the study area was chosen. No need for the historical background in this section.

This site was chosen because it is one institutions having e-learning program and it can be reached easily by the investigator in addition to that, this has not been researched for the similar topic.

3.2 STUDY DESIGN

This is a quantitative cross sectional study design done in a period of one month involving nursing and midwifery students at RSNM.

3.3 STUDY POPULATION

This study involved students of level 2 and Level 3 at Rwamagana School of nursing and midwifery who are legally registered in the program of e learning.

INCLUSION CRITERIA

All level 2 and level 3 students at RNMS who was available during the period of data collection; Including all level 2 and level 3 students in e-learning program maximized the chance of getting all information regarding student's satisfaction.

EXCLUSION CRITERIA

The level 1 Students would not participate in this research

3.4 STUDY SAMPLE

The sample size was constituted of all 100 students who are registered at Rwamagana School of nursing and midwifery in level 2(55) and level 3 (45) in the program of e learning, which is equivalent to the total number of students registered in the program in level 2 and level 3 .

3.5 DATA COLLECTION METHODS AND PROCEDURES USED

Data was collected using self-administered questionnaire addressed to students registered in the program of e-learning at RSNM to evaluate student satisfaction on e learning. The questionnaire was made up close ended questions basing on the research objectives. The questionnaire was composed of 9 questions on demographic data, 4 questions on infrastructures used in e-learning, 7 questions on e-learning delivering mode and 11 questions on the ability of student to use ICT facilities. It was structured in English. The student responded to the questionnaire under assistance of research to answer and clarify questions where needed. The questionnaire was modified and adapted tool to the situation of the present research.

3.6 DATA ANALYSIS

Data was coded and analyzed using SPSS computer program. frequency distribution tables was used to determine the proportions of participants, Chi- square test was used to compare proportions, logistic regression was used to determine factors associated with e-learning students' satisfaction.

3.7 ETHICAL CONSIDERATIONS

A letter of request to conduct a research from IRB was sent to Rwamagana nursing school. We communicated to students about what is going to be done before data collection and participants was ensured of confidentiality of the information given. A box was putted somewhere far from the researcher so that they can put their questionnaires after filling them. No names was used on the questionnaires. The participation in the research was voluntary and the ones agreed signed a consent form.

CHAPTER VI PRESENTATION AND DISCUSSION OF RESULTS

In this chapter the results of this study will be presented and discussed.

4.1. PRESENTATION OF RESULTS

4.1.1 Demographic data

Table 4. 1 Social demographic data

Variables		Frequency (n=100)
Gender	Male	29
	Female	71
Age group (years)	20-30	13
	31-40	66
	40-50	21
Income(FRW)	>100,000	39
	100,001- 200,000	57
	200,001-300,000	3
	< 400,000	1
Social status	single	18
	married	80
	widow	2
Religion	Catholics	44
	protestant	46
	Muslim	4
	other	6
Workplace	urban	48
	rural	52

The total number of participants in this study were 100 among them 29% were male and 71% were female and their age group were ranged between 20 years old to 50 and above, The results shows that 13% participants were ranged in the age group of 20 to 30 years old, 66% Participants were ranged in the age group of 31 to 40; 21% participants were ranged in age group of 41 to 50.

In all respondents 39% earns less than 100000 and among them 44% respondents work in urban area and 34.6% work in rural area, 57% of respondents earn between 100000 and 200000 and this constitute the majority of the respondents, among them 50% work in urban area and 63.4% work in rural area; only 1% of respondents declare earns above 401000.

18% of participants were single, 80% were married and 2% were widows.

Among all 100 participants, 46% were Protestants, 44% were Catholics, 4% were Muslims and 6% were in other religion not mentioned in this research questionnaire

4.1.2 E-learning infrastructures

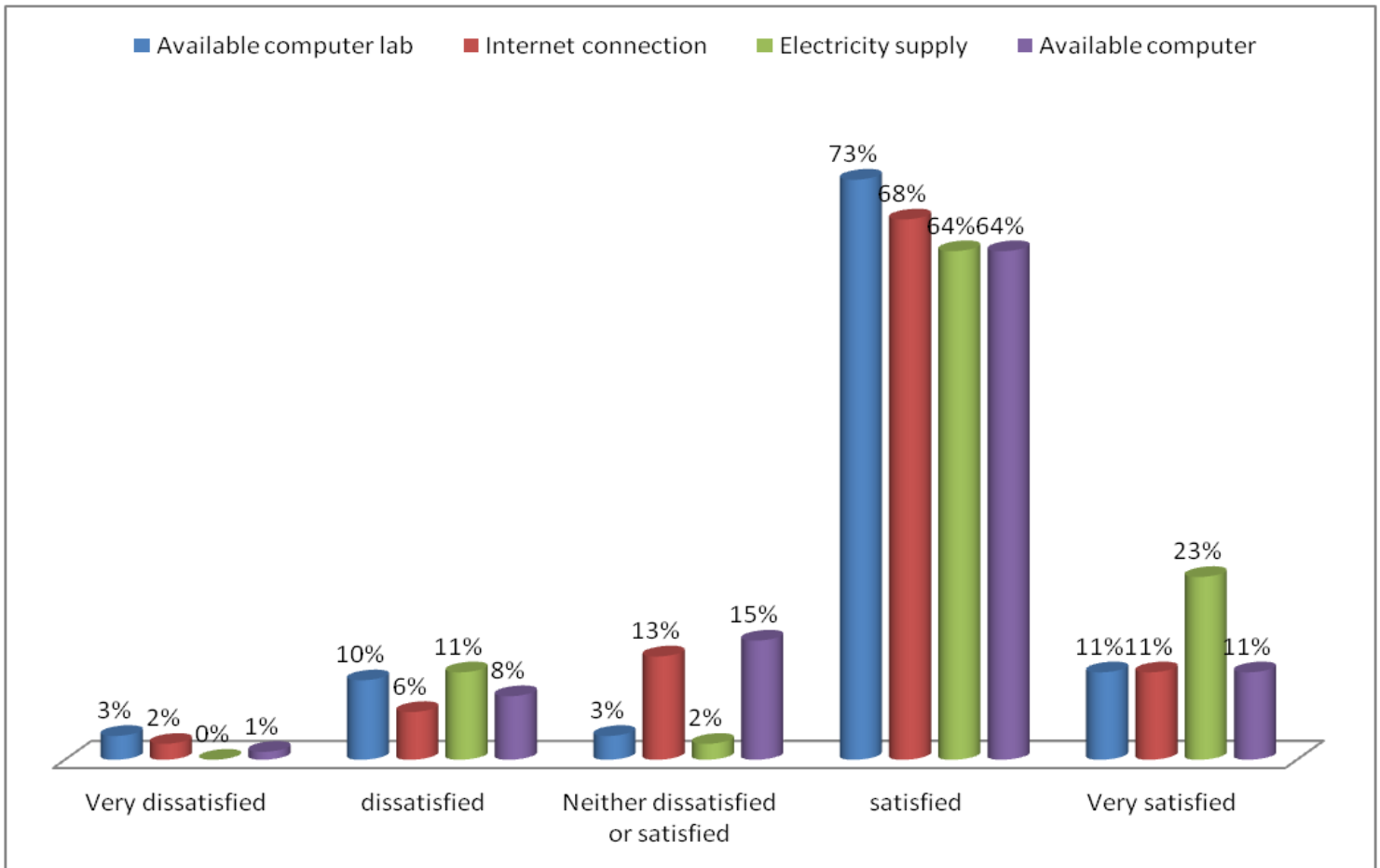


Figure 4.1 Distribution of participants by satisfaction towards available infrastructure

The figure 4.1 shows that many student are satisfied on the available infrastructures. 73% of all respondents are satisfied on the computer laboratory available at RSNM. 68% were satisfied with the internet connection, 64% were satisfied with the electricity supply at the school and 64% were satisfied with the school computers available in the computer laboratory. Among the respondents, 10% of them were dissatisfied on the computer laboratory available at RSNM, 6% were dissatisfied with the internet connection, 11% were dissatisfied with the electricity supply at the school and 8% were dissatisfied with the available computers.

4.1.3 E-learning teaching delivery

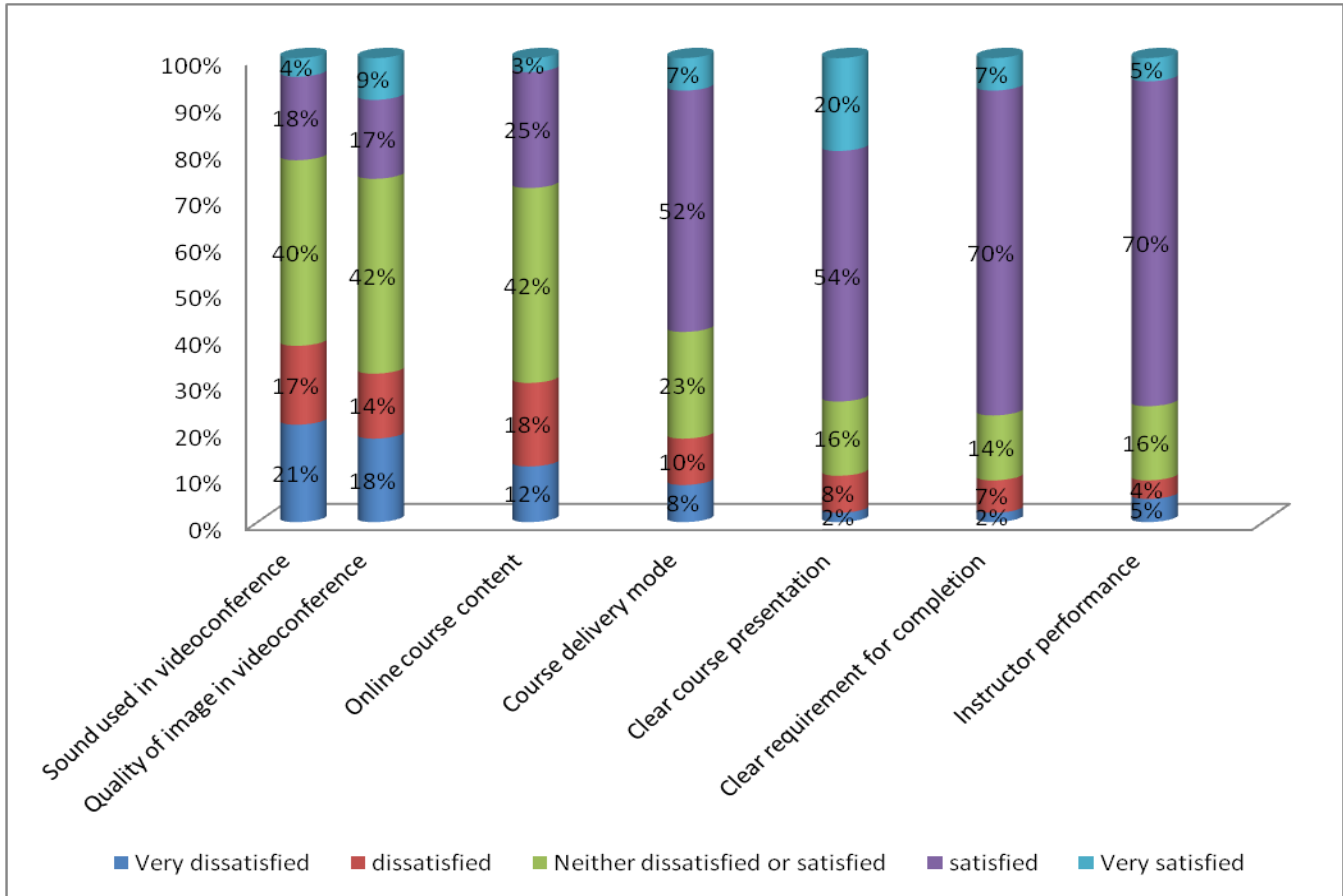


Figure 4.2 Distribution of participants by satisfaction on e-learning teaching delivery

The result of this study as shown on this figure revealed that 78% of respondents were dissatisfied regarding the sound used in videoconference only 24% were satisfied. 74% of respondents were not satisfied with the quality of image used in videoconference, 26% were satisfied with it. 74% of participants in this research were dissatisfied regarding online course contents and 28% were satisfied. 59% of respondents were satisfied with course delivery mode while 41% were not. 74% of participants in this study were satisfied on how course are clear and well presented while 26% said that the course presentation was not clear. 77% of participants said that the requirements for completion were clear and 23% said that they were not. 75% of participants said that they are satisfied with the instructors performance while 25% were dissatisfied.

4.1.4. Ability of students to use ICT facilities

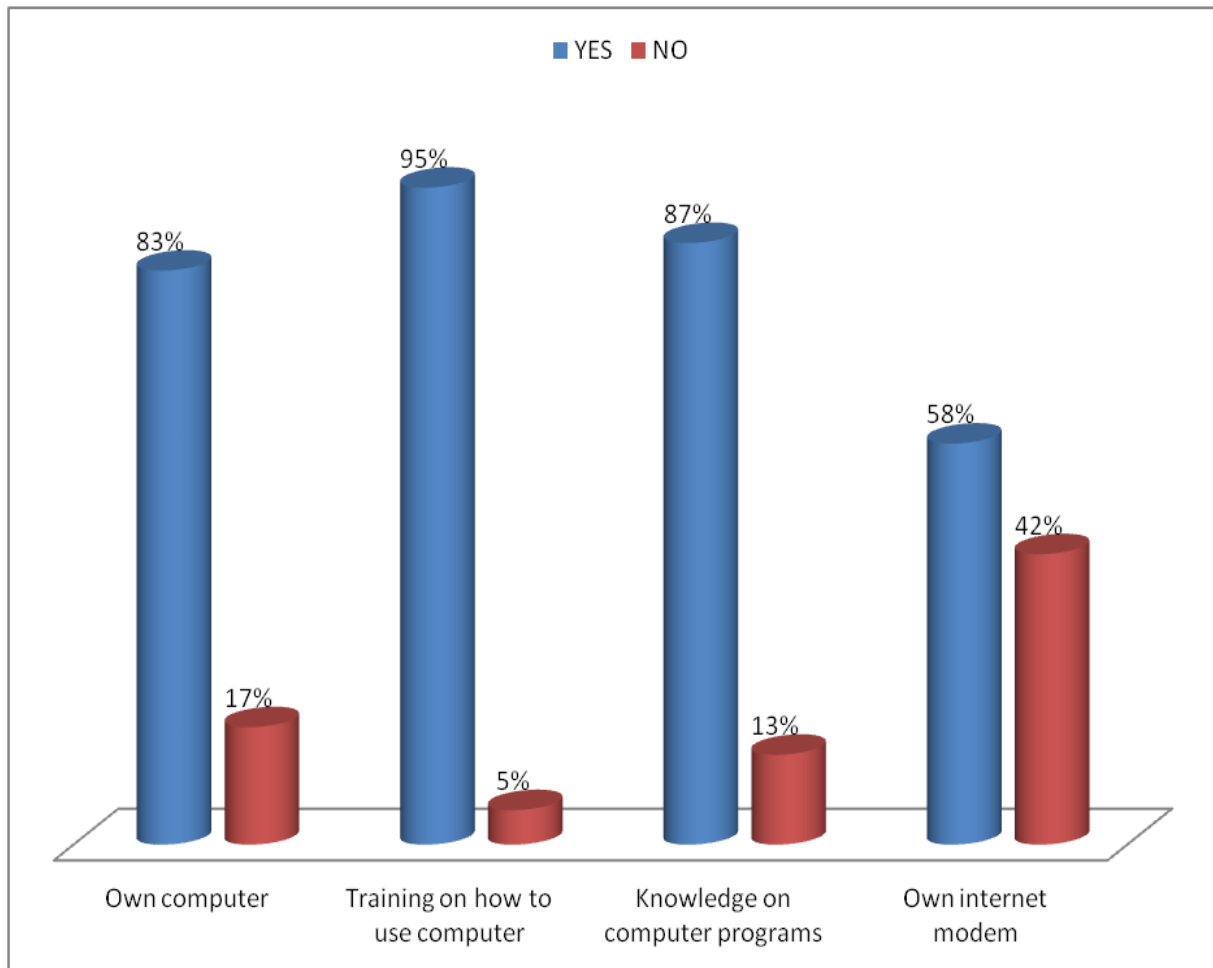


Figure 4.3 Distributions of participants by owning Computer and how to use computer and internet facility

The current study in above figure showed that 83% of respondents have their own computer while only 17% did not have their own computer, 95% of respondents declared to have a training on how to use a computer and only 5% did not, 87% of respondents said that they have a knowledge on computer program while 13% declared not have it before, 58% of respondents said they have internet modem while 42% declared not having it.

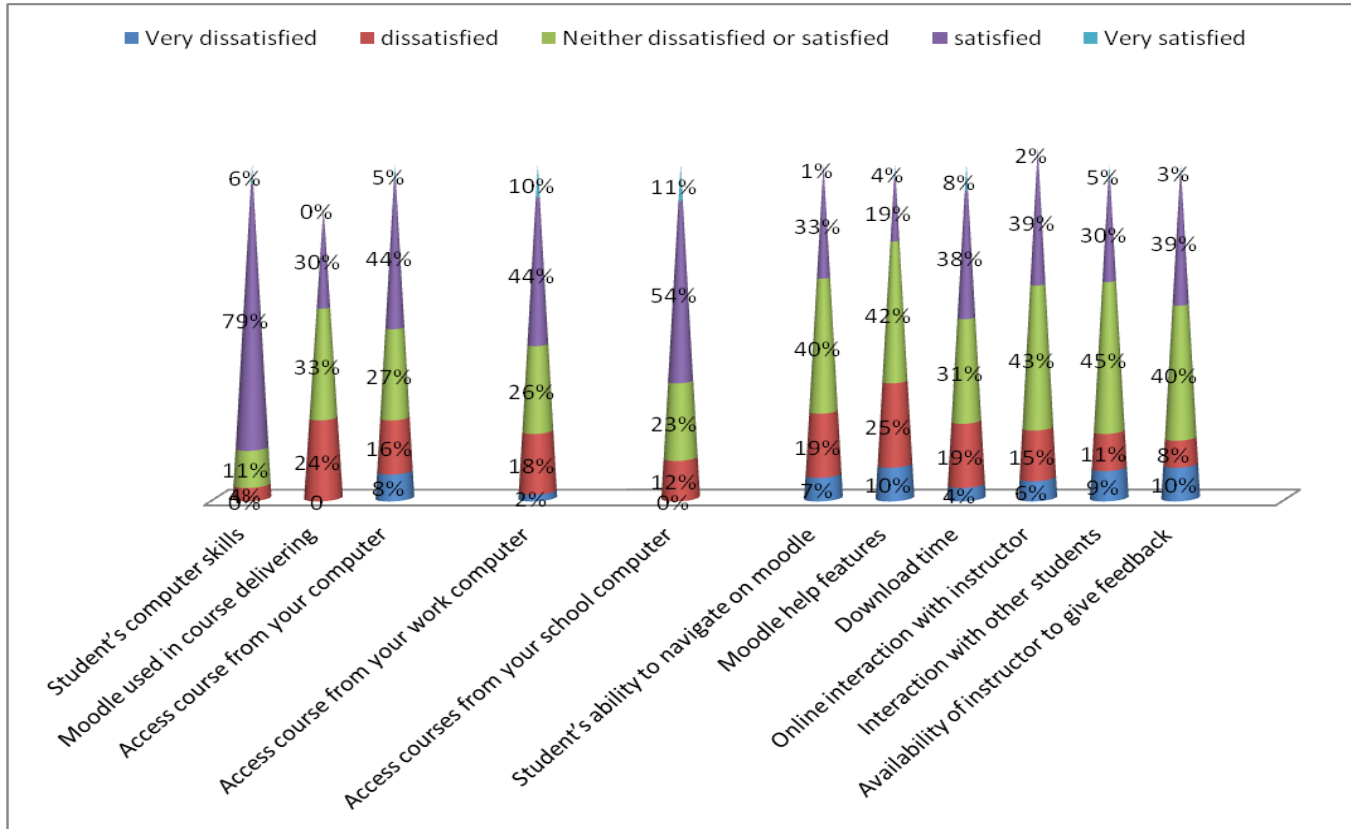


Figure 4.4 Distribution of participant according to satisfaction on ICT Skills

This figure shows that 75% of respondents said that they were satisfied on their computer skills and 15% were not, 70% said that they were dissatisfied on the moodle software program used in course delivering while 30% of them were satisfied on it, 51% of respondents were dissatisfied on the accessibility of courses on their own computer while 49% were satisfied, equal percentage (50%) of respondents were satisfied and dissatisfied on accessing course from work computer, 65% of respondents said that they are satisfied on accessing course from school computers while only 25% were not, 66% of respondents said that they were not able to navigate on moodle thus they are dissatisfied while 34% were able to use it, 77% of respondents said that they were dissatisfied on Moodle help features while 23% were satisfied, 54% of all respondents declared that they were dissatisfied on downloading time of course on Moodle while 46% were satisfied, 59% of respondents were dissatisfied on online interaction with instructor, 60% said they were

dissatisfied on online interaction with other students and 58% were dissatisfied on the ability of instructor to give the feedback.

E-learning students' satisfaction correlates

Bivariate analysis was used to get association of variables

Table 4. 2 Association between computer skills and owning a computer, having a training in using a computer and knowledge on computer program

		Computer skills		Chi-square	P value
		Dissatisfied n(%)	Satisfied n(%)		
Owning a computer	yes	12(12%)	71(71%)	0.113	0.491
	no	3(3%)	14(14%)		
Training on how to own a computer	yes	12(12%)	83(83%)	8.359	0.023
	no	3(3%)	2(2%)		
Knowledge on computer program	Yes	12(12%)	75(75%)	0.765	0.303
	no	3(3%)	10(10%)		
Owning an internet modern	Yes	10(10%)	48(48%)	6.779	0.034
	no	4(4%)	37(37%)		

The table 4.2 show there is no statistical significance association between computer skills and owning a computer ($p=0.491$). Among the respondent who own a computer 12% are dissatisfied with their computer skills and among those who did not own a computer 14% are satisfied with their computer skills. There is statistical significance between computer skills and training on how to use a computer($p=0.023$) 12% of those who got a training on how to use a computer are

dissatisfied on their computer skills and 2% who did not got any training were satisfied on their computer skills. Owning an internet modem and computer skills are also statistically significant ($p= 0.034$) 10% of those who own an internet modem were dissatisfied with their computer skills and 4% who did not were satisfied.

Table 4.3. Association between Moodle software program and the area of working

Work place	Moodle		Chi- square	P value
	Dissatisfied	satisfied		
Urban area	32(32%)	16(16%)	0.488	0.313
Rural area	38(38%)	14(14%)		

The table 4.3 showed that there is no statistical significance association between Moodle software program used in course delivery and area where the participants of this study work ($p=0.313$). Among the respondents who work in urban area, 32% are dissatisfied with the Moodle software program used in course delivery and among those who work in rural area 38% were dissatisfied on it.

Table 4.4 Association between access of computer at home and the age and gender

		Access computer from home		Chi-Square	P value
Gender		dissatisfied	Satisfied		
	male	10 (10%)	19(19%)	4.459	0.29
	female	41(41%)	30(30%)		
Age	20 -30	2(2%)	11(11%)	16.117	0.000
	31-40	43(43%)	23(23%)		
	41-50	6(6%)	15(15%)		

The table 4.4 revealed that there is a high statistical significance between accessing computer from home and the age of participants ($p=0.000$) . Among respondents who were aged between 20 to 30 years old the access to computer was 2% dissatisfaction, those aged between 31 to 40 years old were 43% dissatisfaction and those aged between 41 to 50 years old were 6% dissatisfaction.

Table 4.5 Association between access of course from work computer and work place

Work place	Access from work computer		Chi- square	P value
	dissatisfied	Satisfied		
Urban	22(22%)	26(26%)	0.001	0.567
Rural	24(24%)	28(28%)		

On table 4.5 we saw that respondents who work in urban area 22% were dissatisfied with the access to the computer where they work and 26% were satisfied with it , among those who works in rural area 24% were dissatisfied with the access of computer to their work and 28% were satisfied. The Chi- square test revealed that there is no statistical significance between access of course from work computer and work place ($p= 0.567$).

Table 4.6 Associations between ability to navigate on moodle and the training in computer

Training on how to use a computer	Ability to navigate on moodle		Chi- square	P value
	Dissatisfied	Satisfied		
yes	62(62%)	33(33%)	0.460	0.444
no	4(4%)	4(4%)		

There is no statistical significance between the ability to navigate on Moodle and having a training on how to use a computer as shown on table 4.6 above ($p=0.444$). Among respondents who got a training on how to use a computer 62% were dissatisfied with their ability to navigate on moodle and 33% were satisfied.

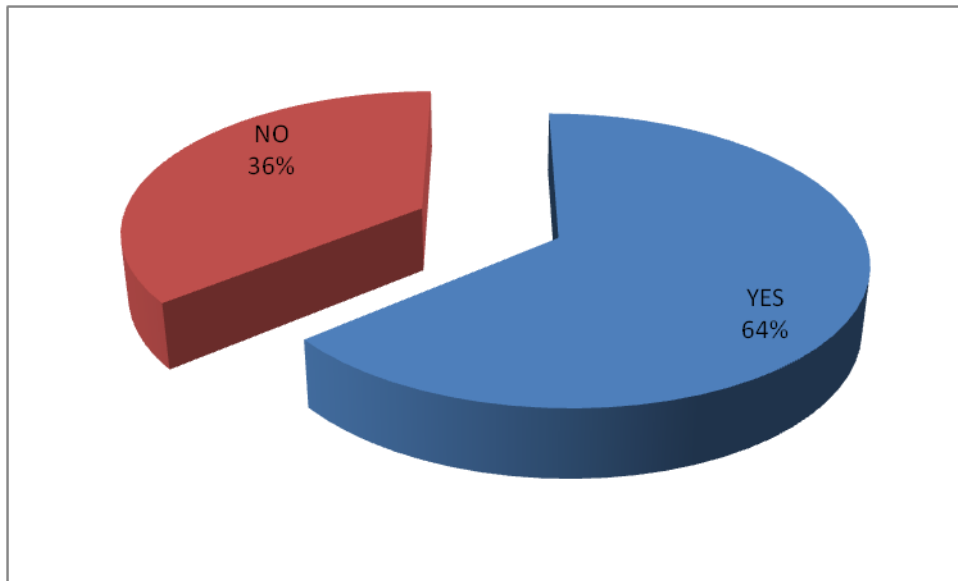
Table 4.7 Association between internet connection and access of course from school computer; download time ; interaction with instructor and students and the accessible of instructor to give feedback.

		INTERNET CONNECTION		Chi-square	P value
		Dissatisfaction	satisfaction		
Access from school computer	Dissatisfaction	16(16%)	19(19%)	19.825	0.000
	satisfaction	5(5%)	60(60%)		
Download time	Dissatisfaction	12(12%)	42(42%)	0.106	0.470
	satisfaction	9(9%)	37(37%)		
Interaction with instructor	Dissatisfaction	18(18%)	46(46%)	5.440	0.016
	satisfaction	3(3%)	33(33%)		
Interaction with other students	Dissatisfaction	17(17%)	48(48%)	2.973	0.68
	satisfaction	4(4%)	31(31%)		
Access the instructor to give feedback	Dissatisfaction	12(12%)	46(46%)	0.008	0.560
	satisfaction	9(9%)	33(33%)		

The table 4.7 shows that there is high statistical significance between internet connection and access courses from school computer ($p=0.000$). Among the respondent who are dissatisfied with the access of the course from school computers 19% were satisfied with the internet connection while who are satisfied with the course access from school computer 60% are satisfied with internet connection

The table 4.7 shows also a moderate statistical significance between internet connection and interaction with instructor ($p=0.016$)

Figure 4.5 Distributions of participants by satisfaction of e-learning Teaching methodology:



On this figure we can see that 64% of all respondent are satisfied of the e-learning methodology and 36% are not. The result of this was obtained by recording and computing of students satisfaction variables

Table 4.8 Logistic regression of training on how to use a computer, own an internet modem, age, access from home computer and interaction with instructor

variable	Odds ratio	95% CI	P value
Training on how to use a computer	0.096	0.015 - 0.637	< 0.000
Own an internet modem	1.542	0.485 - 4.898	< 0.000
Age	3.309	1.162 - 9.420	< 0.000
Acces from home computer	2.270	0.828 – 6.228	< 0.000
Interaction with instructor	4.303	1.171 – 15.817	< 0.000

variables which were statistical significant by bivariate analysis were analyzed by logistic regression and the results show that age of the respondents was three times more likely to be a factor associated with students satisfaction to e-learning methodology and the interaction with instructor was four times more likely to be a factor associated with students satisfaction on e-learning methodology.

4.2 DISCUSSION OF RESULTS

This chapter described and discusses in details the result of this study according to specific objectives which are:

1. To describe students satisfaction on used e-learning infrastructure (computer labs, computers, , internet connection, electricity and e-learning equipment)
2. To describe students' satisfaction on e-learning teaching delivery (sound, image, course content and instructor performance)
3. To identify factors associated with e-learning students' satisfaction

4.2.1 DEMOGRAPHIC FACTORS

The result of current study shows that women are many than men the explanation of this is that the profession of nurse and a midwife is considered as a female profession than male profession, another reason is that in our country female are many than male to the ratio of 0.99m/f.

According to statistics in this study, the sample showed that the higher number of respondents 66% were aged between 31 to 40 years old because the program of e-learning at RSNM is a mature program established in 2007 whereby all students were working for some years before joining the program.

Most respondent were married and were earn between one hundred thousand and two hundred thousand Rwandan francs, this is important to know in this study because this program some like expensive whereby to be accepted in the program one must have his own portable computer another reason is that student have to come to school and stay there for two weeks and take care of themselves despite other responsibilities their have.

4.2.2 E-learning infrastructure

Most respondents declares to be satisfied with the computer lab they are using at RSNM the reason is that this lab is well equipped and well maintained by an ICT personnel who are working at the school and a regular supervision of the authority another reason is that mature students are more responsible so they take care of the computer laboratory. More of respondents were satisfied on the internet connection this is there results of our government which is doing their best so that all the country can have a good internet connection this is supported by the policy of ICT in education of government of Rwanda (MINEDUC 2008), The participants in this study were satisfied with the electricity supply this is due the fact that at the school they have a generator which turns automatically when the power went off.(table 3)

4.2.3 E-learning teaching delivery

The results of this study showed that respondents were dissatisfied on the sound they hear when they are using video conference room and the majority of respondents were dissatisfied with the image they see when using video conference, the reason is that the room where the videoconference is done is not well equipped to be a videoconference room, they use a normal room and sometimes the equipment are brought to the class and the vision and audio are not well captured, another reason to that is that videoconference is not frequently used and due to the lack of experience in using it some respondents are dissatisfied on the use of it. This is supported by (Blake et al. 2013) in a study on how the videoconference room should be designed when teaching health professionals.

Above half of respondents were satisfied with the on and off campus mode used in the e-learning program, it is due to the fact that all students in e-learning program are working and they can not leave their work to come and stay at school for the hall period of the program. This mode of learning is supported by (Brown et al. 2009) who said that adult learners are able to learn everywhere not necessary in the classroom. Majority respondents said that they are satisfied with the performance of their teacher and it is due to the fact that the teachers employed at the school are well trained and very qualified.

4.2.3. Ability of the student to use ICT facilities

The results of this study revealed that majority of respondents own their computer and this is a prerequisite to be accepted in the e-learning program, the results also revealed that almost all respondents had a training on how to use a computer and had a knowledge on computer program such as MS word, MS excel, power point and internet and some of them own an internet modem. This contribute to the successfulness of the program and increased the ability of the students to manipulated a computer during off campus period. This is supported by (Olmsted & Ph 2008) in a study of students performance in e-learning where they said that the student to be able to learn better they must have some ICT tools and facilities on their own to be able to learn everywhere.

The results of this current study shows that majority of respondents are dissatisfied with the Moodle program used in learning at the school the explanation to that is, the system used (Moodle) is almost always offline and no new contents are uploaded and students are not able to access it, this cause to respondents to be dissatisfied on navigation on moodle because they can not be familial with it, the interaction with instructor during off campus period is not possible and interaction between student is not facilitated. Most respondents said that the Moodle help feature are not user friendly.

When compared the computer skills of respondents to other variables such as owning a computer, had a training on how to use a computer, having knowledge on computer program and having internet modem the result shows statistical significance. This mean that the computer skills of the students at the school depend on having a training on how to use a computer. (Noor-Ul-Amin 2003)

When compared the internet connection at RSNM to other variables such as access from school computer the Chi-square test shows statistical significance between those two variables($p=0.000$). The explanation to that is the computers used to the school are desktops and are using wire internet connection which is sometimes off. The wireless internet connection is work very well and students prefer to us their own computer to access it than school computers.

The result of current study shows that when compared the use of Moodle to the work place of respondents, they was no statistical significance ($p=0.313$) and this means that the problem of not accessing the moodle does not depend on the place where the respondents work from but at the school.

The current study shows also that the ability to navigate on the Moodle does not depend on having a training on how to use a computer ($p=0.444$) the respondents declared that familial use of the program will increase their ability to use it. A previous study on students satisfaction showed that a user friendly learning platform increase the accessibility of it by learners (Sinclair 2010)

The results of the current study shows that when compared the accessibility from home computer to gender there was no statistical significance ($p=0.29$) This means that male and female access their computer at home equally, but when compared to the age the Chi-square test revealed statistical significance($p=0.000$) The explanation to this is that as we increase in age different responsibilities are also increased and accessing a computer at home become difficult as most of our respondents(80%) are married this is supported by (Radovi 2010) who looks at advantages and disadvantages of e-learning and discover that adult responsibilities are most handicap to the program.

CHAP 5. CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The current study has addressed the issue of student satisfaction of e-learning methodology at Rwamagana school of nursing and midwifery.

Student's satisfaction in this current study has been measured on the used e-learning infrastructure,(computer labs, computers, , internet connection, electricity and e-learning equipment), on e-learning teaching delivery (sound, image, course content and instructor performance) and identify factors that are associated with e-learning students' satisfaction.

The results of this study revealed that 64% of students at RSNM are satisfied with the e-learning methodology and identify training on how to use a computer as a factor associated with student satisfaction on e-learning. the accessibility of Moodle software learning program has also identified as another obstacle to the successfulness of the program.

This study has identified the program of e-learning at Rwamagana school of nursing and midwifery as a successful and very effective program.

5.2 RECOMMENDATIONS

The researcher recommends the following:

To the RSNM

- Give a training on how to use a computer to all students before starting courses
- To make sure that the Moodle is accessible and are used by the students and the teachers
- To avail a videoconference room which is equipped with all e-learning necessary equipments

To UR-CMHS

- To develop policies and guidelines on how Moodle can be functioning and maintain it accessible by the students and the teachers.
- Organize trainings for both students and teachers on how to use Moodle so that they can use it and upload courses.

Recommended research

After identifying e-learning program as a successful and very effective, the research recommend to do a research on teachers performance towards e-learning teaching methodology.

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APPENDIX 1

QUESTIONNAIRE on E-Learning: Student Satisfaction

This questionnaire is modified and adapted to the situation of current research, it was used before in a study done in parkistan (Han & Umani 2012)

Demographic information

Index number..... (to be given by the researcher or research assistant)

1) Gender

Male	Female

2) Age?

20-30	31-40	41-50	50 and above

3) What is your social status?

single	married	divorced	separated	widow

4) What is your religion

cathoric	protestant	Muslim	other

5) What is your field of education?

Health sector	other

6) Where do your work?

Public institution	Private institution	Other (specify)

7) Where do you work?

Rural area	Urban area

8) What is your total household income?

Less than 100000	
Between 100000 and 200000	
Between 210000 and 300000	
Between 310000 and 400000	
Above 410000	

9) Are you a private student or a government student in this program?

I. QUESTIONS

a) Infrastructure

questions	Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Very Satisfied
How would you rank available computer Lab?					
How would you evaluate the internet connection?					
How would you evaluate the electricity supply?					
How are you satisfied with available computer?					

b) E-learning teaching delivery

questions	Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Very Satisfied
are you satisfied with the sound in videoconferencing?					
how do you evaluate the quality of image in videoconference?					
How are you satisfied with online course content?					
How are you satisfied with course delivery mode(on and off campus)					
The presentation of course					

topics was clear.					
The requirements for completion of the course were clearly outlined.					
How do you evaluate the instructor performance					

c) Ability of students to use ICT facilities

Answer Yes or No to the following question

1. Do you have you own computer (lap top)?
2. Have you had any training on how to us a computer before?
3. Do you have any knowledge on Ms Word, Ms Excel, PowerPoint and internet use?
4. Do you have an internet modern?

questions	Very Dissatisfied	Dissatisfied	Neither Satisfied or Dissatisfied	Satisfied	Very Satisfied
How do you evaluate your computer skills					
how do you evaluate the moodle used in delivering courses at RSNM?					
How are you satisfied when access the course from your home computer					
How are you satisfied when access the course from your					

work computer?					
How are you satisfied when access the course from your school computer?					
How do you evaluate your ability to navigate on moodle					
How satisfied or dissatisfied were you with the moodle help features of the course ?					
How satisfied or dissatisfied were you with the download time for the course pages?					
How satisfied or dissatisfied were you with the online interaction you had with the instructor?					
How satisfied or dissatisfied were you with the amount of online interaction you had with other students in this course?					
Course instructor was accessible to answer questions or give feedback					

Thank you for answering all these questions

APPENDIX 2

WRITEN CONSENT FORM

Consent for Participation in Research

I volunteer to participate in a research project conducted by HARELIMANA INGABIRE Eliane from U-R CMHS. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one on my campus will be told.

I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

I understand that this research study has been reviewed and approved by the Institutional Review Board for Studies Involving Human Subjects

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

I have been given a copy of this consent form.

My Signature and Date

Researcher's Signature and date.....

Researcher's contacts

Contacts of the Chairperson of IRB/Ethics committee

Tel.
