IMPROVING E-LEARNING THROUGH USAGE OF LEARNING MANAGEMENT SYSTEM: A CASE OF A MASTERS IN VOCATIONAL PEDAGOGY AT KYAMBOGO UNIVERSITY

BY

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RESEARCH DISSERTATION SUBMITTED TO KYAMBOGO UNIVERSITY GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTERS IN VOCATIONAL PEDAGOGY OF KYAMBOGO UNIVERSITY

OCTOBER 2019

DECLARATIONS

I Vincent Olema, declare that this research dissertation is my original work and that it has never been presented anywhere else for any academic award and that any other material used herein has been duly acknowledged as references.

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..…… ……..…….…… Sign: ……...

APPROVAL

This is to certify that this dissertation has been done under our supervision and is now ready for submission to be examined.

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DEDICATION

I would like to dedicate this dissertation to my late dad Mr. Ojobile Agapitos, my mother, sisters and brothers.

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I extend my heartfelt thanks to the Norwegian Government through the NORHED Scheme sponsorship Program for students from Uganda; which scholarship made it possible for me to study.

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AR	Action Research
DVD	Digital Optical Disc Storage
FW	Future Workshop
ICT	Information, Communication Technology
ITEK	Institute of Teacher Education Kyambogo
KELMS	Kyambogo E-Learning Management System
KYU	Kyambogo University
LAN	Local Area Network
LMS	Learning Management System
MVP	Masters of Vocational pedagogy
NCHE	National Council of Higher Education
NORHED	Norwegian Support for Higher Education
PAR	Participatory Action Research
UNISE	Uganda National Institute of Special Education
UPK	Uganda Polytechnic Kyambogo
VET	Vocational Education and Training
WBT	Web Based Training

LIST OF APPRENDICES

ABSTRACT

This was a collaborative engagement aimed at "Improving E-Learning through usage of Learning Management System (LMS) at Kyambogo University, Uganda". The study was conducted in the Art and Design Department, Faculty of Vocational Studies. It was specifically conducted with the following stakeholders: administrators, mentors, facilitators and Cohort Six students of the Master's in Vocational Pedagogy (MVP) program. This was a case study of this program (MVP); due to the fact that the stakeholders were directly beneficiary of LMS. To achieve the aim of the research the following specific objectives were employed: examine factors that affect LMS usage, explore possible strategies that can be used to improve its usage, implement the identified strategies to improve its usage and, lastly, evaluate the impact of the intervention strategies used to improve LMS usage at MVP. The study employed the Participatory Action Research (PAR) design which was handy in involving the views of all stakeholders in assessing and understanding the status quo, and improving the use of the LMS, in the program. PAR intends to include people's views in the research process as well as the intervention actions meant to improve the situation. The specific methods used included: work processes analysis, future workshop, focus group discussion, interviews and observation. These are basically qualitative methods that tended to enlist responsiveness from stakeholders; which in turn made them more committed to action as part of the research. The analysis of the process of LMS usage in the program revealed the negative attitude by MVP administration to follow-up LMS usage, digital illiteracy and negative attitude by section of stakeholders towards LMS usage, as some of the significant gaps that needed to be addressed, to improve the use of the system. To address these gaps the following interventions were made: introduction of hands-on computing lessons and weekly exercises on LMS usage to stakeholders. As a result of the lessons and exercises the stakeholders gained knowledge, skills as well as appreciation of the LMS. The stakeholders' attitude toward the system became more positive, the administration took keen interest in following up the LMS usage. Several hands-on trainings were organized and this led to improved digital literacy and better usage of the system. In conclusion, after implementation of intervention strategies the LMS usage improved considerably. Recommendations are that more hands-on trainings need to continue every semester, administration should always monitor LMS usage by stakeholders and internet bandwidth be increased so that the web browsers loads faster.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Overview

This chapter presents the background of the study focusing on Vocational Pedagogy as a discipline, approaches for improvement of practical skills acquisition in Kyambogo E-learning Management System (KELMS) usage. In addition the chapter also presents situation analysis, motivation statement, and statement of the problem, purpose of the study, objectives of the study, scope of the study, justification of the study and significance of the study and finally operational definitions.

1.2 Background

Vocational education and training (VET) are an activities directed to identifying and developing human capabilities for productive and satisfying working life. According to this statement, it is possible to say VET is: a complement of educational activity oriented to provide the necessary knowledge and skills to perform a particular job post an occupation or professional activity in the labor market (Mohamad and MeiHeong, 2012).

In summary, VET is an education system where hands-on practical's is emphasized. The hands-on skills should be able to provide an opportunity for the student to get employed or set-up his/her businesses. Most literature generally considers that the concept of Vocational Education and Training (VET) is restricted to non-University. Gone are the days when vocational training was confined to certain professions like weaving, radio technician, tailoring and motor vehicle mechanic - the horizon has however expanded with the evolution of time. Today, a wide range of job functions like telecommunication, information communication and technology, tourism management, fashion and design, general education, food and beverage management, among others are callings all subscribe to vocational training.

Vocational training has a pedagogic component as well as other types of education, but it is an emphasis on the technical, hands-on and technological aspects (Mohamad and MeiHeong, 2012).

1.2.1 Vocational Pedagogy

Vocational pedagogy encourages the science, art and craft of teaching and learning vocational education (Bill, 2015). Vocational Pedagogy is defined as 'the science, art and craft of teaching and learning vocational education'. Indeed vocational Education and Training (VET) is all too often seen as the 'poorer cousin' of academic' education. In some countries pedagogy, or as some prefer to say, andragogy (Knowles, 1984).

Vocational Pedagogy enables us to develop ways and tools in a way to help VET facilitators more effectively to match teaching and learning approaches to the needs of their context. Through such approaches Vocational Pedagogy can impact on the quality of teaching and learning.

1.2.2 Motivation for undertaking the study

Having pursed most of my courses at Kyambogo University; I keenly observed challenges that affected the teaching and learning processes at the university. The challenges ranged among others from; poor usage and management of learning management system to facilitate courses online, poor internet connection, poor computer usage among students and lecturers at the university, small lecture rooms as result of ever increasing number of students admission at the university and working students who miss lectures etc. With vast knowledge gained from Master in Vocational Pedagogy Programme; the researcher realized that there was need to improve the teaching and learning processes at KyU by improving the e-learning system through usage of LMS. Improvement of e-learning system at KyU would solve some of the problems mentioned here. The system would allow students and lecturers interact though it. This is supported by Mjelde (2006) who clarifies that Vocational Pedagogy is a revolutionary way of thinking about teaching and learning.

Furthermore, the learning experiences the researcher went through in both (undergraduate and graduate level) greatly motivated him to carry-out this research. As Telecommunication Engineer; the researcher has developed interest in engineering pedagogy with keen interest in how knowledge and skills can be imparted to engineering students and community through usage of LMS as e-learning platform.

1.2.3 Contextual study Background

Kyambogo University (KYU) is University created with the aim of promoting and advancing knowledge and development of skills in Science, Technology and Education and such other

fields having regards for quality, equity, progress and transformation of society. The vision of the university is to be a centre of academic and professional excellence.

KyU is Uganda's second largest public university established by the Universities and other Tertiary Institutions Act 2001. It is a merger of former Uganda Polytechnic Kyambogo (UPK), the Institute of Teacher Education, Kyambogo (ITEK), and the Uganda National Institute of Special Education (UNISE).

The university has a rich history that dates as far back as 1928. UPK started in 1928 as a small technical school on the Makerere Hill and was transferred to Kyambogo Hill in 1958 as Kampala Technical Institute. It was renamed Uganda Technical College and finally UPK. ITEK started as a Government Teacher Training College in 1948 in Nyakasura, Fort Portal and transferred to Ruharo and then Ntare Hill all in Mbarara, western Uganda. It transformed into a National Teachers College and later ITEK as per the statue of parliament in 1989. UNISE on the other hand started as a Department of Special Education at ITEK in 1988, and later became an autonomous institution by act of parliament in 1998.

As mentioned earlier KYU was amalgamation of former ITEK, UNISE, and UPK was faced with array of challenges like few lecture rooms, poor communication platform, poor ICT infrastructure, and publication roles among others in delivering knowledge and services to the students (Musisi, 2013). These challenges made the university come-up with innovations to solve them. One of the solution was to introduce Information Communication and Technology (ICT) platform or alternatively information and communications technology. The differing number of the word "communication" is significant in that the singular form is concerned with human interaction while the plural is generally taken to refer to the whole field of data communications infrastructure. At its simplest, the former or singular form is the process or outcome while the latter or plural is about the technology itself. The acronym ICT can also take a plural form (technologies) where it is understood to entail the specific devices or processes which collectively make up the "Technology" (Lloyd, 2005). The researcher defines the term ICT as forms of technologies that are used to transmit, store, create, share or exchange information. The term ICT is broad which includes the technologies as: radio, video, television, Digital Versatile Disc (DVD), telephone which include both fixed line and mobile phones, satellite systems, computer and network hardware; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic

mail. It should be emphasized that ICT in education means teaching and learning with ICT technologies.

Researchers globally have proved that ICT can improve students' learning and better teaching methods. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in student exposure to educational ICT through curriculum integration has a significant and positive impact on student achievement, especially in terms of "Knowledge Comprehension", "Practical skill" and "Presentation skill" in subject areas such as mathematics, science, and social study. While we recognize that the use of instructional technology in the higher education teaching and learning processes is still in its infancy in Uganda, ICT instructional use is vital to the progress and development of faculty and students alike. Higher education institutions, especially those in the west, have adopted ICT as a means to impart upon students the knowledge and skills demanded by 21st century educational advancement (UNESCO, 2002).

MVP as one of the Master programmes in Kyambogo University which embraced use of ICT in facilitation of its course units. All the plenary presentations for example are done by use of overhead projectors, all MVP students are availed with laptops to carry-out their research projects and also to access online tutorials to supplement their teaching-learning processes. KyU like any other universities doesn't want to be left behind in the use of ICT. According to Ndawula et al (2012) KYU has educational projects to facilitate teaching and learning. They include a website, Intranet web servers, laboratories and computers with wireless connectivity. The university has also made progress in digital media and Internet supported distance learning through the Open, Distance and e-Learning (ODeL). KyU like majority of higher education institutions in sub-Saharan Africa adopted Learning Management System (LMS). The web-based LMS is intended to support teaching and learning activities. They consist of various features that enable faculty members to share learning materials as well as providing interaction with their students both synchronously and asynchronously (Vovides et al, 2007). The most widely adopted LMS in the region are Blackboard, Sakai, KEWL, and Moodle (Unwin et al, 2010). The University among other types of LMS deliberately adopted MOODLE system customized as: Kyambogo E-Learning Management (KELMS). This is because Moodle is an open source software and easy to use.

MOODLE, an acronym for Modular Object-Oriented Dynamic Learning Environment which is popular open source LMS designed for educators to create dynamic online courses (Moodle, 2011). Adams (2010) describes LMSs through a five level hierarchy of increasing capabilities as he described them below:

> First, Classroom Management – facilitate, deliver of notes or other learning aids for a particular lecture (e.g., lecturer creates a website to distribute materials)
>
> Second, Course Management – support to span multiple class sessions across an entire course with goals, adding tools for evaluation, feedback and discussion
>
> Third, Curriculum Management – provides meta-tools (e.g., content tagging and objectives management) to handle relationships among a set of courses. These tools can be used to index a curriculum across a programme or identify common attributes a cross courses.
>
> Forth, Learning Management – information is organized around the learner. This facilitates self-directed learning as students can chose from a variety of learning opportunities, and can progress at different rates over time depending on individual goals. Students may have a private area within the system to assemble selected resources (facilitating the use of an e-portfolio).
>
> Lastly, Community Management – enables borders to extend beyond the class, course, curriculum or the traditional campus learner, allowing for multiple learning contexts and organizations.

However, based on the five level hierarchy of LMSs, it became easy to ascertain the problem collectively with stakeholders in this research using work process and future workshop analysis tools. The following section of situation analysis provides step by step processes of using the LMS at KyU, with a view of improving it.

1.3 Situational analysis

Situation analysis is systematic collection and evaluation of past and present data aimed at; identification of internal and external forces that may influence an institution's performance and choice of strategies and assessment of the organization's current and future strength, weakness, and opportunities and threats (Business Directory, 2007).

The situation analysis began with a review of work process in each of the pedagogical program. Thereafter views from stakeholders (Cohort Six MVP students, facilitators, mentors and administrators) were obtained on how well the intensions of KELMS usage are met; uploading and downloading of courseware and assignments, assessments of students using the platform and accessing further reading materials from the KELMS.

In the case of this study, the situation analysis was carried out using the Work Process Analysis and Future Workshop methods. These methods required the participation of the stake holders since they would be direct beneficiaries of the research outcomes.

1.3.1 Work process analysis at MVP

A work process analysis is a series of steps completed to accomplish the tasks that result in some output. To improve the effectiveness of any work, one needs to first understand the work processes. It should be noted that each work process analysis at MVP was carefully tailored to the students, facilitators and mentors.

The Kyambogo University e-learning management Systems work process analysis is divided into three major phases: a) student user, b) facilitators, mentors and c) KELMS administrator. KELMS involve planning, design and development, delivery, evaluation, and maintenance stages.

However, during the time of situation analysis with the stakeholders; it came clearly out that there was no resident KELMS administrator at MVP, fear to use technology, poor KELMS infrastructure, poor follow-up, inadequate LMS training, poor perception, and administration reluctance to implement KELMS, poor ICT usage skills, and poor internet connection despite vast amounts of investment on ICT equipment at KyU.

The researcher carried out work process analysis on the KELMS management, interviewed key informants and students, organized focused group discussions and observational strategies. He identified the work process activities, tasks involved and competences required to facilitate and learn over KELMS. The activities involved in imparting knowledge to learners were identified during situational analysis as: Administration and orientation; Teaching and learning process, assessment of students in order to bring up competent KELMS user as shown in table 1.1.

Table 1.1: Work process analysis in the production of Learning Management System User

Work process	Tasks involved	Competence required
Cohort Six MVP student	▪ Get enrolled into MVP ▪ Get login details from KELMS administrator ▪ Update his/her profile ▪ Upload assignments ▪ Store personal private documents ▪ Download courseware/files	▪ ICT skills ▪ KELMS usage skills ▪ Good communication skills ▪ Interpersonal skills
Facilitator/ Mentors	▪ Login details from KELMS administrator ▪ Update his/her profile ▪ Enroll students ▪ Develop courseware ▪ Upload courseware for student ▪ Facilitate ▪ Download assignments ▪ Store personal private documents, facilitate through KELMS ▪ Evaluate students ▪ Submit the results to MVP ▪ Add more notes from other sources	▪ Knowledge of the subject matter ▪ Communication skills ▪ Management skills ▪ Interpersonal skills ▪ ICT skills ▪ Carrier guidance skills ▪ Administrative right skills
KELMS administrator	▪ Create login details for both students and mentors/facilitators ▪ Create KELMS trainings ▪ Manage the entire KELMS platform ▪ Enroll stakeholders ▪ Guide facilitators develop courseware ▪ Help upload/download courseware for facilitators ▪ Resolve all issues relating to login details: password and usernames ▪ Help facilitators/mentors evaluate students	▪ ICT skills ▪ Moodle knowledge ▪ KELMS management rights ▪ Professional ethics ▪ Time management skills ▪ Communication skills ▪ Carrier guidance skills ▪ Administrative skills

Primary Source: ICT Department KyU (June 2016)

1.4 The Future Workshop Procedures Carried

A Future Workshop (FW) according to Jungk and Müller (1987) is a tool used for problem identification in a given setting. It consists of five phases which include: the preparation phase, the critique phase, the fantasy, the reality/implementation and follow up.

The Future Workshop carried was planned and carried on The 30th Oct 2016 from 2:00 p.m. to 5:00 p.m. at NOMA House 1 Plenary. FW was used as research tool at this point to identify gaps and lay out possible strategies for improving use of KELMS at MVP for effective teaching and learning tool.

1.4.1 The preparation phase

During the preparation phase, the researcher came up with guide that was followed during the future workshop session. The identified participants were invited for the workshop as planned. The room for the workshop was arranged by the organizers who even; purchased the writing materials (Pens, papers, markers and manila papers).

1.4.2 Critique phase

The critique phase started by discussing critical problems faced with implementation of KELMS usage at MVP. Brainstorming was used as a tool for generation of ideas in the critical phase of the future workshop. Participants' generated ideas with, no criticism, and respect for everyone's idea to be considered. Short responses and combination of ideas were permitted. Together with the stakeholders, challenges or gaps were identified. The generated ideas were classified into short term, medium term and long term as shown in the table 1.2 below.

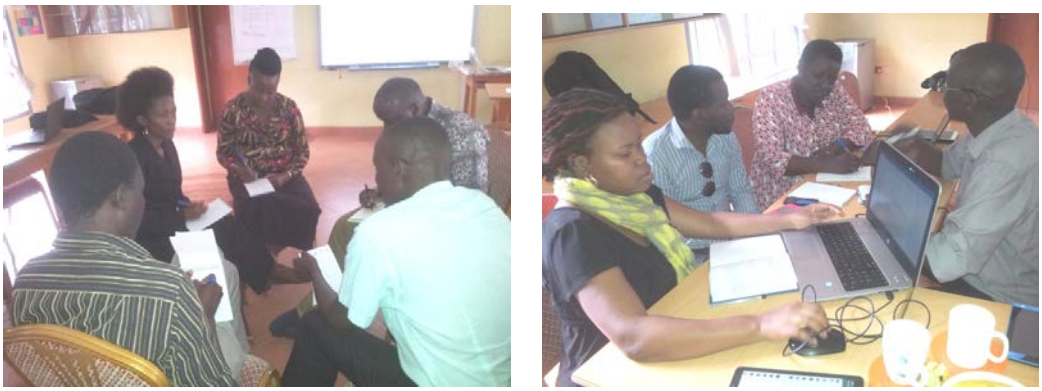
Table 1.2: Summary of the challenges identified by the participants in the critical phase of the FW

Short Term	Medium Term	Long Term
▪ Negative attitude ▪ Negative attitude by MVP administration to follow-up LMS usage ▪ In-adequate technical support ▪ No link between training	▪ No resident KELMS administrator at MVP ▪ Not practically assessed ▪ Requires lots of time ▪ Indiscipline among learners ▪ Fear to use KELMS	▪ External factors ▪ High Internet Bandwidth ▪ Procure modern ICT equipment at MVP ▪ Collaboration with international organization in the area of LMS

and practice for stakeholders ▪ Communication gap ▪ No content ▪ No schemes of work and lesson plans ▪ Negative KELMS usage ▪ Digital illiteracy among stakeholders ▪ Inadequate training on KELMS ▪ Negative response follow-up	▪ Inadequate KELMS infrastructure ▪ No KELMS technical support ▪ Bureaucratic administrators both (KELMS and MVP)	

Primary Source: FW - NOMA House 1 Plenary - KyU (30th October, 2016)

Figure 1: Stakeholders engaged in group discussions which led to the findings



Primary Source: NOMA House II plenary (November, 2016)

Through brainstorming data was collected by structuring and grouping of ideas into main sub-themes. Participants' generated ideas store while observing the rule of thumb as the guiding principles – first idea generation, no criticism, and respect for every ones idea, short responses and combination of ideas permitted.

The above identified gaps were arranged starting from the most serious ones up to the least ones. Coding was done to show major challenges that can be easily solved without resources as shown in Appendix 4. Challenges were arranged in order starting with critical ones and coding was done according to numbers 1 (short term), 2 (medium term) and 3 (long term). Therefore this action research focused on category 1 (short term). This was because, this

category required short time and required no or minimum resources. The major challenges under short term were fantasied in order to generate solutions; of which details are presented in table 1:3.

1.4.3 The Fantasy phase

In the fantasy phase, stakeholders suggested the possible ways of solving the problems identified in the critique phase. All the ideas were accepted and gathered regardless of their practicability. All the negative ideas were turned to be positive. Participants assumed that every suggestion was possible and resources were available to solve the problems mentioned during the future workshop meeting. During this stage participants were free to record, photography and take note. The social fantasies of the stakeholders were developed in this phase allowing them to liberally dream big. Stakeholders, worked out Utopian solutions without any restrictions as shown in Table 1:3 below.

Table 1.3: Fantasized solutions November 2016 - July, 2017

Gap	Solutions
Negative response by MVP administration to follow-up KELMS usage	▪ University policy that every lecturer must put his/her coursework online ▪ Improvement of ICT infrastructure and technical support ▪ Organize KELMS usage trainings' at MVP ▪ Increase Internet bandwidth at MVP ▪ KELMS usage be examined at MVP ▪ Strict follow-up on KELMS usage: assignment submission etc.
Digital illiteracy	▪ Capacity trainings' on KELMS at MVP for stakeholders ▪ Individual trainings on digital skills ▪ Facilitation/trainings on KELMS usage ▪ ICT trainers should provide digital skills to stakeholders ▪ Include KELMS trainings on MVP timetable ▪ Conduct one on one trainings on KELMS usage ▪ Individual trainings on digital skills ▪ Practical examination on KELMS usage so as to improve interest in students

Negative attitudes by stakeholders	▪ Reward KELMS users ▪ University policy that every stakeholder must interact with KELMS everyday ▪ Individual trainings on digital skills ▪ Organize KELMS usage trainings' ▪ Conduct one on one trainings on LMS with mentors ▪ Individual trainings on digital skills

Primary Source: FW - NOMA House 1 Plenary - KyU (30th October, 2016)

1.4.4 Reality phase

In this phase, stakeholders agreed that this was the real situation and that challenges which are short term should be prioritized by pair wise ranking approach to ascertain the most pressing but manageable challenges.

The identified gaps were arranged starting from the most serious ones up to the least ones. The gaps were given codes to each gap; this was for easy identification as shown in pairwise matrix table in Appendix 7. Pairwise is comparison technique that has been widely used to tackle the subjective and objective judgments about qualitative or quantitative criteria in multi-criteria decision making, especially in the Analytical Hierarchy (AHP) and Analytical Network Process (ANP), and usually dented as pairwise comparison matrices (Gang et al , 2016). Challenges or gaps were arranged in order of critical ones (as shown from numbers) and coding was done according: numbers 1 (short term), 2 (medium term) and 3 (long term). Therefore this action research focused on category 1 (short term). This was because, this category required short time and require no or minimum resources. The major challenges under short term were fantasied in order to generate solutions of which details are presented in table 1.3.

Together with the stakeholders, gaps were identify, visualized and possible strategies to fix the causes of the challenges identified were suggested in the FW meeting.
Negative response by MVP administration to follow-up the KELM usage emerged first followed by digital illiteracy and negative attitude by stakeholders were the gaps that identified to be solved during the short term period. However, stake holders unanimously agreed that all the three gaps mentioned above all be addressed at once.

1.4.5 Implementation of Action Research work plan

During the Implementation stage participants acted with respect to the designed work plan as shown in the **Appendix 8.** This is supported by psychologists like Walton who states that, feeling that you are part of the team can encourage one to take on tasks (Carr and Walton, 2014). In this study, the roles of participants were clearly agreed upon and my role as a researcher was to follow up the action implementation by responsible stakeholders and track what is being implemented and what was not working well.

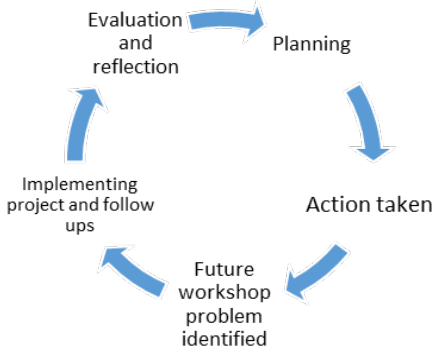
1.4.6 Monitoring and Evaluation action research work plan

Monitoring was done to find out if there was any improvement exhibited within the period of the action research from October, 2016 to August, 2017. Also, evaluation was conducted to determine the success or failure of the Future Workshop in order to re-plan how to solve the problem.

In order to understand the action research works, the action research cycle adapted from Kemmis and McTaggart (1988) was used to interpret its process. This is quite good but not sufficient to explain the entire passive process since Action Research involves constructing identities as shown in the cycle in figure 2.

Therefore, since action research is cyclic, after the first phase of improvement on problems presented, the cycle is continued until when all the problems are addressed so as to improve use of the KELMS to enhance learning and teaching processes at MVP.

Figure 2: Processes of action research undertaken in the study at MVP



Secondary Source: Action Research Cycle (Kemmis S & McTaggart, 1988).

1.5 Statement of the problem

The use of e-learning system for teaching and learning processes, with the support of more advanced technologies is a wide enterprise at the global level of late. East African universities are not left behind; they too have adopted the use of e-learning system so as to expose their students and lecturers to online teaching and learning environments such as Learning Management System, mobile learning, blended approach etc. KyU, customized its e-learning system to facilitate some courses/course units online. LMS adoption at KyU had good intention, but its usage was rather poor since its inception. However, over the years the KELMS users continued to face numerous challenges such as; accessing login details, login/logout was tedious, difficult to locate course unit/courseware from the system panel, slow web browser and lack of ICT knowledge by KELMS users among others. It is against the aforementioned concerns that this participatory Action Research attempted to address the challenges. The concerns were mainly due to: long process to acquire system login details, long login/logout steps to be followed, lack of ICT hands-on skills, congested KELMS panel made it difficult to access their course units or courseware, low internet bandwidth, congested KELMS panel, small font size and poor color etc. During the course of the research stakeholders found it viable to use the following strategies to remedy the challenges identified: increase internet bandwidth, introduction of hands-on computing lessons and weekly exercises on LMS usage to stakeholders, reduce login/logout steps, increase the font size from small to medium and add bright color, KELMS administrator to decongest the system panel by removing unwanted documents and system administrator to provide promptly the login details to KELMS users.

1.6 Purpose of the study

The purpose of the study was to improving E-learning through usage of Learning Management System: A case of a Master's Degree in vocational pedagogy at Kyambogo University

1.7 Objectives of the Study

The study was guided by the following objectives:

i. To examine factors that affect KELMS usage for MVP, KyU.

ii. To explore strategies identified during FW to improve LMS usage to enhance teaching and learning processes for MVP.
iii. To implement the identified strategies to improve KELMS usage in teaching and learning processes for MVP.
iv. To evaluate the impact of the intervention strategies used to improve KELMS usage in teaching and learning processes for MVP.

1.7.1 Research questions

The research questions of the study were:

i. What are the factors affecting KELMS usage for MVP, KyU?
ii. What are the strategies that were identified during FW can be used to improve KELMS usage for enhancing teaching and learning processes for MVP?
iii. How can the identified strategies be implemented to improve KELMS usage for enhancing teaching and learning processes for MVP?
iv. How can the intervention strategies be evaluated to improve KELMS usage in teaching and learning for MVP?

1.8 Significance of the Study

This study will be of value to the MVP programme graduates, mentors, facilitators and MVP programme administrators who may be able to attain the required skills and competences required by students, facilitators and mentors to improve KELMS usage to enhance teaching and learning at MVP. In addition, Kyambogo University may use this research to improve KELMS usage in other faculties. The knowledge shared in this research may help facilitators, students and administrators to have the opportunity of using action research to explore common problems encountered in usage of KELMS to teach and learn processes with the purpose to bring about change. Danielson & McGreal (2000) in support to the above clarified that most teachers have scarce opportunities to explore common problems and possible solutions, or share new pedagogical approaches with their colleagues at workplaces. In addition to that, lecturers, students and administrators may have the opportunity of using action research to explore common problems encountered in the teaching and learning processes with the purpose to bring about change.

Furthermore, according to Parkin (2009), involving the stakeholders in the action research process which is collaborative, investigative and participatory provides opportunity to work

together to identify common problems, design action plan and find solutions, follow up to see observable changes or improvement on the problems raised in this Thesis.

The study will contribute to the body of existing knowledge pertaining to e-learning. On the other hand, the information generated by this research might serve as source of literature for future researchers. The methods applied in this study can be used with improvement to yield similar results in study areas that may have common attributes and challenges similar to MVP.

This study was required in order to come up with strategies to improve KELMS usage in the teaching and learning processes: a case of MVP. Secondly, it was to help KyU and other universities to realize the possible ways in which they can improve strategies of developing ICT and LMS skills among learners.

1.9 The Scope of the Study

The study consisted of the content scope, geographical scope, and time scope**.**

1.9.1 Geographical scope

The study was undertaken at the Department of Art and Industrial Design, specifically at MVP Programme, Faculty of Vocational Studies at KyU – Kyambogo, Uganda. The stakeholders involved in the study were facilitators, mentors, Cohort Six Students of MVP Programme and administrators of both MVP Programme and KELMS. The total number of 36 stakeholders were sampled to assess their attitudes, knowledge, experience, authority to improve the KELMS usage.

1.9.2 Content scope

The study concentrated on the identification of challenges, identified action strategies to the challenges, implementation of action strategies and lastly evaluated the impact of the action strategies implemented so improve KELMS usage at MVP.

1.9.3 Time scope

The Action Research (AR) process at MVP programme started in October, 2016 to August, 2017.

1.10 Limitations of the study

Funding; the research funds were given late and this led to delays in starting the research process. To be able to work the researcher had to use other sources to facilitate the future workshop. The funding was later availed to facilitate other research processes like implementation and evaluation.

Timing; the fact that the research is carried out in an institution, the implementation process was interrupted by the semester break offs which then delayed other research processes like evaluation. Therefore, the research process which was meant to be completed in June was rather completed at the beginning of August when the evaluation stage of the research process was carried out.

1.11 Definition of operational terms

Action research: According to (Sagor (2000) action research which is also known as is a disciplined process of inquiry conducted *by* and *for* those taking the action. The primary reason for engaging in action research is to assist the "actor" in improving and/or refining his or her actions.

Learning Management System: A learning management system (LMS) is a software application for the administration, documentation, tracking, reporting and delivery of electronic educational technology (also called e-learning) courses or training programs. A frequently used definition of an LMS describes it as "abroad term that is used for a wide range of systems that organizes and provide access to online learning services for students, teachers, and administrators. These services usually include access control, provision of learning content, communication tolls, and administration of users" (Paulsen, 2002). Kyambogo University customised its LMS as: Kyambogo E-learning Management System (KELMS).

Teaching: is the deliberate intervention that involves planning and implementation of instructional activities and experiences to meet intended learner outcomes according to a teaching plan (Orlich et al, 2013).

Learning: Is the process of acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences (Richard, 2000).

Teaching and learning process: It is the most powerful instrument of education to bring about desired changes in the students.

Assessment: Ioannou-Georgiou (2003) defines assessment as "a general term which includes all methods used to gather information about children's knowledge, ability, understanding, attitudes, and motivation"

Vocational Pedagogy: Is a field of knowledge oriented towards trades, occupation and profession (NOMA programme Document, 2008).

Skills: Refers to a students' potential in performing work oriented tasks efficiently when all the activities are on their fingertips.

CHAPTER TWO

LITERATURE REVEW

2.0 Overview

This chapter presents the theoretical underpinning, related literature reviewed from various scholarly materials to the two main objectives of action and reflection. Related literature for evaluation is based on three main gaps identified during the future-workshop namely; negative response by MVP administration to follow-up usage of KELMS, digital illiteracy and negative attitude towards KELMS usage by stakeholders which affected effective usage of KELMS at MVP.

2.1 Theoretical perspective

Preparing students for the demands of the 21st century requires committed, versatile and innovative technologies so as to break existing barriers in the teaching-learning processes. The rapid development of ICT infrastructure in Uganda has motivated most educational institutions to adopt the e-learning system to bridge the gap that exists in classroom teaching - learning. LMS has been widely used in higher education due to various advantages including flexible learning times and boundless distance education (Hamuy et al, 2010).

Driscoll (2000) defines learning as “a persisting change in human performance or performance which come about as a result of the learner’s experience and integration with the world”. According to the researcher, learning is a process where an individual interacts with its environment to acquire new knowledge to get experience.

Literature provides numerous learning theories employed by vocational and technical education researchers to explain the learning processes with the aim of improving teaching - learning. Among the common theories are the:- behaviorist, cognitive social learning, psychodynamic, and humanistic learning theories. While the aforementioned theories provide an understandinng of learning, the environment is equally improtant in determining which theory best suits a particular circumstance. Learning that takes place in general education differs from that of Vocational and Technical Education setting. School setting learning is usually rewarded, students are typically individually accountable, material is regularly taught without the use of typical tools such as calculators, and learning is often decontextualized (Sand et al , 2014). However, learning at vocational eduaction and training ensure acquiring

employable hands-on skills which is needed for world of work. However, this research ensured acquiring of hands-on skills as KELMS user which can be used in the world of work. The learner owns his/her learning.

According to Embi (2011) out of 20 public universities, nine use LMS on MOODLE globally. In fact, Moodle is the leading open source in North American and European universities Itmazi & Megias (2011). The factor that drives this is mainly due to its attractiveness because of zero implication costs to these higher learning institutions. Other than its free nature, Moodle is attractive because of other aspects explained next. Moodle is much more interactive than Blackboard.

Bof (2005) states that e-learning is complex and requires efficiet management so that educational outcomes can be achieved. It is crucial to establish strategies and mechanisms by which one can ensure that this system will effectively work as intended, the following components are defined: educational goals, instructional design, steps and activities, mechanisms to support the learning system, technologies to be used, evaluation system, formal academic procedures and functioning of the system as a whole, E-learning is made of a number of components that must operate in an integrated manner. It is about the formalization of an operational structure since that involves the development of course design, production of didactic materials or information sources and definition of an evaluation system, including the establishment of operational mechanisms for the distribution of subjects, the availabililty of teaching - learning support services and the establishment of academic procedures.

2.2 Examining factors that affected use of KELMS as teaching and learning aid

Negative response by MVP administration to follow-up implementation of KELMS usage at MVP was identified as one the factors that affected the use of KELMS at KyU. This factor was very important: administrative support, as the system was under implementation at the MVP programme and various organizational, structural, and infrastructural issues inevitably occur. To this research stakeholders added the technological aspect, for the same reason, as the system was not fully enhanced to carry-out teaching and learning. However, it is important to note that the most influential factors appeared to be the human factor, namely poor attitude towards KELMS usage and digital illiteracy of three groups of stakeholders: students, mentors and facilitators.

Administrative support was critical to the successful integration of KELMS into teaching and learning processes. Administrators can provide the conditions that are needed, such as ICT policy, incentives and resources. The commitment and interest of the top management and other leaders at every level is the most critical factor for successful implementation of ICTs. According to Sife et al (2007) quoted (Cameron & Ulrich (1986) as saying that transformational leadership is a leadership that involves a process of fundamental change which is required for the institutions to adapt to changes brought about by the information society. However, Buabeng-Andoh (2012) asserts that Earle, (2002) linked ICT integration with the concept of wholeness, when all elements of the systems are connected together to become a whole. For instance, the two important elements of teaching and learning which are content and pedagogy must be joined when technology is used in lesson. These ideas are consistent with international studies in terms of identification of major areas of dissatisfaction and perceptions of quality online teaching and learning Weaver et al (2008) and the importance of the role of teachers for the successful implementation of LMS Steel, (2009). For many Ugandan universities using online learning systems is a new experience and they consider it relevant to study and highlight probable challenges. However, for the success of the research it was important that both administrators for MVP and IT department of KyU were involved since they wield the power to make important decisions for the success implementation of the intervention strategies.

Negative attitude towards KELMS usage was another gap that was identified during the future workshop with stakeholders. Ali et al (2013) attitude is a predisposition to respond favorably or unfavorably to an object, person, or event. To successfully initiate and implement educational technology in school's program depends strongly on teachers "support and attitudes." Among the factors that influenced successful integration of ICT into teaching are teachers "attitudes and beliefs towards technology". If teachers' attitudes are positive toward the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. The strong relationship between computer related attitudes and computer use in education has been emphasized in many studies. Attitudes toward computers influence teachers' acceptance of the usefulness of technology, and also influence whether teachers integrate ICT into their classroom. However, for poor attitudes towards KELMS usage at MVP, the researcher and stakeholders organized two hours weekly hands-on trainings for all the stakeholder. It was observed that once these trainings started section of stakeholders who had poor attitudes towards KELMS usage

improved considerably. By the end of the end of the research all the stakeholders were on the same page.

> *Attitudes whether positive or negative come from stakeholders themselves and can be made visible in how they perceive LMS as not being 'as good' as face to face teaching. Attitudes can become major challenges for LMS if not addressed openly (*Gammill and Newman, 2005).

It was also observed from the beginning of the research that poor attitudes towards KELMS usage by section of facilitators and mentors was due to their "ignorance" that the KELMS usage once the platform is mastered, they could lose their jobs. This perception was changed when the MVP administration clearly explained the importance and help KELMS could make difference in their teaching and learning processes.

As if attitude was not enough, digital illiteracy came prominent during future workshop where section of stakeholders had poor ICT usage skills. Digital literacy is an emerging concept. The national curriculum framework for all Ministry of Education and Employment (2012) sees digital literacy as a cross-curricular theme where students will, "acquire skills that include confident and critical use of Information Technology (IT) for communication, work and leisure." It is envisaged that students, "acquire basic skills in ICT organized around four major all Ministry of Education and Employment (2012) overlapping strands." Similarly the Royal Society for DL in the "Shut down or restart" report which came out in January 2012 states: "Digital illiteracy should be understood to mean having poor basic skill or poor ability not to use a computer confidently, safely and effectively, including: the ability to use office software such as word processors, email and presentation software, the ability to create and edit images, audio and video, and the ability to use a web browser and internet search engines; including KELMS. These are handy ICT skills that are needed as KELMS user. The Digital illiteracy gap was reduced when the stakeholders were exposed to hands-on weekly computer trainings.

Sound ICT infrastructure plays a key role in successful delivery of online content to distance students (Nanayakkara, (2007). Nanayakkara also reported that more often institutions have at least core ICT infrastructure needed to support distributed learning. However, developing online courses requires additional equipment and specialised software, for example, additional servers and KELMS administrator. Student, facilitators and mentors access

requires network bandwidth and modem pools or internet service provider connections. These facilities need to be well managed and maintained to achieve a high degree of reliability. Lack of reliability, performance and timely support on infrastructure could inhibit both the tutor and the student from accepting this technology. Reliability, situation where KELMS is readily available to KEMS user. Reliability can be achieved when there is good internet connection, good computer or laptop with free virus and stable power source. Similarly, Tucker & Gentry (2009) reported that successful implementation of eLearning programs and curriculum depends upon the infrastructure being firmly in place. The curriculum structure for KELMS courseware development should be available so that facilitators and mentors who wish to upload their courseware into the platform follows the structure to ensure uniformity.

2.3. Implementation of actionable solutions identified during FW to enable use of KELMS

Implementing LMS in higher institutions such as KyU is certainly very big decision to make especially in terms of financial cost, procurement of ICT equipment and hiring LMS administrator to manage the system. Most vendors offer a robust LMS product, but require upfront costs and yearly site licenses. These costs may be especially prohibitive if it is a single department or even a small university which is considering purchasing the LMS. To overcome these issues, some institutions of higher learning have developed their own learning management open source system, such as OpenUSS Dewanto (2003). Institutions should consider exactly what objectives they wish to achieve through the LMS before acquiring a system. Iqbal (2011) suggest the following factors as the most important considerations when selecting LMS: organizational goals and objectives, technical specification and support, design specifications, clear and user friendly graphical interface, well designed course repository, course administration capability, capability of interaction among users, evaluation and feedback, student's profile, and pedagogy. Whether developing an in house system, opting for an open source solution or purchasing a large system, these issues shape the LMS adoption decision.

The KyU adopted LMS which is an open source, that use Moodle and customised as Kyambogo ELearning Management System (KELMS). The university utilizing constructivist principles with a focus on authentic tasks, cognitive realism, and suspension of disbelief can help facilitate more opportunities for an authentic experience within LMS. Creating deeper

learning within LMS presents challenges within the online environment (Herrington, 2001). Deeper learning principles can be utilized in a variety of ways in LMS, but often faculty must think outside the box to implement these strategies. Virtual chat, discussion boards and announcement postings all allow for the social learning element, encouraging interaction between faculty and students. Interactive tests with immediate feedback facilitate active learning where practice and real world tasks are emphasized. Carefully chosen hyperlinks to websites let students and lecturers explore additional information in a contextual way, integrating the knowledge into the student's world. Engaging learning, respecting multiple talents in a high challenge, low threat environment can be achieved through the use of audio/visual tools and multimedia.

In addition to ensuring that stakeholders are achieving meaningful learning, it is also of utmost importance that they are having a positive experience in the KELMS environment. KELMS platform by the time the research was complemented some courseware for certain course units were deployed on the system. The stakeholders were able to access their course materials from the platform any time and from any location on or off campus. In addition to that lectures or difficult topics could be rewatched multiple times for optimal understanding, and the combination of audio/visual slides and notes serves students of differing learning styles. LMS provides platform where learners can watch topics that are difficult many times, any where and time around the globe.

2.3.1 Kolb - Learning Styles

Simon (2004) described Kolb – learning style as a model which has four – stage proposed hypothetical learning cycle. According to him individuals will show a preference for or will cope with some stage better than others and that learning is seen as interactive process. The four stages of the LMS are described as: concrete expereince which favours experiential learning; abstract conceptualisation where there is a preference for conceptual and analytical thinking in order to achieve understanding; active experimentation involving active trial-and-error learning; and reflective observation where extensive consideration is given to the task and potential solutions before there is any attempt at action. The Kolb's assertion was good in that learning involves mental reasoning to comprehend and the learner should own his/her learning process.

KyU presents a variety of concerns in utilizing KELMS for teaching and learning. Technical sophistication requirements, acceptance of the tools among students and the time it takes for

facilitators and mentors to create and administer courseware courses are all issues presented from faculty.

2.4 Evaluating the impact of the intervention strategies used to improve KELMS at MVP

In all action research intervention strategies, evaluation is vital in assessing whether implementations were successful or not and as such it becomes a vital step for future planning.

By evaluation, we ensured the validity and reliability of an action research interventions. When evaluation was done, action built by all stakeholders of an education intervention for this matter leads to making informed transformations of practice in line with the purpose of the intervention; and in this case becomes guiding document on formulation on effective lesson objectives (Teddlie & Tashakkori, 2009).

Several studies, (Ansorge & Bendus (2004) reported that LMS have contributed positively to both instructional and learning needs.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter presents a detailed plan, clearly indicating the research design, area of the study, study population, sample size and selection, procedure of sampling technique, data collection methods and instruments, pre-testing (validity and reliability) procedure of data collection and quality control methods, data analysis techniques, ethical considerations and limitations.

3.1 Research Design

The study employed the participatory action research design which was handy in involving the views of all stakeholders in assessing and understanding the status quo situation of, and improving the use of the KELMS. According to Greenwood & Levin (1998) PAR has been described as a form of action research in which professional social researchers operate as full collaborators with members of organizations in studying and transforming those organizations. PAR intends to include people's views in the research process as well as the intervention actions meant to improve the situation. The specific methods used included: work processes analysis, future workshop, focus group discussion, interviews, observation etc. These are basically qualitative.

The quantitative part of the study relied on using quantitative measuring tools including an observation checklist and questionnaire.

3.2 Sample Size

3.2.1 Area of the Study

This study was a collaborative engagement aimed at "improving the use of E-Learning Management System (KELMS) in the teaching and learning processes at MVP; Kyambogo University, Uganda. The study was conducted in the Arts and Design department, under the Faculty of Vocational Studies. It was specifically conducted with the following stakeholders: both MVP and KELMS administrators, mentors, facilitators and Cohort Six Students of the Master's Degree in Vocational Pedagogy (MVP).

3.2.2 Study Population

This research randomly focused on 36 participants who comprised of the following stakeholders; Cohort Six MVP Students, mentors, facilitators, administrators (both MVP and KELMS). In summary form the stakeholders composed of 22 Cohort Six MVP students as of August, 2017 which represented (61.11%), where 5 (13.89%) were female and 17 (47.22%) male students and total of 14 (facilitators, mentors and administrators) which represented (38.89%) which comprised of 9 (25%) male and 5 (13.89%) female. The reason why Cohort Six students were randomly picked other than Cohort Five at the time of the research was simply because they were still in their first year and had time to attend classes. Cohort Five were in the field carrying out their research. They would not have time to come to attend to KELMS trainings. The facilitators, mentors and administrators were most time around.

3.2.3 Sample size determination

It is the process that describes the sample size as a representative group of the population in research. Bartlett et al (2001) define Sample size as one of the four inter-related features of a study design that can influence the detection of significant differences, relationships or interactions.

The sample size was twenty two (22) (61.11%) Cohort Six Students, fourteen (14) (38.89%) facilitators, administrators and mentors.

Using Krejcie and Morgan (1970) table of sample size determination, the researcher arrived at the sample size of 36 participants as indicated in table 3.1.

Table 3.1: Composition of study Participants (Population, Sample Size and Sampling Technique)

Stakeholder Category	Sample Size Target	Actual Sample Size	Sampling Technique
NORHED Coordinator	1	1	Purposive
NORHED Administrator	1	1	Purposive
Head of Learning Management System (LMS)	1	1	Purposive
LMS System Administrator	1	1	Purposive
Facilitators and Mentors	10	10	Purposive
MVP Cohort six Students	22	22	Purposive
Total	**36**	**36**	

***Secondary Source**: Krejcie and Morgan (1970) table of sample size determination (2017)*

The key participants involved in this study were 36 as indicated in the table above. The stakeholders were purposely sampled simply because they had the data wanted, they were willing to participate, available and knowledgeable.

3.2.4 Sampling Technique

The sampling technique was purposive. The researcher made use of Cohort Six MVP Students because they were in their second semester, first year when lectures were still going on. All the stakeholders were drawn from section of MVP community because they had data needed, experience, and the research was beneficial to them. The administrators were key decision makers in the implementation of the intervention strategies to improve KELMS use.

According to Teddlei & Yu (2007), purposive sampling helps to find instances that are representative or typical of a particular type of case on a dimension of interest. The simple random sampling technique enabled the researcher to select a representative sample from the final year students' population without bias. Purposive sampling saved time, money, flexible and satisfied multiple needs and interests. Purposive sampling technique is defined as selecting units based on specific purposes associated with answering a research study's questions (Teddlie & Tashakkori, 2009).

3.3 Instruments/Methods of data collection

The researcher used observation, focus group discussion, library search, questionnaires, oral interviews and brainstorming as key methods of data collection. For effective use of the mentioned methods, the researcher employed video recorder, reflective logs and group

evaluation as a research tools. Interviews allowed to discuss more so as to cover the topics in details; it gave the researcher the freedom to probe the interviewee to elaborate a new line of inquiry. The researcher must treat interviews as an interchange of views between two or more people on a topic of mutual interest.

Table 3.2: Summary of data collection methods and tools

Method	Tool
Interview	Interview Guide
Future workshop	Future workshop guide
Participant Observation	Future Workshop
Focus Group Discussion	Work Process Analysis
Focused Group Discussion (FGD)	FGD Guide
Documentary Analysis	Questioner Form
	Video Camera and still Camera
	Log Books

3.3.1 Interview

Information required from the participants (MVP Cohort Six Students, Mentors, facilitators) was gathered by the researcher asking questions in an interview process. Nigel (2002), asserts that information can be collected from individuals about their own beliefs and experiences of the teaching- learning process using interviews. The interviews were conducted during the situation analysis and future workshop in which the researcher asked questions well guided by the interview guide. An interview guide containing a set of guiding questions that prompted the participants to unveil the information they had concerning the research topic was used. It guided the researcher to ask more probing questions in a more organized manner (Boyce, 2006).

The researcher therefore made use of the guide questions as they appeared in **App.3** to collect viable information related to practical skills acquisition to meet competencies required to become LMS user.

3.3.2 Observation

The researcher, listened and took note in all stages during entire research period. Observation was also very instrumental in measuring the performance of both MVP Cohort Six Students

and facilitators while working on the LMS platform. Seeing the place or environment where something takes place can help increase your understanding of the event, activity, or situation you are evaluating (Evaluation Research Team, 2008). The researcher obliged to get involved at all times since the project was action based.

This aspect of data collection was basically to reinforce the interview method and as a means of validating the quality of data gathered. The method was supplemented with video recorder to bridge the gap between the information noted in the process of observation and what actually occurred.

3.3.3 Focus group discussions

Focus group discussions are conducted especially during the situation analysis study in order to produce a large amount of data on the topic in a short time through a semi-structured group interview processes moderated by a researcher (Nigel, 2002).

In this study focus group discussions were held with participants who included: the researcher and stakeholders (Cohort Six MVP Students, mentors, facilitators, administrators). Guiding questions were introduced by the researcher, ideas and opinions of each participant were recorded as the discussions continued**.**

Whys use Focus group discussions?

3.3.4 Documentary Analysis

Also referred as library and archival, Documentary analysis is concerned with all kinds of information, hard and soft copies of various categories and artifacts such as buildings and machines.

Relevant data may be collected through documents, archival records, interviews, direct observations, and physical artefacts (Yin, 2009). To Yin, reviewing documents, reflect reality (e.g. policy and process documents may be out-of-date). It should be noted that archival records are arguably more realible, as they are usually used for record keeping purposes.

Documentary analysis helped the researcher in the building of the literature while working with Cohort Six Students and facilitators. A number of books from the library and internet were used in the course of the study to get information about the study.

3.4 Procedure of data collection

Data collection was preceded by seeking permission from the MVP programme Coordinator. Upon receiving permission, stakeholder meetings were convened to assimilate them in the study that was aimed at improving e-learning through usage of learning management system at MVP. The lead researcher explained the procedure of data collection to the stakeholders and their role in the process. The procedure included the agreeing on the tools and how they were to be administered. In the implementation stage data was collected by interviewing stakeholders during KELMS training and usages and taking photos that do not contravene the principle of participant's privacy. Interviews were transcribed by the researcher and observation check lists completed. Data was later typed in Microsoft word, documented and stored as narrative.

During the stakeholder evaluation workshop, data was collected using recorder by recording all the discussions and writing every point as summarized form on Manila paper. In the process collected data from the stakeholder evaluation workshop meeting were later analyzed and compared with the previous data collected from Focused Group Discussion groups, interviews etc. for triangulation.

Prior to the workshop letter of invitation were sent out calling members to the evaluation meeting (Appendix 19). An instrument and other workshop materials were organized. A copy of data collection tool was given to the supervisors for their input. Upon approval a workshop was conducted in a democratic environment and data collected on visual charts, photography and transcribed notes.

3.5 Data Analysis

Data was analyzed majorly using both qualitative methods; however there was a small portion of data that was analyzed and presented quantitatively. The use of multiple methods enabled the researcher to utilize and triangulate all data generated which helped to minimize errors. Using multiple methods of data analysis also enabled stakeholders to understand the outcomes of their participation.

The researcher also used interview guide which triggered the stake holders to give as many ideas as possible regarding the solutions to the problem under study. Other tools were used for data collection, and these included: observation, interview guides, camera, and notebook.

3.6 Validity

Validity is described by a wide range of terms in quality studies. This concept is not a single, fixed or universal concept, but “rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies and projects” (Winter, 2000). Validity is also the accuracy and meaningfulness of inferences which are based on the research results, (Mugenda, 1999).

3.7 Reliability

Reliability and validity are conceptualized as trustworthiness, rigor and quality in qualitative paradigm (Golafshani, 2003). In order to ensure reliability and validity of the research finding this study employed multiple data collection methods namely, observation, focus group discussions and participant logbooks and attendance register. In the same way the researcher ensured validity of responses given by the participants during the implementation stage, through repeating the same questions in the evaluation workshop. The questions were phrased as statements and participants were asked to give responses using a Likert scale. This is supported by Brink, (1993), who said that validity can be improved by interviewing the same informant on several occasions and making observations more than once and over time. The data collected showed consistence with what was observed and responses collected during implementation. Similarly, validity of data was be ensured by asking participants to review the researcher’s synthesis of interviews for accuracy.

3.8 Ethical Considerations

As mentioned earlier that this research employed Participatory, or participatory action research (PA) which is a broad approach to research that treats human participants as collaborators rather than subjects. Often employed in projects concerned with policy and practice or service delivery, PA also aims to demystify the research process and enable non-professionals subsequently to do their own research. Many argue that PA research is inherently ethical, because this type of work involves placing a high degree of responsibility on the research participants, and demands continuous reflexivity about, and sensitivity to, emergent ethical issues as the programme of research unfolds.

> *According to* Parse (2001) *the ethical dimension of the research process includes three areas: science merit, protection of participants (human subjects), and integrity. These three dimensions provided the researcher with the basis for ensuring ethical conduct.*

To address the ethical issues, the researcher presented an introductory letter to the respondents from the faculty of Vocational Studies, department of Art and Industrial Design of Kyambogo University so as to avoid bias and give focus of the study. Principles of ethics were purely taken into consideration in the course of the research. Respondents were left to retain the independence of their minds and free decision making process.

3.8.1 Confidentiality and anonymity

Anonymization of sources of data is an important part of research and during this research process, Anonymity of individual participants and arising from an individual interviews and face to face discussions with others in ways that might identify an individual. Dresser (1998) asserts that the administrative burden of ethical reviews and procedutres is balanced by the protection of participants. She suggested close monitoring of high-risk studies in qualitative studies, researcher rely heavily on collecting data through interviews, observations, written materials, and audiovisual material. While in the field, researchers should negotiate access to participants to collect data; thus the quality of social interactions between researchers and the participants may facilitate or inhibit access to information.

3.8.2 Informed and voluntary consent

Informed Consent is a voluntary agreement to participate in research. It is not merely a form that is signed but is a process, in which the subject has an understanding of the research and its risks. Informed consent is essential before enrolling a participant and ongoing once enrolled. Informed Consent must be obtained for all types of human subjects research including; diagnostic, therapeutic, interventional, social and behavioral studies, and for research conducted domestically or abroad. Obtaining consent involves informing the subject about his or her rights, the purpose of the study, the procedures to be undergone, and the potential risks and benefits of participation. Subjects in the study must participate willingly. Vulnerable populations (i.e. prisoners, children, pregnant women, etc.) must receive extra protections. The legal rights of subjects may not be waived and subjects may not be asked to release or appear to release the investigator, the sponsor, the institution or its agents from liability for negligence (Susan et al, 2017). Permission was sought from the participant including administrators, Cohort Six Students and facilitators to participate in the research process. Most importantly, permission was sought from MVP administration to carry-out this research.

3.8.3 Collaboration

Since the research was participatory action based, active involvement of the participants was done such that they took a leading role in creating their own change by working together with the researcher. Reason, & Bradbury (2008) who assert that participatory action research (PAR) is an approach to research in communities that emphasizes participation and action. It seeks to understand the world by trying to change it, collaboratively and following reflections. PAR emphasizes collective inquiry and experimentation grounded in experience and social history. Within a PAR process, "communities of inquiry and action evolve and address questions and issues that are significant for those who participate as co-researchers.

CHAPTER FOUR

ACTION IMPLEMENTATION, RESULTS AND EVALUATION

4.0 Overview

This chapter presents the results as indicated in the title of this chapter. The presentation of the findings followed the objectives of the study as reflected in chapter one. The objectives were as follows; to examine factors that affected KELMS usage at MVP, explored possible strategies that were used to improve KELMS usage to enhance teaching and learning processes at MVP, implementation of the identified strategies to improve KELMS usage for enhancing teaching and learning processes at MVP and lastly evaluated the impact of the strategies used to improve KELMS usage at MVP.

4.1 Challenges in the usage of KELMS to teach and learn at MVP

October 30th, 2016 future workshop meeting was conducted at MVP premises - NOMA house one. This meeting came up with list of challenges that hindered KELMS usage. These challenges or gaps were as follows: little knowledge on ICT for students, poor technical support, no link between training and practice for mentors, students and facilitators, communication gap, no content, negative attitude towards use of ICT in teaching and learning, no schemes of work and lesson plans, lecturers do not upload their courseware into the KELMS, digital illiteracy amongst lecturers, mentors and Cohort Six Students, inadequate KELMS training, no resident KELMS administrator at MVP, not practically assessed, indiscipline among learners, inactive course leaders, poor KELMS infrastructure, poor local technical support, bureaucratic administrators both (KELMS and MVP), external factors like inadequate internet bandwidth, not easy to change Internet Service Provider, no modern ICT equipment at MVP, lack of collaboration with international organization in the area of KELMS and poor interest by administration to follow-up KELMS usage among others.

The above challenges were then clustered into four categories as: i) negative response by MVP administration to follow-up usage of KELMS ii) digital illiteracy iii) negative attitude towards KELMS usage by section of stakeholders and v) external factor such as inadequate internet connection from Internet Service Provider which affected effective usage of KELMS. The challenges were further scrutinized and subjected to pair wise matrix (app. 7) leaving only four categories namely; negative response by MVP administration to follow-up usage of

KELMS at MVP, digital illiteracy, negative attitude towards KELMS usage by section of stakeholders, and external factor as inadequate internet connection from Internet Service Provider which affected effective usage of KELMS. A democratic process was then carried out to choose the critical challenge and the results were as follows: negative response by MVP administration to follow-up usage of KELMS received 15 (41.67%) votes; negative attitude towards KELMS got 10 (27.78%) votes; digital illiteracy received 06 (16.67%) votes; and external factor such as poor internet connection from Internet Subscriber provider received 05 (13.89%) votes.

The researcher tasked stakeholders during the Future Workshop meeting to choose category which could be handled within means and the time available for the research. However, unanimously the stakeholders agreed that the three challenges namely; poor interest by administration to follow up KELMS usage, digital illiteracy and negative attitude towards KELMS usage were related to each other and they could be solved altogether and further required not much funds to implement them. The external factor which was the fourth gap was left out since it required more time and funds.

4.2 Action Plan for Participatory Implementable Interventions

The study involved 36 stakeholders of which 22/36 (61.1%) were Cohort Six students, 10/36 (27.8%) were facilitators and mentors, 4/36 (11.1%) were both KELMS and MVP administrators. The stakeholder's voluntarily took part in implementation process; they performed the duties assigned to them so that the research achieved its intended objectives.

After analyzing the situation analysis of the KELMS using work process analysis and future workshop methods (Refer 1.2 situational analysis above), the stakeholders came out with the an action plan as indicated in (App.17).

4.3 Implementation of the strategies to improve KELMS usage to enhance teaching and learning processes at MVP

Under this objective, strategies that were adopted during future workshop were clustered into seven (7) categories and were recommended for implementation by the stakeholders. The following were the strategies identified: set compulsory practical tasks on KELMS platform to improve KELMS usage, all class activities be uploaded into the KELMS, lead researcher guide stakeholders in uploading or downloading tasks into or from the KELMS and follow-up its active usage, involvement of KELMS administrator as KELMS usage trainer, new

laptops be provided to equip Cohort Six MVP Students and improving KELMS Platform outlook by KELMS administrator for easy accessibility and scalability.

The implementation of these strategies were based on the gaps that were identified during future workshop: poor interest by administration to follow up KELMS usage, digital illiteracy and negative attitude towards KELMS usage amongst stakeholders.

4.3.1 Set compulsory practical tasks in KELMS to improve KELMS usage

During implementation period there were series of tasks that were aimed to bring about effective KELMS usage. The tasks were set by facilitators and mentors for Cohort Six Students with clear instructions how to go about working on the tasks. The continuous setting up of tasks on KEMS provided opportunity for stakeholders to appreciate importance of KELMS usage. The tasks included; setting assignments for Cohort Six students by facilitators and mentors, blogging and participate in forums.

This made effective usage of the system and also stakeholders polished their ICT skills to get used to the system.

Setting compulsory practical tasks on KELMS; to some extent helped administrators to improve KELMS usage. This made them to follow the deadlines for submissions of some tasks. It made section of students to request for some time to submit their assignment. This helped MVP administrators track student's performances.

Digital illiteracy improved amongst both student and facilitators as there was no choice but to learn how to use ICT facilities to learn and facilitate respectively. This made stakeholders to appreciate the beauty of using ICT to facility and learn.

Negative attitude towards KELMS usage amongst section of Cohort Six Students, facilitators and mentor changed as soon as compulsory weekly two hour KELMS usage training and coupled with uploading all tasks into KELMS started.

4.3.2 All class activities be uploaded into the KELMS as a strategy to improve KELMS usage

Uploading all class activities into the KELMS was one of the intervention strategies pointed-out to be used to improve KELMS usage. This meant that all the facilitators, mentors and Cohort Six MVP students were supposed to upload all their course unit assignments into the system and weekly blog. This strategy was assigned and followed by both MVP and KELMS administration. MVP Administration made sure that all the class activities were all uploaded

into the KELMS platform by all the stakeholders. The facilitators and mentors were tasked to upload their courseware into the KELMS for the students to follow and refer to. This worked to some extent, as many facilitators and mentor uploaded their presentation into the KELMS platform for students to access their presentations. This strategy intervention was assigned for the course leaders to follow as to achieve positive feedback.

4.3.3 Involvement of KELMS administrator as KELMS usage trainer

This intervention was implemented during implementation phase. Both MVP and lead researcher were fully involved to sure that the KELMS administrator was fully involved in KELMS usage trainings at MVP.

The KELMS administrator together with lead researcher were most time around to help any stakeholder who were having challenge.

The areas where technical team were involved were mainly in the uploading and downloading, creating username and passwords, logging into the KELMS system and updating user profile.

During the entire research period the KELMS administrator and researcher were fully involved. The strategy worked to some extent by the time the first research cycle came to an end some section of the stakeholders were able to upload and download documents from the KELMS and log-into and out from the system.

Figure 3: KyU ICT coordinator taking through facilitators and mentors on steps by Step how to upload and download couseware into/from KELMS

Primary Source: MVP Computer Lab (April, 2017)

4.3.4 Lead researcher guiding stakeholders in uploading or downloading tasks into or from the KELMS and follow-up its active usage

The Cohort Six MVP students were followed by lead researcher to ensure that ICT facilitations were organized. The first interventions was that Cohort Six MVP students were introduced to hands-on computer training. They were later taken through KELMS usage on step by step style. The students had more than ten KELMS trainings which were organized by MVP administration in collaboration with KELMS administration. These trainings comprised of: how to log-in, to update their profile information, location of their course, uploading and downloading their docs, blogging, participate in discussion forums and sending messages among themselves.

The students were able to upload their course unit assignments through the platform, although others still needed some help from KELMS administrator and lead researcher.

The lead researcher made sure that KELMS and ICT facilitations were included on the MVP semester timetable.

This intervention worked very well and MVP administration made sure that KELMS and ICT facilitations were included into the MVP timetable. These trainings totally changed the negative attitude by section of stakeholders towards the KELMS usage.

The lead researcher in absence of KELMS administrator was able to facilitate Cohort Six MVP students on KELMS usage. These trainings were in consultation with MVP administration. This meant that administration was fully committed in KELMS usage at MVP at last.

With constant follow-up by lead researcher on KELMS usage big difference as stakeholders acquired hands-on skills needed KELMS usage. This strategy made some Cohort Six MVP students changed their attitude towards ICT usage.

Implementation intervention worked to some extent with mentors and facilitators in uploading courseware into the KELMS. This was because some facilitators had not prepared courseware for some of their course units to be uploaded into the system. It should be mentioned here that most MVP course units namely: VP611, VP 612, VP 613, VP 621, VP 622, VP 623, PS 511, PS 512, VP 711, VP 712, and VP713 were already uploaded by some facilitators and mentors into the KELMS. We couldn’t run away from the fact that

introduction of KELMS usage was technology shock to some facilitators and mentors. This took some time for some sections of stakeholder to adapt to the new technology.

The MVP administration made sure that lead researcher followed-up with mentors and facilitators to ensure that all their course units were uploaded into the system. The continuous uploading of files into the system made facilitators acquire both ICT and KELMS usage skills.

In conclusion, stakeholders were able to link their KELMS accounts with their social media accounts like Facebook, Twitter and LinkedIn accounts to further access more learning materials online.

Figure 4: Lead researcher one on one with Cohort Six Student how to submit her assignment

Primary Source: NOMA house I (July, 2017).

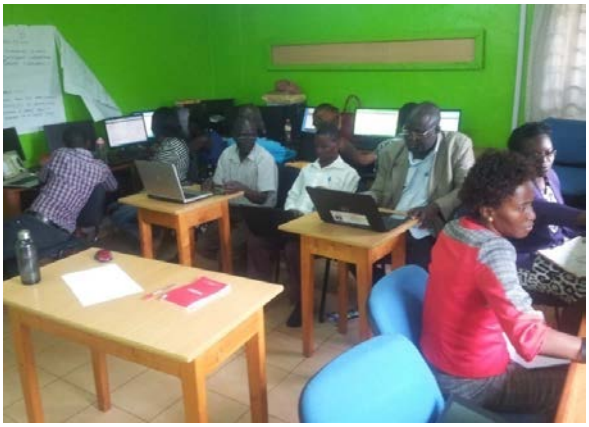
4.3.5 Providing new laptops to equip Cohort Six MVP Students as strategy to improve KELMS usage

KELMS is ICT based teaching and learning platform which require use of the following gadgets; laptops, computers, good internet connection, good stabilized power. It was very important that stakeholders had access to ICT gadgets to access the KELMS platform.

During future workshop meeting it was noted that Cohort Six MVP Students had not yet received their laptops. The new laptops are usually provided to new cohort of MVP students as tradition. With no laptops for Cohort Six Students would affect implementation of the

intervention strategies identified; much as MVP administration insisted that the programme had fully equipped computer lab. However, stakeholders insisted that the programme source for laptops for each Cohort Six MVP Student if interventions identified were to be effective. This was very important because laptop would help them to work on their assignments while the students were off MVP lab and also meet their deadlines to submit their tasks. However, the students continued to use MVP lab as shown in fig. 5 below.

Figure 5: Cohort Six MVP Students in Computer Lab for ICT KELMS usage skills



Primary Source: MVP Computer Lab (May, 2017)

Finally, Cohort Six MVP Students were procured new laptops during the course of the research. This helped them so much to achieve the targeted objectives. The laptops helped the students to have ICT hands-on practical skills, thus improved their KELMS usage skills. Cohort Six Students were very happy and they were motivated to embrace ICT tool to improve their digital skills. Furthermore, negative attitude towards KELMS usage amongst some students promptly changed.

"I am loving ICT and KELMS usage in my life" says one Cohort Six Student.

Provision of new laptops improved KELMS usage at MVP department. This indicated that MVP administration supported KELMS usage with provision of new laptop to Cohort MVP students.

4.3.6 Improving KELMS Platform outlook by KELMS administrator for easy Accessibility and flexibility as strategy

During the examination of the factors that affected KELMS usage; it was found out that the system had accessibility and flexibility challenges. The KELMS users would take very long time to access their documents or even just to log-in to the system was a problem. The steps were not clear and it became very difficult for new KELMS users to access the platform so as to enroll for courses.

Gaps were identified on the platform for KELMS administrator to work on. These gaps were: log-in or log-out buttons were not easily located, the log-on/log-out had so many steps hard to follow, it was not easy for KELMS users to locate his/her course units on the system, upload or download features were hard to locate, the KELMS browser was slow to load due to low bandwidth.

The KELMS administrator made significant changes to the areas that were identified by stakeholders which made the system complicated or not clear. The areas improved included among others log-in and out steps; which were initially difficulty to understand or to follow, the font size of the system was changed from small to medium size, the system color from green to light blue to reflect KyU colors and internet bandwidth was increased at MVP programme so as to increase internet speed. This made the internet browser load faster which in-turn helped to upload and download documents to/from the system faster. The system panel layout was de-congested by removing unwanted and replacing with wanted files etc.

The course units were re-arranged according to academic and semesters basis. This improved the outlook of the system immensely and it became easy to access course units from the platform with easy. This alone motivated the stakeholders and some of the participants who had negative perception changed. They started to embrace the use of the system more often

Lastly, there was need to carry-out more trainings on KELMS usage so that the stakeholders gain more hands-on skills. It was found out that lack of hands-on skill also contributed to some of the complications on the system usage. These trainings were organized in collaboration with both MVP and KELMS administration. With continuous hands-on trainings that were organized improved KELMS usage considerably. Users could easily log-in or out from their KELMS accounts more freely than before.

4.4 Action implementation, results and evaluation on the strategies used.

The appraisal of action implementation, results were conducted with the help of an interview guide and a focus group discussion guide. The results were compiled together with results from stakeholder's evaluation workshop meeting were presented accordingly in Tables 4.1.

4.4.1 Evaluation from stakeholder's evaluation workshop meeting on how the strategies used really worked

Evaluation feedback collected from all the 36 stakeholders are shown in Table 4.1 below. These Stakeholders) were evaluated based on the following: set compulsory practical tasks on KELMS platform, all class activities be uploaded or downloaded tasks into and from the KELMS, lead researcher guide stakeholders in uploading or downloading tasks (course works, courseware, or other tasks) into or from KELMS and follow-up its active usage, involvement of KELMS administrator as KELMS usage trainer, provision of new laptops to equip Cohort Six MVP Students, and lastly improved KELMS Platform outlook by KELMS administrator for easy accessibility and scalability and for active participation in forums, uploading (courseware, usage. assignments etc.), blogging, log-in and out, send email, chat or even send message amongst themselves as shown in (Appendix 4).

Table 4.1: Evaluation responses collected from stakeholders after implementation

Strategy	Response				
	Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**	**Total**
▪ Set compulsory practical tasks in KELMS to improve KELMS usage to improve KELMS usage.	22 (27.8%)	10 (27.8%)	3 (8.3%)	1 (2.8%)	36
▪ All class activities be uploaded or downloaded into or from the KELMS as a strategy to improve KELMS usage.	17 (47.2%)	8 (22.2%)	10 (27.8%)	1 (2.8%)	36
▪ Lead researcher guide stakeholders in uploading or downloading tasks into or from KELMS and follow-up its active usage.	23 (63.9%)	7 (19.4%)	6 (16.7%)	0	36
▪ Involvement of KELMS administrator as KELMS usage trainer.	16 (44.4%)	12 (33.3%)	8 (22.2%)	0	36
▪ New laptops provided to equip Cohort Six MVP Students.	26 (72.2%)	6 (16.7%)	4 (11.1%)	0	36
▪ Improve KELMS Platform outlook by KELMS administrator for easy accessibility and scalability.	8 (22.2%)	6 (16.7%)	9 (25%)	13 (36.1%)	36

Primary source: *MVP survey, NOMA (July 2017)*

4.4.2 Interpretation of findings from stakeholders on how the strategies used really worked

During the evaluation process with stakeholders (mentors, Cohort Six MVP Students, facilitators and administrators) it was found out that 61.1% strongly agreed that compulsory practical tasks were set on KELMS platform, 27.8% agreed, 8.3% disagreed, while 2.8% strongly disagreed.

When it came to whether all class activities were uploaded into the KELMS platform 47.2% strongly agreed, 22.2% agreed while 27.8% disagreed and 2.8% strongly disagreed respectively.

Whether lead researcher guided stakeholders in uploading tasks (course works, courseware, or other tasks) into KELMS and follow-up its active usage; the percentages were as follows: 63.9% strongly agreed, 19.9% agreed, while 16.6% disagreed and 0% strongly disagreed.

When it came to whether involvement of KELMS administrator as KELMS usage trainer as strategy improved the KELMS usage. The responses were as follows: 44.4% strongly agreed, 33.3% agreed, while 22.2% disagreed and again 0% strongly disagreed.

Provision of new laptops to equip Cohort Six MVP Students as strategy to improve KELMS usage. This strategy worked with high number of stakeholders strongly agreed with 72.2.6%, 16.7% agreed, while 11.1% disagreed and 0% strongly disagreed.

Lastly, responses for whether KELMS administrator improved KELMS platform accessibility and flexibility. The responses were as follows: 22.2% strongly agreed, 16.7% agreed that this strategy indeed worked, while 25% disagreed and 36.1% strongly disagreed that the interventions worked.

In conclusion, investment on new laptops provided to equip Cohort Six MVP Students as strategy to improve KELMS usage was the best strategy. Investment on new laptops provided to equip Cohort Six MVP Students and coupled together with lead researchers' guide on stakeholders in uploading or downloading tasks into or from KELMS and follow-up on its active usage were the factors that motivated and changed attitudes of some stakeholders to appreciate KELMS usage in teaching and learning processes at MVP.

Figure 6 & 7: Cohort Six Students attending to KELMS facilitation


Primary Source: NOMA House II – Computer Lab (June, 2017)

The ICT facilitation was also included on the MVP timetable as shown in Appendix 10.

Figure 8 & 9: Facilitators and mentors attending to KELMS facilitation


Primary Source: NOMA House II – Computer Lab (July, 2017)

Figure 10: Facilitators and mentors attending to KELMS facilitation

Primary Source: NOMA HOUSE II – Presentation Plenary (September, 2017)

KELMS administrator, *"I think with continuous ICT trainings MVP is on top of the KELMS usage"*.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Overview

This chapter presents findings, conclusion and recommendations and is based on the research questions/objectives of the study that is to: examine factors that affect KLMS usage, explore possible strategies that can be used to improve its usage, implement the identified strategies to improve its usage and, lastly, evaluate the impact of the intervention strategies used to improve LMS usage at MVP, KyU.

5.1 Conclusion

Improving e-learning through usage of KELMS at MVP, KyU was achieved by first identifying and examining the factors that affected the KELMS usage at MVP. The possible strategies were later explored so as to solve the factors that hindered its usage. The identified strategies were then implemented one by one so as to improve the system. The identified strategies were: set compulsory practical tasks in KELMS to improve KELMS, all class activities be uploaded into the KELMS as a strategy to improve KELMS usage, involvement of KELMS administrator as KELMS usage trainer, lead researcher guiding stakeholders in uploading or downloading tasks into or from the KELMS and follow-up its active usage, providing new laptops to equip Cohort Six MVP Students, improving KELMS Platform outlook by KELMS administrator for easy accessibility and flexibility as strategy. After the implementation of the identified strategies; the stakeholders gained knowledge as a result of the lessons and practical exercises on KELMS usage this improved their digital literacy and better usage of the system, as well as appreciation of the KELMS. The stakeholders' attitude toward the system became more positive, the administration took keen interest in following up the LMS usage. Several hands-on trainings were organized and this led to improved

Lastly, an evaluation was carried out after the implementation of the strategies so as to determine if they improved the KELMS usage at MVP. The feedback from the evaluation showed great improvement in the KELMS usage by the stakeholders. To have continuously improve KELMS usage at MVP; continuous implementation of practical hands-on computing lessons and weekly exercises on KELMS usage will go long way improve practical skills of KELMS users. However continuous mentoring is required by the mentors, students, facilitators so as to change the negative attitude by MVP administration to follow-up LMS

usage, improve digital illiteracy and negative attitude by section of stakeholders towards LMS usage attitudes towards KELMS usage.

5.2 Discussion of findings

The research started with needs assessment where MVP community was involved right from the beginning of the research. The needs assessment was followed with future workshop meeting where all stakeholders (facilitators, mentors, administrators (both MVP and KELMS) and Cohort Six Students) all gathered together to find means and ways to improve the KELMS usage to facilitate teaching and learning processes at MVP. The research sought to improve KELMS usage at MVP. This was done by identifying and examining factors that affected KELMS usage, exploring possible intervention strategies for improving KELMS usage, implementing identified intervention strategies and evaluating the impact of intervention strategies on the improvement of KELMS usage in the teaching and learning processes at MVP. Therefore, the findings were discussed in line with the objectives of the research.

As mentioned in Chapter two, the learning management system (LMS) platform adopted by KyU is MOODLE. Moodle was idea of Dougiamas to create his own online learning environment in the open source format and allow the open source community to help develop and refine it. MOODLE was designed to support and promote users interested in developing constructivist, student-centered learning environments (Dougiamas, 2015). The flection and discussions in this chapter were guided by the five (5) core foundations of student – centred learning environments framework developed by Hannafin & Land (2000) which was initially designed as aguide for developing constructivist learning enviroments. According to the authors, “learning enviroments, directed as well as constructivit, are rooted in five core foundations: psychological, pedagogical, technological, cultural, and pragmatic” (Hannafin et al, 1999). This arqument is highlighted in figure 5 and describes the five components of these core foundations as applied to the design of student – centred learning enviroments.

5.2.1 Set compulsory practical tasks in KELMS

During future workshop meeting, consistently negative repsonse by MVP administration to follow-up KELMS usage was major gap identifed by stakeholders. Before setting compulsory practical tasks on KELMS; there were no measures of using KELMS at MVP. This made the platform dormant and useless. However, once MVP administration ensured setting

compulsory practical tasks on the KELMS platform. This provided an opportunity for the stakeholders to log into the system either to upload or download tasks. The administration much as they advocated for KELMS usage at MVP; they did not put measures and effort to follow up its usage. The measure required for MVP administrators to ensure constant use of the system could only be by setting up practical tasks in the system by the stakeholders. According to Cameron & Ulrich (1986), a transformational leadership is a leadership that involves a process of fundamental change which is required for the institutions to adapt to changes brought about by the information society. They further said; for every successful implementation of LMS administrative support is critical to its success to enhance teaching and learning processes. Administrators can provide the conditions that are needed, such as ICT policy, incentives and resources. The commitment and interest of the top management and other leaders at every level is the most critical factor for successful implementation of ICTs.

To increase the KELMS usage skills amongst the stakeholders; series of ICT and KELMS skills trainings were organized for the stakeholders at least every week by MVP administration. Addition to that, ICT facilitation was included on the MVP time table as course unit. For effective situated cognition to be achieved effective learning should involve immersing students in authetic activity and culture in a real-world learning context as supported by (Brown, 2000). Furthermore, MVP administrators themselves attended all the trainings' which were facilitated by KELMS administrator. This is backed by Dwyer et al, (1997) who emphasized that for the integration of LMS to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education.

However, technological proficiency is a must for online courses, as it enables stakeholders to manage their assignments and courseware in an organized manner without struggling. The constant logging into the system either to submit assignments, uploading or downloading tasks from the platform somehow solved the digital illiteracy problem and negative attitudes problem. This made section of stakeholders who had digital illiteracy problem to spend more time on their laptops or computers in the lab to get digital skills of uploading, logging and downloading etc. The negative attitudes towards KELMS usage improved considerably amongst stakeholders simply because they had no choice but to log into the platform to access tasks. The constant uploading or downloading tasks into or from the KELMS achieved

the purpose of constructivism where the stakeholders linked new knowledge with existing knowledge. This is supported by McCombs & Whisler (1997) who said that constructivism implies that the learner links new information with existing and future-oriented knowledge in unique and meaningful ways.

5.2.2 All class activities be uploaded into the KELMS as a strategy to improve KELMS usage

For effective usage of the KELMS platform amongst MVP stakeholders it was important for MVP administration to ensure that all class activities like; assignments submission, forums, assessment of MVP Cohort Six Students were carried out via the platform. This is supported by Martin - Blas and Serrano –Fernandez who argued that Moodle can help to strengthen. They further suggested that Moodle is the best platform for instructors to "organize, manage and deliver contents" (Martín-Blas & Serrano-Fernández, 2009). The Cohort MVP Students on the other side uploaded their assignments for assessment via the system. They also downloaded presentations from their facilitators or mentors from the system. The assignments results were also displayed for the students via the system. The constant upload or download of documents by stakeholders' sharpened their KELMS usage skills. As mentioned earlier Moodle LMS platform allows as many as possible uploads such as resources, forum postings, assignment etc. can be edited using an embedded WYSIWYG (What You See Is What You Get) HTML editor (Antonenko et al, 2004).

With constant uploads in to the KELMS helped to reduce digital illiteracy amongst the stakeholders since there was constant KELMS usage by the stakeholders. However, digital illiteracy is when one lacks a set of competencies required for full participation in information knowledge society. This may include knowledge, skills and behaviours involving the effective use of digital devices like smartphones, tablets, laptops and desktops personal computers for purposes of communication, expression, collaboration and advocacy. The term digital literacy was simplified by Paul Gilster and Glister in their 1997 book "Digital Literacy". Gilster and Glister described digital literacy as the usage and comprehension of information in the digital age. He also emphasized the importance of digital technologies as an "essential skill". It should also be stressed out that during the implementation process; so many ICT trainings that were organized by MVP administration for stakeholders were meant to achieve the digital literacy. These digital trainings covered basic courses in computer

literacy to enhance the stakeholders' knowledge in the field; having a fundamental knowledge on KELMS so as to submit, upload or download their documents into or from the platform.

"I am loving the use of ICT to facilitate my course units. I thought the use of KELMS was very hard" Says one facilitator.

From the analytical point of view, Cohort Six Students were able to submit their course assignments, participate in forum discussions and post into their blog accounts about their passionate topics over the platform. However, the reverse was also true for a section of facilitators and mentors who still had challenges to upload or assess their assignment over the platform. For continuous KELMS usage MVP administration must continue to organize ICT trainings which will go long way to resolve some of the basic ICT skill challenges faced by the section of facilitators who still challenges on KELMS usage. This is supported by Pardamean & Suparyanto (2014) who said one barrier would be the participants 'basic computer skills.

Negative attitude by section of stakeholders was one of the gaps which could not favor KELMS usage at MVP. It said that success of any initiative aimed at implementing technology in an educational program depends strongly upon the attitudes of the faculty members involved (Al-Erieni (1999); Albirini, (2006); Clay (1999); (Hamdi, 2002). This argument is supported Albirini, (2006) and (Hamdi, 2006) who said that faculty members who hold positive attitude toward technology feel comfortable in using it and are more ready to overcome arising obstacles. According to AlKkhaldi & Al-Jabri (1998), the overall attitude the faculty members reflected toward computer technology directly influenced the extent of computer utilization. Experience has showed that some students, facilitators and mentors do not appreciate use of ICT to facilitate on learning platform, they appreciate the traditional method of chalk and blackboard, while the facilitator stands in front. During the implementation process; series of hands-on practicals were organized by MVP administration, but facilitated by KELMS administrator. This was done simply to change the negative attitude of the stakeholders towards KELMS usage. It was found out that once the stakeholders were exposed to these hands-on practicals on ICT and KELMS usage skills; section of stakeholders who had negative attitudes towards KELMS usage quickly changed.

Al-khaldi & Al-Jabri (1998) asserted that individual attitude consists of what a person feels about an object (affective), think (cognitive), and plan to do in the future (behavioral). Faculty stakeholders who hold positive attitudes toward technology in general feel comfortable using it and are more ready to overcome arising obstacles (Albirini, 2006; (Hamdi, 1991).

Similarly, Yang & Yoo (2004) investigated the relationship between the affective attitudes and the cognitive attitudes of users and the extent of their usage of technology. Hence, if the faculty members have a positive attitude toward KELMS usage, they are more likely to be motivated to use the platform.

5.2.3 Lead researcher guide to uploading or downloading tasks into or from KELMS platform and follow-up its active usage

The main reason why KELMS was introduced at MVP was to enhance teaching and processes; however stakeholders were not guided especially whenever they got trouble in uploading, downloading and logging into the platform. It was found out later that once KELMS user failed to log into the platform he or she became demoralised. This made it difficult to convince KELMS users that the system was easy to be used. To change the negative attitude towards KELMS usage; lead researcher was tasked to guide the stakeholders whenever they stakeholders had problems during uploading or downloading or even logging into the system. This worked since the KELMS users were able to log into the system with the help of lead researcher. This created confidence and motivation amongst the KELMS users. This in line with Lave & Wenger (1991) who describes learning as a form of social co-participation, where the social situation in which it occurs is a focal point. The individual learner acquires the skill by actually engaging in the process, under the attenuated condition of legitimate peripheral participation. This process of skills attainment is highly interactive and productive. Learning is by participation in a particular task. One must get fully involved in the real act of the task in order to learn it, which is an emphasis of vocational learning.

The guide by lead researcher gave any opportunity for section of stakeholders who had low digital literacy to have one on one interface to polish their digital usage skills.

5.2.4 Involvement of KELMS administrator as KELMS usage trainer

A discussed earlier a number of trainings on KELMS and ICT usage were organized weekly for two hours for Cohort Six MVP students and it was once every month for facilitators and mentors. These trainings were organized by MVP administration, but facilitated by KELMS administrator to acquire ICT and KELMS usage skills. These trainings further reduced the digital illiteracy level significantly and improved the digital literacy amongst stakeholders who had low level of digital usage skills. According to Dwyer et al (1997), who emphasize that for the integration of ICTs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education.

KELMS administrator personally involved herself in conducting the trainings' which motivated the stakeholders even more. This changed negative attitudes amongst the section of stakeholders who had a problem with KELMS usage to positive attitude towards it. Furthermore; there is a body of research that show that the assistance of external LMS expertise, consultants and vendors and their respective quality is one of the most important aspects of the KELMS adoption and use process within LMS (Ghobakhloo et al, 2011). The perception of the researcher is that professional abilities of LMS administrators could have positive impacts on the LMS usage and adoption process while most universities suffer from lack of both IT experts and the hiring of external consultants.

5.2.5 Providing new laptops to equip Cohort Six MVP Students as strategy to improve KELMS usage

The MVP administration has a program of providing free laptops to its new MVP Cohort Students. It so happened that the Cohort Six Students hadn't received their laptops by the time this research commenced. It became hard for them to access KELMS platform while they are out of the MVP computer lab.

During the future workshop meeting; it was agreed unanimously that MVP administration provided the laptop to Cohort Six Students. When the laptops were procured and given to the students; it motivated them to access KELMS platform. This strategy worked in that Cohort Six Students with their new laptops they were fully equipped to acquire ICT skills. This helped them to acquire skills in typing, uploading, downloading, and logging into the KELMS platform.

It was found out that once Cohort Six Students received the new laptops their negative attitudes towards KELMS usage changed. It also motivated them; thus their digital literacy consequently KELMS usage skills improved instantly. This is supported by (Wambui, (2013), who argued that motivation is important in participation as trainees who are motivated participate more effectively. It directs and regulates behaviour for example motivated stakeholders work hard and focus in achieving their goals. Motivation energizes and sustains behaviour. Having personal laptops; enabled them to have their personal time for their practicals on it. This also helped the students to learn from one another during interaction as they work independently. This is because when the students have enough time to work together, assess their own work, discuss challenges that they encounter during the practice and forge a way forward together. In the end, the students gained enough confidence and competences as they built on their experiences through interaction. This statement is re-enforced by Lave & Wenger (1991) who said that learning occurs in social relationships with other learners by observation and peripheral participation in the community rather than in a classroom setting.

5.2.6 Improving KELMS platform outlook by KELMS administrator for easy flexible and scalability

One of the challenges KELMS platform faced right at its inception at MVP was its portal appearance. This was coupled with too many courses, and course units that were all mingled up together. It became very difficult for KELMS users to access their courses units leave alone their courses from the platform. The MVP administration together with stakeholders agreed for KELMS administrator to improve and organize the courses and re-arrange the course units under their respective courses so that the KELMS platform appears organized and easy for the users to access their courses. Although, section of stakeholders had issues with logging into the system. This created more confusion to the system users. Once the dashboard issue was solved by re-organizing the courses and course units to their respective courses by the KELMS administrator it improved KELMS usage significantly. This made it easy for the system users to access their courses and course units faster and easier.

This strategy improved the negative attitude towards KELMS usage since the platform was easier to log into. The stakeholders were able to locate their courses and course units easily from the system.

In summary, the strategy improved the outlook of the KELMS platform and it became more appealing to its users. It improved digital literacy, negative attitudes were changed towards to KELMS usage in order to improve the teaching and learning processes at MVP.
Negative attitudes towards the KELMS usage slowly melt away as there was requirement that all the activities be uploaded or downloaded into or from the system by the stakeholders. This made section of the stakeholders who had negative attitudes towards KELMS usage in the teaching and learning to acquire the skills so as to upload or down the activities from the system as expressed below:

"A mentor was very happy that her attitude changed and she now loves KELMS platform"

However, from the Cohort Six MVP students as this did not work well as some of the assignments were not uploaded into the KELMS system by respective course leaders. This intervention did work well. This strategy may work well during the second cycle of the research.

5.3 Evaluation of the impact of strategies implemented

The impact of the implemented strategies were evaluated through: assessing Cohort Six Students by submitting the course work through KELMS platform by facilitators; while other hand mentors and facilitators were assessed by KELMS administrator on how to organize Courseware and upload them to the platform. According to Wiggins (1990), assessment aims at assessing students' mastery of knowledge and skills, or their attitudes and values, through assignments that resemble as closely as possible real-world conditions or situations. The advantages of assessment are many: perhaps the most significant is that the increased relevance and meaning for students motivates them to spend more time on task and to engage with course material in more depth.

During the assessment, students were given assignment tasks in the KELMS platform individually. They were told to submit their feedback via the system. The fact that students could on their own carry out a given practical without assistance indicated that they had mastered the procedures of the given activity with a good level of confidence. Since competence development is the core value of Vocational training, it therefore gives a great sense of the impact of the interventions given when students can log into the system and submit their assignment for assessment.

The facilitators were given opportunity to set assignment into the platform and also organize courseware for their course units. They were required to set up assignment on the system; with time line set. The time line was required for students when they were supposed to submit their assignment feedback for marking. Once the students submitted their assignment for assessment via the platform to their respective facilitators or mentors; then the assessment results are send back using the platform.

The second method of evaluating the impact of the strategies implemented was done through evaluation workshop meeting which was organized where all stakeholders were gathered together in a room to speak-out what they had felt after the implementation of the strategies. The evaluation workshop helped the stakeholders to come on board by discussing how the KELMS usage improved or not. In this way, all parties understood one another and plan together on how to make things happen sustainably.

In this workshop, we were able to tell what had gone well and needed to be maintained and also what needed to be improved or the continuity of the KELMS platform at MVP. For instance, the Cohort Six Students had concerns that some mentors and facilitator were not using the KELMS platform to submit their presentation slides. This was noted and the MVP coordinator offered to follow it up and talk to those mentors and facilitators to use the KELMS platform to facilitate their course unit.

All in all, the evaluation process was done in such a way that it probed the stakeholders to exhibit the impact of the implementation process to their skills and level of competence development. Special attention was given to the ability of the implemented strategies to enhance teaching learning processes at MVP for skills acquisition in KELMS usage and digital skills among the stakeholders. Thus, throwing light to the fact that the strategies can easily remain integrated into the MVP system.

Throughout the implementation process, collaboration and active learner engagement proved to be a great deal in achieving any Vocational goals as regards skills training. Collaboration between KELMS administration and MVP administration played a role of enabling the exposure of stakeholders to acquire hands-on ICT and KELMS skills. It provided platform for solving problems that manifest in the course of KELMS usage while, active learners' engagement acted as a motivator for stakeholders' participation, retention and building confidence for self-reliance among students.

Figure 11& 12: Stakeholders are attending the final evaluation meeting

Primary Source: NOMA HOUSE II – Presentation Plenary (November, 2017)

5.4 Recommendations

Based on the findings of the study the following recommendations were made in accordance to the objectives in order to improve e-learning through usage of KELMS at MVP, KyU:

- More hands-on trainings need to continue every semester.
- MVP administration should always monitor KELMS usage by stakeholders.
- Internet bandwidth be increased so that the web browsers loads faster.

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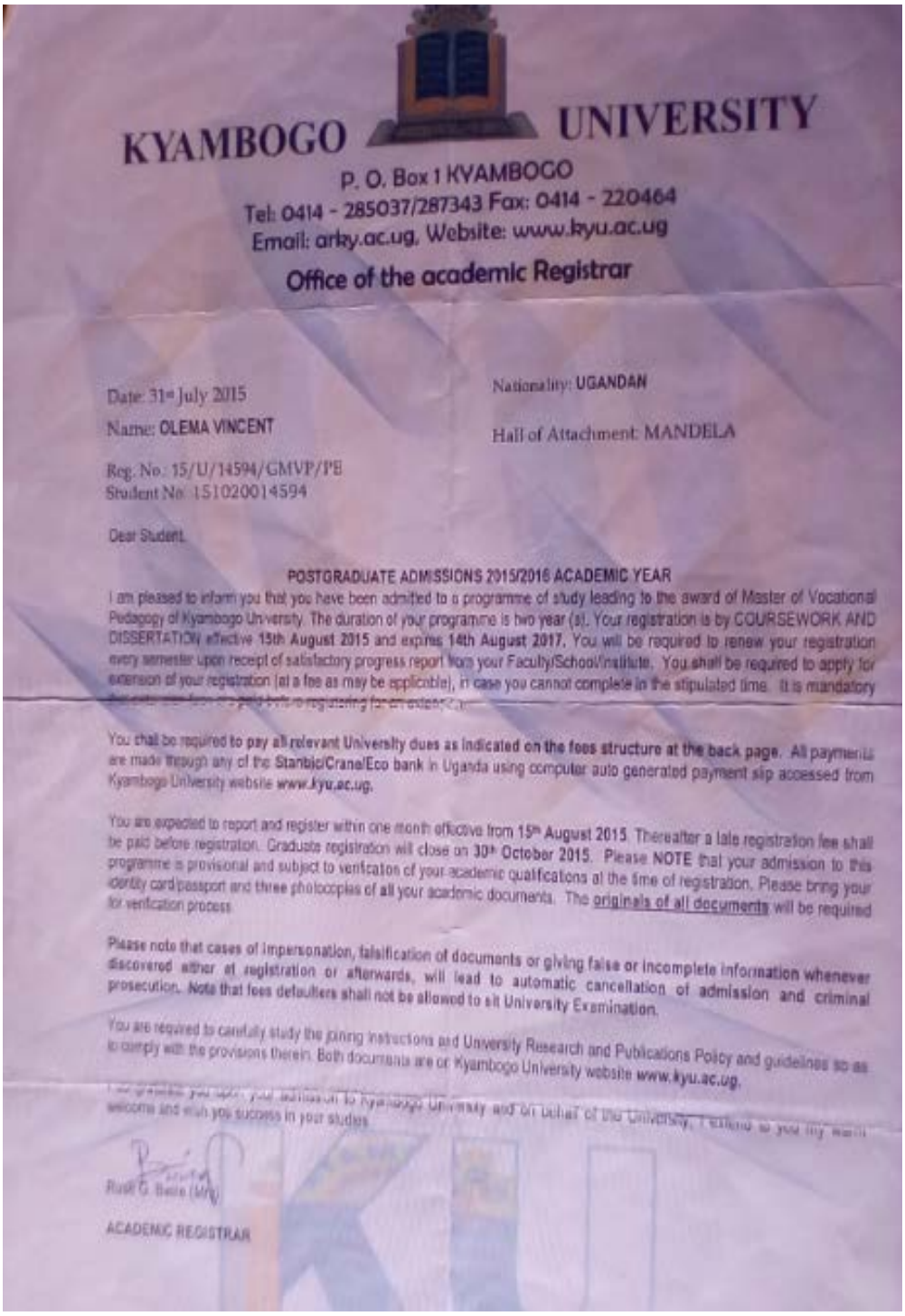
APPENDICES

Appendix 1: Admission letter for Master's in Vocational Pedagogy Programme



KYAMBOGO UNIVERSITY

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Tel: 0414 - 285037/287343 Fax: 0414 - 220464
Email: arky.ac.ug, Website: www.kyu.ac.ug

Office of the academic Registrar

Date: 31st July 2015

Nationality: UGANDAN

Name: OLEMA VINCENT

Hall of Attachment: MANDELA

Reg. No.: 15/U/14594/GMVP/PE
Student No: 151020014594

Dear Student,

POSTGRADUATE ADMISSIONS 2015/2016 ACADEMIC YEAR

I am pleased to inform you that you have been admitted to a programme of study leading to the award of Master of Vocational Pedagogy of Kyambogo University. The duration of your programme is two year (s). Your registration is by COURSEWORK AND DISSERTATION effective 15th August 2015 and expires 14th August 2017. You will be required to renew your registration every semester upon receipt of satisfactory progress report from your Faculty/School/Institute. You shall be required to apply for extension of your registration (at a fee as may be applicable), in case you cannot complete in the stipulated time. It is mandatory

You shall be required to pay all relevant University dues as indicated on the fees structure at the back page. All payments are made through any of the Stanbic/Crane/Eco bank in Uganda using computer auto generated payment slip accessed from Kyambogo University website www.kyu.ac.ug.

You are expected to report and register within one month effective from 15th August 2015. Thereafter a late registration fee shall be paid before registration. Graduate registration will close on 30th October 2015. Please NOTE that your admission to this programme is provisional and subject to verification of your academic qualifications at the time of registration. Please bring your identity card/passport and three photocopies of all your academic documents. The originals of all documents will be required for verification process.

Please note that cases of impersonation, falsification of documents or giving false or incomplete information whenever discovered either at registration or afterwards, will lead to automatic cancellation of admission and criminal prosecution. Note that fees defaulters shall not be allowed to sit University Examination.

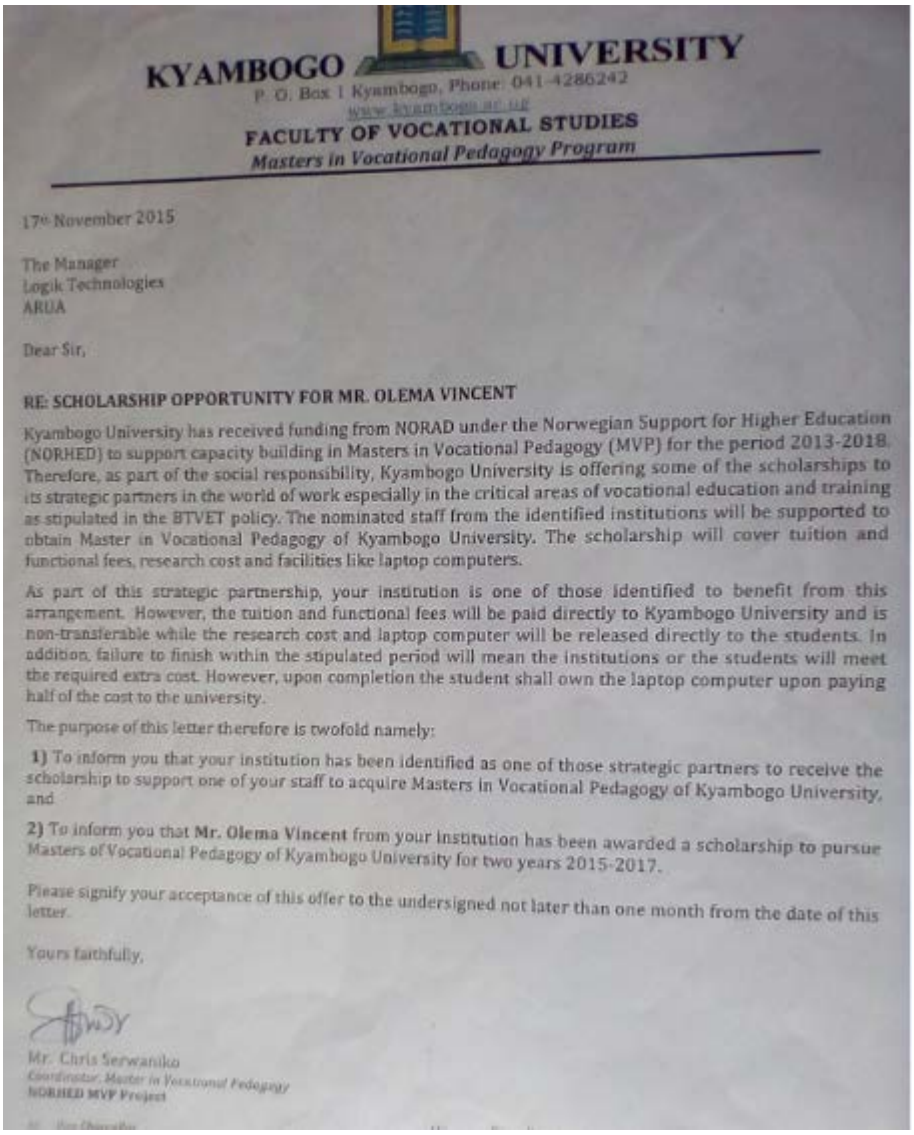
You are required to carefully study the joining instructions and University Research and Publications Policy and guidelines so as to comply with the provisions therein. Both documents are on Kyambogo University website www.kyu.ac.ug.

I congratulate you upon your admission to Kyambogo University and on behalf of the University, I extend to you my warm welcome and wish you success in your studies.

Rose G. Bete (Mrs)

ACADEMIC REGISTRAR

Appendix 2: Scholarship acceptance letter for Master's in Vocational Pedagogy Programme



KYAMBOGO UNIVERSITY
P. O. Box 1 Kyambogo, Phone: 041-4286242
www.kyambogo.ac.ug
FACULTY OF VOCATIONAL STUDIES
Masters in Vocational Pedagogy Program

17th November 2015

The Manager
Logik Technologies
ARUA

Dear Sir,

RE: SCHOLARSHIP OPPORTUNITY FOR MR. OLEMA VINCENT

Kyambogo University has received funding from NORAD under the Norwegian Support for Higher Education (NORHED) to support capacity building in Masters in Vocational Pedagogy (MVP) for the period 2013-2018. Therefore, as part of the social responsibility, Kyambogo University is offering some of the scholarships to its strategic partners in the world of work especially in the critical areas of vocational education and training as stipulated in the BTVET policy. The nominated staff from the identified institutions will be supported to obtain Master in Vocational Pedagogy of Kyambogo University. The scholarship will cover tuition and functional fees, research cost and facilities like laptop computers.

As part of this strategic partnership, your institution is one of those identified to benefit from this arrangement. However, the tuition and functional fees will be paid directly to Kyambogo University and is non-transferable while the research cost and laptop computer will be released directly to the students. In addition, failure to finish within the stipulated period will mean the institutions or the students will meet the required extra cost. However, upon completion the student shall own the laptop computer upon paying half of the cost to the university.

The purpose of this letter therefore is twofold namely:

1) To inform you that your institution has been identified as one of those strategic partners to receive the scholarship to support one of your staff to acquire Masters in Vocational Pedagogy of Kyambogo University, and

2) To inform you that **Mr. Olema Vincent** from your institution has been awarded a scholarship to pursue Masters of Vocational Pedagogy of Kyambogo University for two years 2015-2017.

Please signify your acceptance of this offer to the undersigned not later than one month from the date of this letter.

Yours faithfully,

Mr. Chris Serwaniko
Coordinator, Master in Vocational Pedagogy
NORHED MVP Project

Appendix 3: Invitation E-mail to attend LMS Future Workshop at NOMA

On 12/6/16, olema Vincent <olemavincent@gmail.com> wrote:

Dear Facilitator, Mentor, and MVP student,

I am Vincent Olema, Second Year Student Pursuing Master Degree in Vocational Pedagogy.
I am inviting you to attend Future Workshop meeting that will take place today Wednesday 07 December, 2016 at NOMA HOUSE 1.
The area of Concern: Learning Management System (LMS) at NOMA.

I will be grateful when you come as a stakeholder.

I look forward to accept your participation.
All the best.

Vincent
LMS researcher.

Appendix 4: KELMS competences required to improve use of KELMS

KELMS implementation in Relaying the Interaction among E-Learning Elements

No.	Relation	Relation
1	student-student	chat, forum, email, assignment upload, blogging, profile, messaging, discussion, computer use
2	student-KELMS content	download, search, view, create, assignment
3	Student-Facilitator/Mentors	chat, forum, email, message, tasks, assessment, results, computer use
4	Facilitators - Mentors	chat, forum, email, message, blogging, courseware development, computer use
5	Facilitator/Mentors - content	Upload courseware, view, create
6	Content-content	link files, indexing, assessment

Appendix 5: Interview guide to assess the improvement in KELMS use at KyU: a case of MVP

Section A: Administration

Students

i. How many students are you in this MVP Cohort Six?
ii. Who is your group leader?
iii. How was the leader selected/ chosen?
iv. What roles does the group leader play during this ICT/ KELMS facilitations?
v. What is the reporting mechanism between MVP, KELMS administrators and facilitators about your ICT/ KELMS learning activities?
vi. In case of uncertainty who do you communicate to and how?
vii. During this practicum you learn by doing, can you talk about how tasks are assigned?

Mentor /supervisor

viii. How did you get these learners assigned to this unit?
ix. What is the link between you, kelms administrators and facilitators and mentors?
x. Is there any form of accountability required?

Administrators, Students, Mentors and Facilitators

Section B: Digital Illiteracy

i. What role do you have in the KELMS activities?
ii. Were you assigned a role?
iii. Which form of support do you receive?
iv. Before executing the tasks assigned to you how do you know what is required?
v. Do you receive comments about the kelms use task accomplished?
vi. Professional ethics (what is your comment about the conduct of administrators, students and facilitators in KELMS use?)
vii. Rate the KELMS and challenges?
viii. Lecturers should be practical oriented (is ICT KELMS facilitation practical?)

KELMS administrator

i. How do your students and facilitators get involved in KELMS use?
ii. Who would you rate the abilities of your learners?
iii. Which aspects of the program have they showed mastery?
iv. Is there any improvement in KELMS use?
v. Has supply of new ICT gadgets help to improve kelms use?
vi. Competence of both students, mentors and facilitators

Both Mentors, facilitators and Cohort Six Students

Section C: Poor Attitude

i. What challenges with use of ICT?
ii. What is your impression about KELMS platform?
iii. What is your comment about lms gadgets at MVP? (consumables, tools, and safety)
iv. What have been your best learning moments with KELMS?
v. Point out the weakness encountered in this kelms use that have affected your ability to learn or changed your attitude.
vi. What is your opinion about use ICT to facilitate learning

Mentor /supervisor(s)

i. How do you comment on the learners' attitude in general terms towards kelms use?
ii. What do you have to say about kelms management?
iii. Are you able to upload and download your activities and courseware into KELMS

Appendix 6: Table 1: Work process analysis in the production of Learning Management System

	University Admission Office	Reception at the Department (s)	Facilitators	Head of department	System Administrator (ICT Department)
Activities	-Recruit Students -Communicate with new students -Answers questions about the university -Evaluates potential applicants -Maintain appropriate records, including details of student enquiries, applications, interviews Guidance for students	-Issuing, storing and receiving of student documents -Direct new students where to get offices at the University -Deal with general and specific enquiries Welcomes Students -Co-ordinating and maintaining information resources -Point of information dissemination -Take notes in meetings -Write a reports	-Enroll Student -Develop Content -Manage their courses Set Tests -Mark tests and examination -Award Marks -Assign tasks -Upload the course content -Print the results -Marks the attendance -Participate in course content development -Compile tasks -Submit results to Kyambogo University administration -Present tasks -Interact with course facilitators -Receive feedback on tasks -Attend to feedback	- Verifies the curriculum content that is loaded into the system - Ensures good management of the LMS - Participate in course content development - Compile tasks Submit results to Kyambogo University administration -Present tasks -Interact with course facilitators -Receive feedback on tasks -Attend to feedback	-Enroll students -Assign Username and Password -Introduce new lecturers into LMS -Solve registration problem -Solve registration ion problem -Interact with course facilitators -Receive feedback on tasks -Attend to feedback

Tools and materials	-Good internet connection -Power source -Laptops -Flip charts -Markers -Pens -Phones Books -Papers	-Good internet connection -Power source -Laptops -Flip charts -Markers -Books -Papers -Pens -Phones	-Good internet connection -Power source -Projectors -Laptops -Flip charts -Markers -Pens -Phones Books -Papers	-Good internet -connection -Power source -Projectors -Laptops -Flip charts -Markers -Pens -Books -Papers -Phone	-Good internet connection -Power source -Projectors -Laptops -Flip charts -Markers -Pens -Phones -Books -Papers
Competences	-Ability to plan -Research skills -ICT skills -Communication skills -Teamwork spirit -Report writing skills -Communication skills -Presentation skills -Time management	-Ability to plan -Research skills -ICT skills -Communication skills -Teamwork spirit -Report writing skills -Presentation skills -Time management	-Ability to plan -Research skills -ICT skills -Communication skills -Teamwork spirit -Report writing skills -Presentation skills -Time management -Curriculum Development Skills	-Ability to plan -Research skills -ICT skills -Communication skills -Teamwork spirit -Report writing skills -Presentation skills -Time management -Curriculum Development Skills	-Ability to plan -Research skills -ICT skills -Communication skills -Teamwork spirit -Report writing skills Presentation skills -Time management - Curriculum Development Skills -Multimedia Skills
Quality assurance	- attain the pass mark for admission -Has the required subjects for admissions	- Coordinates Lecturers few -Computers are installed with Antivirus -100% participation Submission of reports	-Creation of Username and Password -Course LMS Coordinator -Lecturers few -Computers are installed with Antivirus -100% participation -Submission of reports	-Creation of Username and Password -Course LMS Coordinator -Lecturers few -Computers are installed with -Antivirus -100% participation Submission of reports	-Creation of Username and Password -Course LMS Coordinator Lecturers few -Computers are installed with Antivirus -100% participation -Submission of reports

Appendix 7: Shows gaps that were identified during the Future workshop session were then tied according to their similarity.

Gaps	**Ranking**			
	1	2	3	4
Fear to use technology (phobia)	1			
No local systems administrator at NOMA			3	
Require a lot of time that lectures don't have		2		
Poor infrastructure			3	
Poor attitude towards use of technology in teaching and learning		2		
Poor perception (it is difficult)		2		
Insufficient technical support			3	
Lecturers do not upload activities into the LMS	1			
Lack of seriousness		2		
Poor implementation	1			
Lack of local content	1			
Digital illiteracy among lecturers	1			
Inadequate training				
Willingness to engage in LMS technology/ICT				
Course leaders are inactive to prompt other mentors upload their content				
Deliberate us of the system is not functioning				
Little Knowledge of Information Communication and Technology (ICT) for students	1			
Insufficient time for students		2		
Bureaucratic management System			3	
External Factors				4
Poor self-motivation among students			3	
Not practically assessed			3	
Poor follow-up				
No content	1			
Inactive course leader			3	
No link between training and practice for mentors	1			
Rigidity to certain ways of work		2		
Human and tool (Teaching and Learning Methods culture)				

Appendix 8: Pair wise Ranking was used to group critical gaps for action

Fig. 1.4. Pair wise Ranking

	1	**2**	**3**		**Total Tally**	**Ranking**
1					2	2
2	1				1	3
3	3	3			3	1
4	1	2	3		0	4

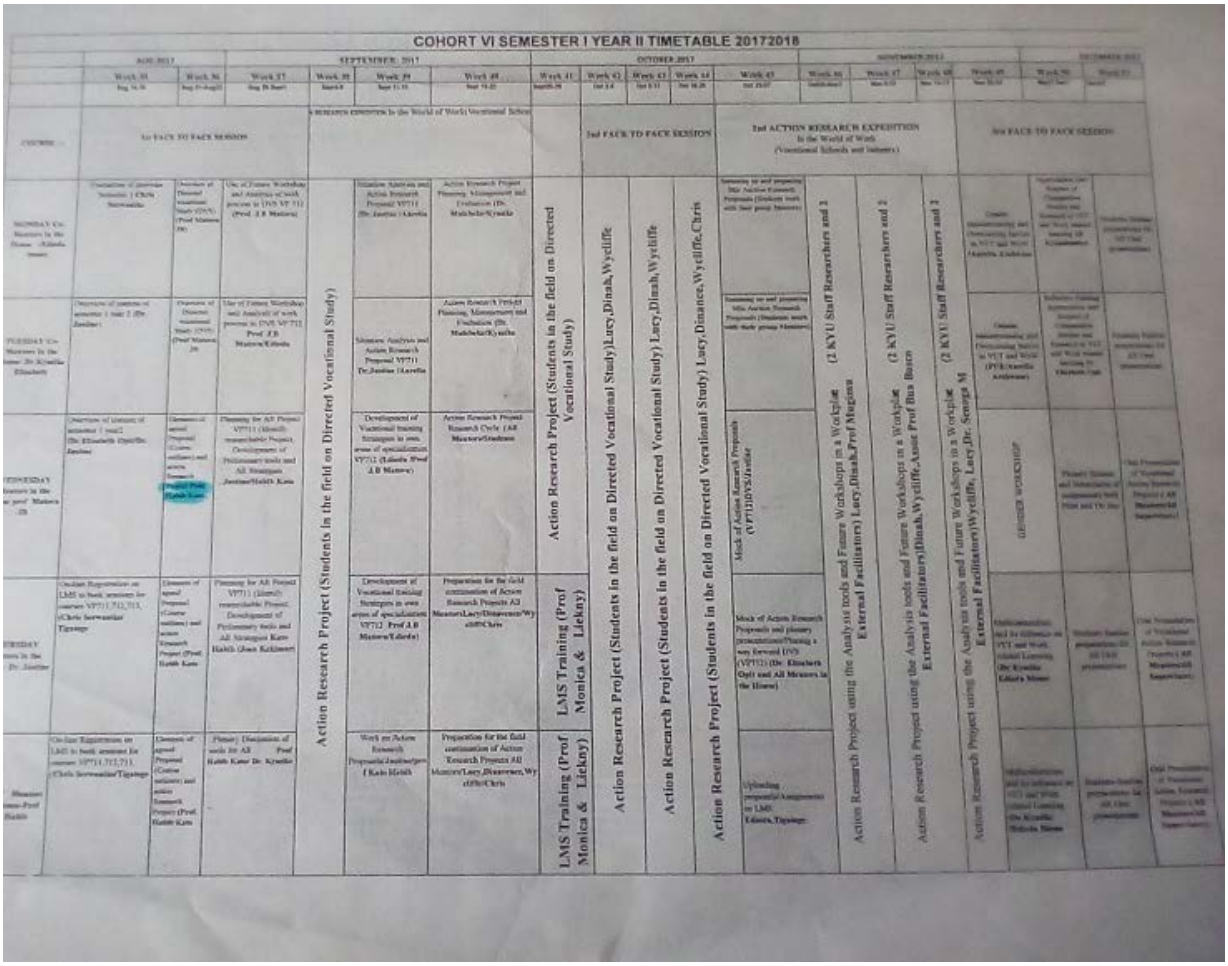
Appendix 9: Action Research Work Plan 2016/2017

Activity	Oct 2016	Nov 1016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	June 2017	Aug – Sept 2017	Nov – Dec 2017
Obtaining a letter of introduction Meeting workplace supervisors, HOD, HOS. identifying participants											
Permission to conduct study Visit and hold an interactive interview with world of work graduates and employers											
Meetings with stakeholders at workplace, planning, conducting future workshop											
Proposal writing and reading related literature											
Summing up, mock, presentation to panel, approval											
Implementation and follow up meetings											
Thesis writing, reading related literature											
Summing up. Validate results with stakeholders and evaluation											
Mocks, viva presentations. Final report.											
Submission of Thesis											
Graduation											

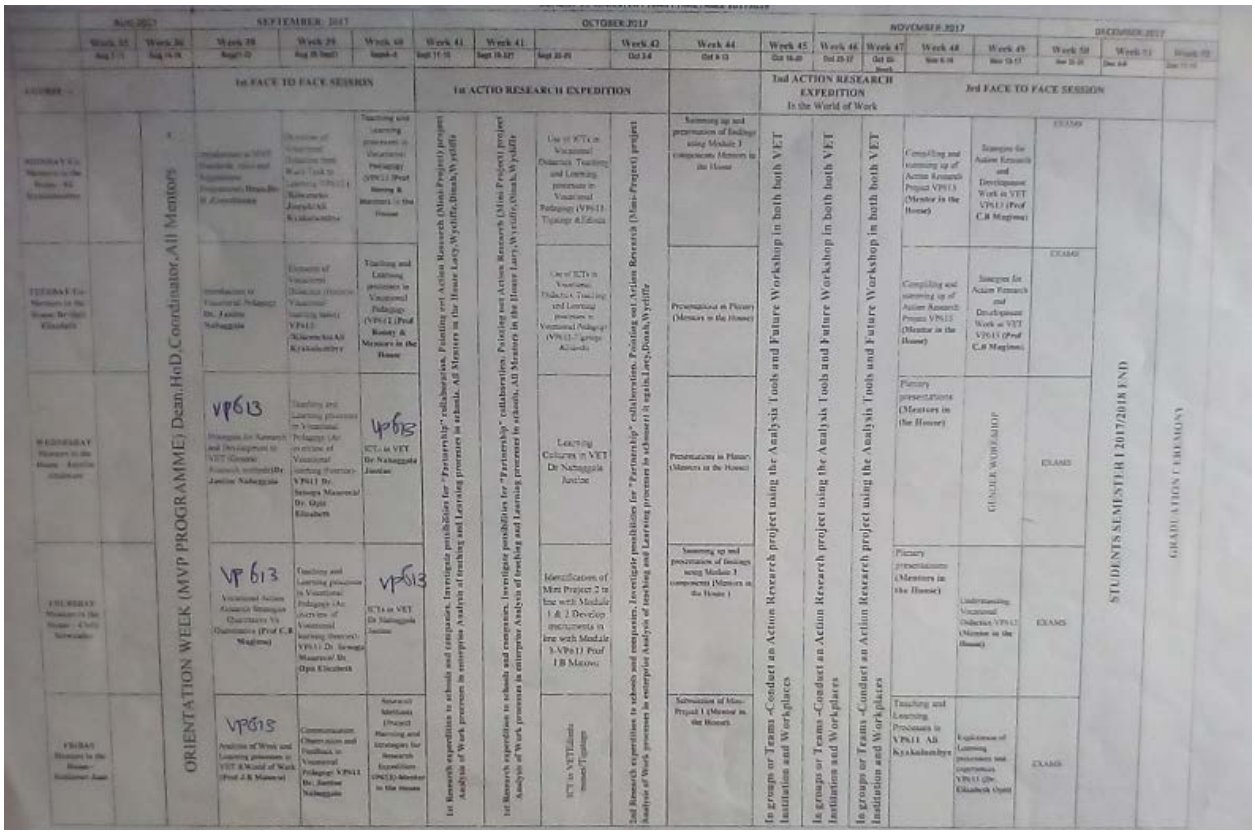
Appendix 10: Budget

Item	**Quantity**	**Unit cost**	**Amount**
Future workshop 1	1	550,000/=	350,000
Communication Airtime (Communication)	6 months	400 ,000/=	400,000/=
Stationery Log book photocopying Printing proposal Flip chart Markers Cell tape	3 rims 2 3 50 20 pcs 3	15,000/= @ 20,000/= @ 50,000/= @ 1,000/= @ 4,000/= @ 5,000/= @	45,000/= 40,000/= 150,000/= 50,000/= 80,000/= 15,000/= 1,330
Evaluation Meeting	2	650,000/=	1,300,000/=
Future Workshop 2	1	700,000/=	700,000/=
Total cost			**3,330,000/=**

Appendix 11: ICT/KELMS time table



Appendix 12: ICT/KELMS time table



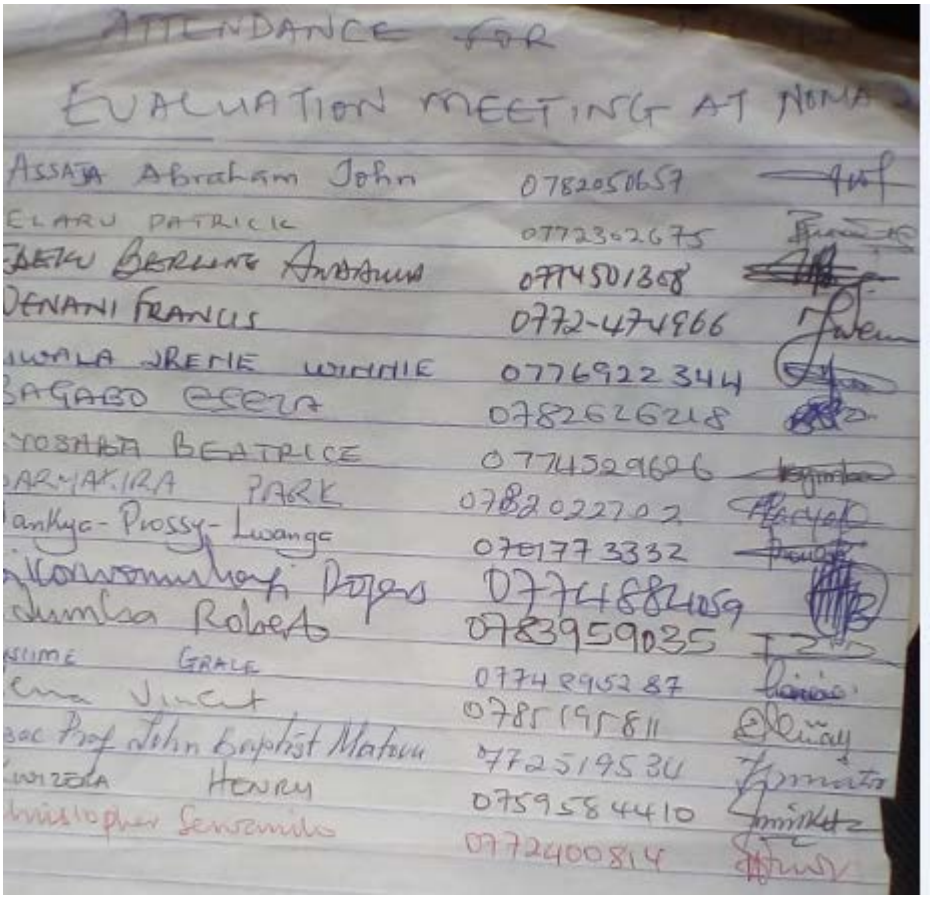
Appendix 13: ICT/KELMS training advert

Appendix 14: Future workshop attendance list

ATTENDANCE FOR
EVALUATION MEETING AT

1.	ASSAJA Abraham John	0782050659
2.	ELARU PATRICK	0772302675
3.	[illegible]	0774501308
4.	WENANI FRANCIS	0772-474966
5	KIWALA JEREMIE WILLMIE	0776922344
6	BAGABO ESEZA	0782626218
7.	KYOSHABA BEATRICE	0774529626
8.	BARYAKIRA PARK	0782022702
9	Nankya-Prossy-Lwanga	0701773332
10.	[illegible]	0774882459
11.	Ndumba Robert	0783959035
12	Tusiime GRACE	0774295287
13	Olema Vincent	0785195811
14	Assoc Prof John Baptist Matovu	0772519534
15	Kwizera HENRY	0759584410
16	Christopher Senzamba	0772400814

Appendix 15: Evaluation meeting attendance list



Appendix 16: KELMS mentors training list

KYAMBOGO UNIVERSITY

P.O. BOX 1, KYAMBOGO

Faculty of Vocational Studies

Department of Art & Industrial Design

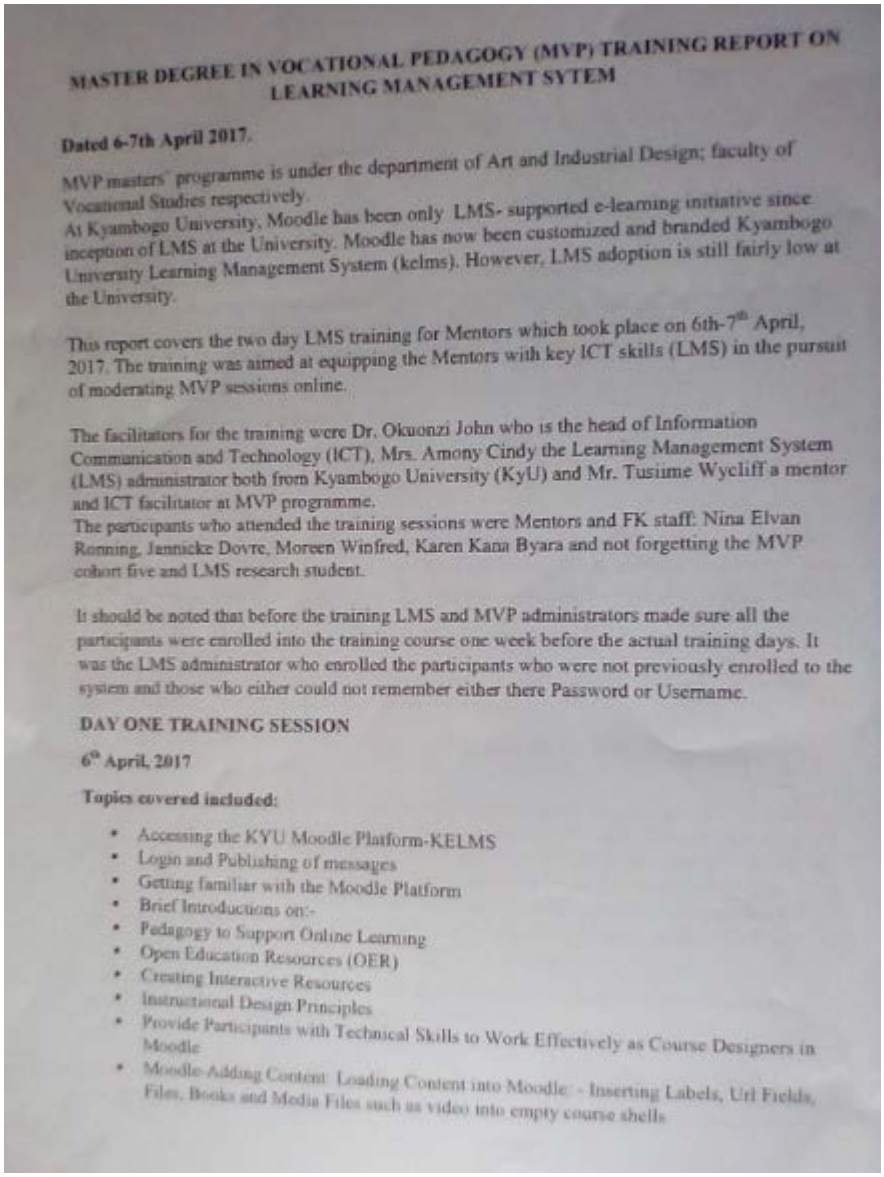
Masters in Vocational Pedagogy Programme

LMS MENTORS TRAINING HELD ON 20/02/2017 AT NOMA HOUSE AT 2:00PM

Minute 1:20/02/16 Record of Members Present

No.	Name	Position	Tel: Contact	Email Contact
1.	Chris Serwaniko	Co-coordinator NORHED MVP	0772 400814	serwanico@gmail.com
2	Lucy Ajambo	Mentor MVP	0772 588971	lucy_ajambo@yahoo.com
3	Kekimuri Joan	Mentor	0782 855737	joankeki@gmail.com
4	Assoc. Prof J B Matovu	Mentor-MVP	0772 519534	jbaptistmatovu@yahoo.com
6	Dr. Justine Nabaggala	Mentor MVP	0777579257	Justinenabz72@yahoo.com
7	Arinaitwe Dinavence	Mentor MVP	07774945565	dinavence@yahoo.com
8	Dr. Elizabeth Kyazike	Mentor MVP	0784786772	elizabethkyazike@rocketmail.com
9	Charity Byarugaba	Project Admin NORHED MVP Project	0774945565	Charity24pounds@gmail.com
	Cyindy Among	ICT		
	Tusiime wycliff	Mentor	0703064621	wycliffdux@yahoo.com
	Dr. Okounzi John	ICT		
	Aurelia Atukwase	Mentor	0757794904	aureliatukwase@gmail.com
	Kyakulumbye Ali	Mentor	0701617576	Kyakulumbyeali@gmail.com
	Ediedu Moses	Mentor	0752665214	ediedumoses@yahoo.com

Appendix 17: KELMS mentors training list



MASTER DEGREE IN VOCATIONAL PEDAGOGY (MVP) TRAINING REPORT ON LEARNING MANAGEMENT SYTEM

Dated 6-7th April 2017.

MVP masters' programme is under the department of Art and Industrial Design; faculty of Vocational Studies respectively.
At Kyambogo University, Moodle has been only LMS- supported e-learning initiative since inception of LMS at the University. Moodle has now been customized and branded Kyambogo University Learning Management System (kelms). However, LMS adoption is still fairly low at the University.

This report covers the two day LMS training for Mentors which took place on 6th-7th April, 2017. The training was aimed at equipping the Mentors with key ICT skills (LMS) in the pursuit of moderating MVP sessions online.

The facilitators for the training were Dr. Okuonzi John who is the head of Information Communication and Technology (ICT), Mrs. Amony Cindy the Learning Management System (LMS) administrator both from Kyambogo University (KyU) and Mr. Tusiime Wycliff a mentor and ICT facilitator at MVP programme.
The participants who attended the training sessions were Mentors and FK staff: Nina Elvan Ronning, Jennicke Dovre, Moreen Winfred, Karen Kana Byara and not forgetting the MVP cohort five and LMS research student.

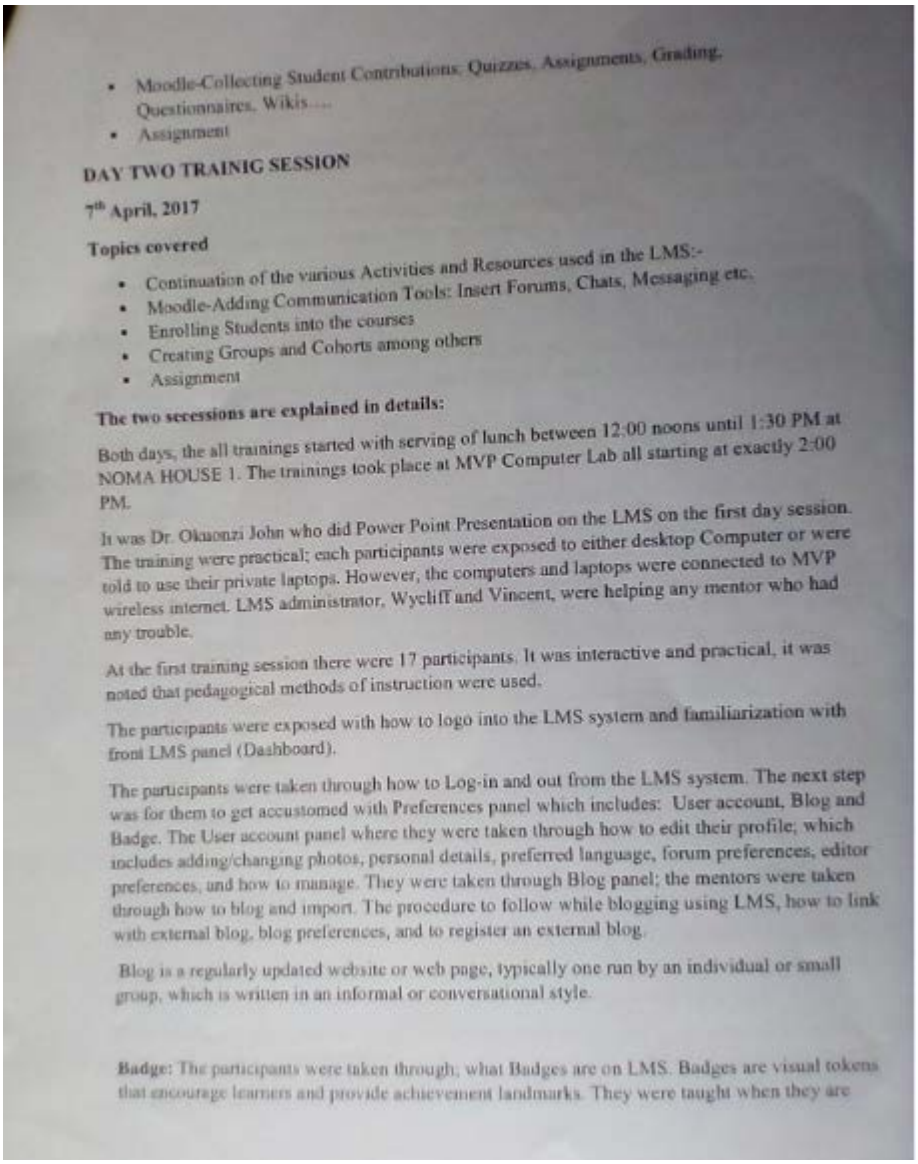
It should be noted that before the training LMS and MVP administrators made sure all the participants were enrolled into the training course one week before the actual training days. It was the LMS administrator who enrolled the participants who were not previously enrolled to the system and those who either could not remember either there Password or Username.

DAY ONE TRAINING SESSION

6th April, 2017

Topics covered included:

- Accessing the KYU Moodle Platform-KELMS
- Login and Publishing of messages
- Getting familiar with the Moodle Platform
- Brief Introductions on:-
- Pedagogy to Support Online Learning
- Open Education Resources (OER)
- Creating Interactive Resources
- Instructional Design Principles
- Provide Participants with Technical Skills to Work Effectively as Course Designers in Moodle
- Moodle Adding Content: Loading Content into Moodle: - Inserting Labels, Url Fields, Files, Books and Media Files such as video into empty course shells



- Moodle-Collecting Student Contributions. Quizzes, Assignments, Grading, Questionnaires, Wikis….
- Assignment

DAY TWO TRAINIG SESSION

7th April, 2017

Topics covered

- Continuation of the various Activities and Resources used in the LMS:-
- Moodle-Adding Communication Tools: Insert Forums, Chats, Messaging etc.
- Enrolling Students into the courses
- Creating Groups and Cohorts among others
- Assignment

The two secessions are explained in details:

Both days, the all trainings started with serving of lunch between 12:00 noons until 1:30 PM at NOMA HOUSE 1. The trainings took place at MVP Computer Lab all starting at exactly 2:00 PM.

It was Dr. Okuonzi John who did Power Point Presentation on the LMS on the first day session. The training were practical; each participants were exposed to either desktop Computer or were told to use their private laptops. However, the computers and laptops were connected to MVP wireless internet. LMS administrator, Wycliff and Vincent, were helping any mentor who had any trouble.

At the first training session there were 17 participants. It was interactive and practical, it was noted that pedagogical methods of instruction were used.

The participants were exposed with how to logo into the LMS system and familiarization with front LMS panel (Dashboard).

The participants were taken through how to Log-in and out from the LMS system. The next step was for them to get accustomed with Preferences panel which includes: User account, Blog and Badge. The User account panel where they were taken through how to edit their profile; which includes adding/changing photos, personal details, preferred language, forum preferences, editor preferences, and how to manage. They were taken through Blog panel; the mentors were taken through how to blog and import. The procedure to follow while blogging using LMS, how to link with external blog, blog preferences, and to register an external blog.

Blog is a regularly updated website or web page, typically one run by an individual or small group, which is written in an informal or conversational style.

Badge: The participants were taken through; what Badges are on LMS. Badges are visual tokens that encourage learners and provide achievement landmarks. They were taught when they are

used. From the badge panel, participants were taught how to manage badges and how to backpack settings.

Calendar: Learning Management System features a highly versatile and interactive all-in-one calendar. This calendar can display site, course, and group and/or user events in addition to assignment and quiz deadlines, chat times and other course events. There are various features this calendar supports which include: adding an event, calendar export to iCal or ics file, importing calendar into other calendars, importing multiple events, etc.

Messages: It was interesting part for mentors to know how to send messages to each other and access their messages on LMS. The mentors were taken through how to access and use message panel.

Private Files: They were taken through how to store and upload docs from the private file panel. As the same suggest; private file if a panel where LMS user stores his/her private docs for future use.

Forum Posts: Mentors were taken through how to set-up forum posts. They were told what forum posts were and when to use them.

Discussion: Participants were shown how to participate in discussion forum. How to set-up discussion posts and comments. They were able to follow students in the forum discussions and how to rate their students.

My Grades: Allows mentors to grade students from the posts students have posted in forum. Grades in the Forum activity are referred to as Ratings. Which can constitute part of final assessment. Mentors were taken through how to mark from the LMS system and how to grade the results from the assignments.

Help panel: The importance of HELP panel to facilitators, mentors and student that can guide them whenever they want to execute an activity. Participants were taken through how to use this panel.

Navigation Block: Mentors were taken through Navigation block panel where they were told how to navigate and locate: site home, site pages, my course (is the area where the course units are located and selected), and assignments are located. How they can set-up, follow, mark assignments on line. How to carry-out assessment.

Creating Courseware on LMS.

This was important area where the facilitators spent most of their time to explain to participants.

Each mentor were shown where to start when they what to set-up their course unit into the system. They were taken step by step how to create their course unit into the system.

From My Course panel, mentors were told to select their course unit, go ahead to create a block where they can now create their course unit, topic. For them to edit and remove anything from the Courseware panel, then they need to turn the editing button on or off and after to add an activity, a resource.

Once Topic block is created, they can now edit topic title, then followed with Objectives of the topic. They were told that they can add Power Point Presentation on the topic they are to facilitate, even add reading resources, and including links (Videos, pdf, URL links etc.) for further reading enhance their learning

Tasks: Mentors were taken through how to create tasks; like forums, blogging, chats, attendance, assignments, tests, etc. How to create the task, set time limit.

Add a resources; Mentors were shown practically how to add or delete a resource and what Add a resources entails: includes books, files, folder, IMS content package, label, page and URL.

Add an Activity: Participants were taken through how to in-put the following activities: assignment, attendance, chat, choice Database, external tools, feedback, forum, Glossary, journal, lesson, questionnaire, quiz, SCORM package, Survey, WIKI and workshop.

For DAY One training, there were 16 participants

Record of Mentors Present for the LMS Training

NO	NAME	POSITION
	DAY ONE : 6th APRIL, 2017	
01	Chris Serwaniko	Coordinator NORHED MVP
02	Lucy Ajambo	Mentor MVP
03	Joan Keimuri	Mentor MVP
03	Assoc. Prof. JB Matovu	Mentor MVP
04	Dr. Justine Nabaggala	Mentor MVP
05	Dinavence Arinaitwe	Mentor MVP
05	Charity Byarugaba	Project Admin NORHED MVP Project
06	Cindy Among	LMS Administrator
07	Wycliff Tusiime	Mentor MVP
08	Dr. Okuonzi John	ICT
09	Aurelia Atukwase	Mentor MVP
10	Ali Kyakulumbye	Mentor MVP
11	Moses Ediedu	Mentor MVP
12	Elizabeth Kyazike	Mentor MVP
13	Karen Kana Byara	FK
14	Moreen Winfred	FK
15	**Jannicke Døvre**	FK
16	Nina Elvan Ronning	FK
17	Vincent Olema	MVP Cohort V Student
	DAY TWO : 7th APRIL, 2017	
NO	NAME	POSITION

01	Chris Serwaniko	Coordinator NORHED MVP
02	Lucy Ajambo	Mentor MVP
03	Charity Byarugaba	Project Admin NORHED MVP Project
04	Cindy Among	LMS Administrator
05	Aurelia Atukwase	Mentor MVP
06	Ali Kyakulumbye	Mentor MVP
07	Moses Ediedu	Mentor MVP

DAY TWO: 7th April, 2017

I am afraid, many participants did not attend the training to the end and many sent apologies for not attending the training for various reasons: attend to some lectures, and attending important meetings. As shown in the attendance list above, fewer mentors attended the Day two training. The assignment which was left for the participants to be performed in day two was not successful as many mentors were not present.

Recommendations

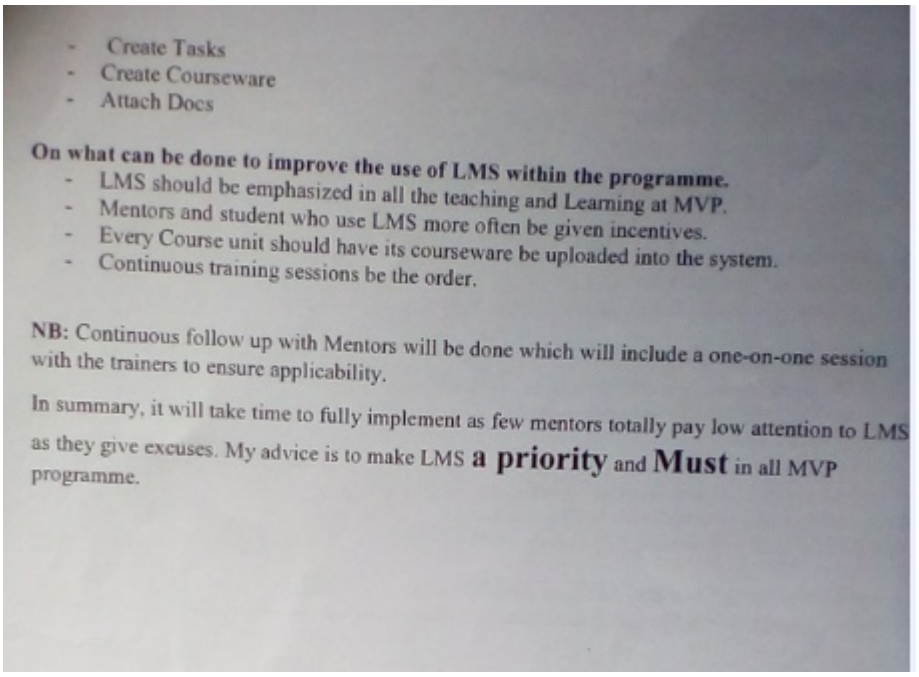
- Mentors were told to find time to practice LMS and log to the system at least every day.
- Mentors were told to enroll Cohort Six students into their topics they are facilitating and allow them to submit their assignments and pending works on LMS.
- LMS administrator to provide customized LMS to training to group or individual mentors' accordingly to the free time, since it was not easy to gather the Mentors at one single training session.
- MVP administrator should make sure that the incoming MVP cohort students be introduced into LMS from the first day and all assignments and assessment be done all on the system.
- Organize continuous LMS trainings monthly.
- Recruit LMS administrator that should be resident at NOMA to help mentors, facilitators.

What the mentors are able to do now on LMS
Currently, not all the mentors are not on the same level with LMS user competences:

Towards the end of the Semester Two MVP cohort six student were submitting all their assignments, and other tasks through LMS. Four mentors were able to set-up their course unit topics into the system.

70% mentors can perform the following.

- Log in and out
- Edit and delete docs from the system
- Edit their profile (photo, password etc.)
- Some can also mark their assignment on the system
- Messaging from the system
- Blog
- Follow their students on forums
- Upload courseware on the platform



- Create Tasks
- Create Courseware
- Attach Docs

On what can be done to improve the use of LMS within the programme.

- LMS should be emphasized in all the teaching and Learning at MVP.
- Mentors and student who use LMS more often be given incentives.
- Every Course unit should have its courseware be uploaded into the system.
- Continuous training sessions be the order.

NB: Continuous follow up with Mentors will be done which will include a one-on-one session with the trainers to ensure applicability.

In summary, it will take time to fully implement as few mentors totally pay low attention to LMS as they give excuses. My advice is to make LMS **a priority** and **Must** in all MVP programme.

Appendix 18: Action plan to implement the best solutions

Task	Responsible officer	Resources	Roles	Measurement	Time frame
Set compulsory practical on KELMS	Facilitator and mentors	Personal computer Internet access Power KELMS platform Pen Note book	▪ Enrol students into their courses units ▪ Facilitate online ▪ Follow ICT and kelms trainings periods on MVP timetable ▪ Upload and download their courseware into the KELMS	▪ Knowledge how to facilitate through online ▪ Skills to acquire ICT knowledge ▪ KELMS hands-on skills can be developed	7 months
Uploads class activities in KELMS	Facilitator and mentors MVP Administrators Lead researcher	Personal computer Internet access Power KELMS platform Pen Note book	Facilitate kelms and ICT Help students , facilitators and mentors	▪ Impart hands-skills to stakeholders ▪ Guide the stakeholder of issues related to KELMS and ICT	8 months
Lead researcher ensures course leader uploads courseware	Lead researcher	Personal computer Internet access Power KELMS platform Pen Note book	▪ General facilitator of the research process. ▪ General mobilization of all stakeholders ▪ Provision of extension services- trainings ▪ Conduct farm visits ▪ General monitoring and evaluation ▪ Motivation of participants ▪ Make a final documentation for record purpose	Observation Interviews	8 moths
Lead researcher to ensure active use of KELMS by student	Cohort Six Student	Personal computer Internet access Power KELMS platform Pen Note book	▪ Individual trainings ▪ Individual trainings ▪ Update their profile on the kelms platform ▪ Upload and download their tasks into the KELMS	▪ Knowledge how to facilitate through online ▪ Skills to acquire ICT knowledge ▪ KELMS hands-on skills can be developed	6 months
Involve technically persons in use of KELMS	MVP Administrators	Personal computer Internet access Power KELMS platform Pen Note book	▪ Recruit kelms administrator ▪ Recruit MVP students ▪ Reward mentors/facilitators who use KELMS ▪ Procure ICT gadget	▪ Change altitude towards ICT ▪ Improve digital literacy ▪ Acquire ICT and KELMS use skills	7 months
Provide LMS gadgets	MVP Administrators	Personal computer Internet access Power KELMS platform	▪ Procure ICT gadgets	▪ Change altitude towards ICT ▪ Improve digital literacy ▪ Acquire ICT and KELMS use skills	3 months

		Pen Note book			
Ensure KELMS accessibility and flexibility	KELMS administrator	Personal computer Internet access Power KELMS platform Pen Note book	▪ Training (capacity building) for mentors and students ▪ Facilitation/trainings on LMS for the mentors/lecturers to enable them use LMS ▪ Enrol students and mentors ▪ Update the KELMS ▪ Offer technical support ▪ Improvement in the infrastructure and technical support ▪ Help update profiles for some KELMS users	▪ Change altitude ▪ Encourage student or facilitator to love online learning ▪ Interviews	3 months

Appendix 19: Invitation E-mail to attend Evaluation Workshop Meeting on LMS at NOMA – House 2

On 10/7/17, olema Vincent <olemavincent@gmail.com> wrote:

Dear Stakeholders,

I am inviting you to attend the Evaluation Workshop meeting on KELMS.

The Evaluation workshop meeting will take place on Thursday August, 2017 at NOMA – House 2. Time: 2:00 p.m. and End at 5:00 p.m.

I will be grateful if you do not miss.

I look forward to accept your participation.

All the best.

Vincent
LMS researcher.

Appendix 20. KELMS usage training photo

Primary Source: NOMA HOUSE II – Presentation Plenary Room (September, 2017)

Appendix 21: Stakeholders engaged in group discussions which led to the findings

Primary Source: NOMA House II plenary (November, 2016)