IMPROVING PERFORMANCE IN REAL LIFE PROJECT MODULE FOR BUILDING STUDENTS AT AMELO TECHNICAL INSTITUTE, ADJUMANI DISTRICT

Figure 4.5: Cost estimate prepared by students

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ACTION RESEARCH DISSERTATION SUBMITTED TO KYAMBOGO UNIVERSITY GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF MASTER OF VOCATIONAL PEDAGOGY OF KYAMBOGO UNIVERSITY

NOVEMBER- 2019

DECLARATION

I, **WENANI FRANCIS MWISAKA**, do hereby declare that this research report is my original piece of work and has never been presented to any institution of higher learning or for the award of any degree.

Signature ……. Date ……

WENANI FRANCIS MWISAKA

APPROVAL

This is to acknowledge that this action research report work titled "**Improving performance in Real Life Project module for building students at Amelo Technical Institute, Adjumani District**" has been under our supervision and is ready for submission to Kyambogo University Graduate School for approval.

Signed …….. Date ……

Dr. MUHWEZI LAWRENCE

Supervisor

Signed…… Date…….

MR. ALI KYAKULUMBYE

Supervisor

DEDICATION

The work of my hands is dedicated to my beloved spouse, son and daughter; **Mrs. Kimono Harriet, Martha Kilande and Mathias Wenani.** Thank you for loving and being tolerant with me when I often had difficulties and could not give you all the due attention and care you deserved. Your contribution will remain memorable to me may god bless them abundantly.

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LIST OF ACRONYMS

ATL: Active Teaching and Learning

B.O.Q: Bill of Quantities

BTVET: Business Technical Vocational Education and Training

CBET: Competence based education and training

D.O.S: Director of Studies

FW: Future Workshop

ICT: Information Computing Technology

MoES: Ministry of Education and Sports.

MVP: Masters in Vocational Pedagogy

NCBC: National Certificate in Building Construction

NCDC: National Curriculum Development Center

PAR: Partcipatory Action Resaersh

PBL: Problem based learning

RLP: Real Life Project

TVET: Technical Vocational Education and Training

UVQF: Uganda Vocational Qualification Framework

VIP: Visual in Participation

ABSTRACT

Real Life Project Module is one of the course modules for NCBC designed to impact on skills needed in the labour market. The major aim of this action research was therefore to improve the performance of the Real Life Project module. The study purpose was to develop a tool that could be used to streamline the teaching and learning of Real Life Project. The specific objectives of the study were; to assess the current methods in the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute, to develop a tool for efficient teaching and learning of Real Life Project module for Building students of Amelo Technical Institute, to implement the use of the developed tool in the teaching and learning of Real Life Project module for Building and Construction Students of Amelo Technical Institute and to evaluate the impact of the use of developed tool in the teaching and learning process of Real Life Project module for Building students at ATI. The study employed a descriptive qualitative research design and an Action Research approach. Focused Group Discussions, interviews, observation and future workshop were employed as tools of data collection. Ten students of the NCBC and three instructors were purposively selected and engaged in the study. Data were collected using a questionnaire, interview guide, visual in participation (VIP) cards/manila cards logbook, Focus Group Disussion Guide, Observation Guide and a process journal.

Among the findings, the study revealed that teacher centered learning approach was the current method in the teaching and learning of Real Life Project module for the students. The study also revealed that using the process journal as tool improved the instructor/ student relationship. This was evidenced when the trainees were in constant consultation with instructors during the product development and report writing. The study revealed that, participants were motivated with the results of the project especially process journal to aid the implementation of the project. The study further revealed that teaching and learning in groups could yield better results and therefore improve the quality of trainees. The study found out that instructors need to pay more attention to the methods of teaching utilized during a given subject matter.

The study recommended that the tool be adopted by UBTEB as one of its tool.

In conclusion, it is aspired that the process journal will serve as a guide in the training and evaluation of Real Life Project module.

Keywords: *Process journal; Active teaching and learning; Retooling instructors.*

CHAPTER ONE

INTRODUCTION

1.1 General Overview

This chapter presents the background of the study focusing on vocational pedagogy as a discipline and building construction as one of the courses offered in technical institutes in Uganda. The study specifically focused on improving performance in real life project module for building students at Amelo Technical Institute, Adjumani district. In addition the chapter also presents situation analysis, statement of motivation, statement of the problem, purpose of the study, objectives of the study, research questions, scope of the study, justification of the study, significance of the study and definition of operational terms.

1.2 Vocational Training and Vocational Pedagogy

The term vocational education and training which under different localities may be referred to mean Technical and Vocational Education (TVE) and Technical Vocational Education and Training (TVET) as described by Atchoarena (2002).

As McGrath, (2012b) acknowledged, it is difficult to find a definite definition of VET because people use different terms and definitions for it. However, in this study the researcher used VET to refer to education and training that aim to equip participants with practical skills, expertise and understanding that facilitate their entry and performance in the labour market or to improve their livelihoods. The training is geared towards the graduates finding a job or becoming self-employed, especially in the informal sector, which is the main employer in Uganda (UNESCO, 2012b). Until recently, VET in Uganda had not been given its due importance because of a number of factors, including the prevailing image of VET as a second choice, government

prioritization of primary and secondary education, and inadequate financial resources. However, with high youth unemployment, large numbers of young people leaving school early without the required skills for their integration into the labour market and a desire for greater socio-economic development, there is now a policy shift in the country towards VET and skills development. This adjustment is markedly agreed in the Business, Technical, and Vocational Education and Training (BTVET) Act of 2008 (MoES, 2008b). The Skilling Uganda Programme (MoES, Skilling Uganda: The BTVET Strategic Plan 2011–2020) and the Uganda Vision 2040 (G o U, 2007) The focus on VET and skills development is meant to improve young people's labour market and livelihood opportunities and promote prosperity and national development.

Vocational Pedagogy on other refers to a field of knowledge oriented towards trades, occupation and profession. The central aspect of vocational pedagogy is an understanding of human learning and the integration of hands, mind and heart in the learning situation (Mjelde, 2006). Vocational pedagogy embraces learner centered learning as opposed to traditional instruction based on teacher centered learning. In this case, interest is actually shifted from the focus of the learner-centred pedagogy to a multidimensional framework for vocational pedagogy. The application of learner-centred approaches is also strongly dependent on the choice and beliefs of the Instructors. Basing on the current trends and modernization of Technology the traditional teacher-centred pedagogies have proved inappropriate for VET, because they give undue emphasis to 'inert knowledge', which has no relevance to the expected competences for VET graduates (Cedefop, 2010).

The above argument puts more weight on 'knowing how' than to knowledge in the sense of declarative knowledge, 'knowing that', though students emphasize that both are important

and cannot be separated (Juul, 2005) and Lene Tanggaard and Svend Brinkmann (2008) argue that vocational learning is both cognitive and practical.

Therefore, vocational pedagogy unlike general education employs learning strategies that are focused on hand on training. Learning in this case is intended to equip a person with specific skills in the industry. The skills required by the learners are to make them relevant in the world of work. Mjelde (2006) observed that there are three players in vocational education and training namely; school, workplace and the employee. These parties work collaboratively in provision of apprenticeship and institutional based training there by facilitating the learner in developing the required expertise in a particular trade.

It is my interest to prove that for effective skill acquisition it must embrace the theory of 'Learning by doing', which is characteristically the way in which vocational pedagogy is described. In addition to learning by doing, vocational pedagogy is also hinged on experience learning, problem solving and group learning among others.

1.3 Background to the Study

Teaching practicals in Vocational Institutions calls for use of the most appropriate methods that can actively involve learners in the practices. The efficiency of all instruction's systems depends on the quality of teaching and learning in workshops, laboratories and other spaces in which education takes place. Therefore, to improve outcomes from vocational education lie in the classroom in understanding the many decisions instructors take as they interact with students (Lucas, 2012). Instructors, therefore, need to use the right instructional methods that enable students plan, actively learn and evaluate their own learning.

The study aimed at seeing learners actively involved in the teaching and learning process through collaborative learning. To achieve that, students, colleagues and I engaged in an action research project where instructors and student were trained to impress holistic learning techniques that induced learner centred approach. The main purpose of the action research project was to improve the performance of Real Life Project module for Building students at Amelo Technical Institute, Adjumani district. Action research as a learning approach embraces the principles of participation, reflections, empowerment and unrestraint of people and groups interested in improving their social situation or condition (Berg, 2012).

Therefore, the researcher was obliged to carry out action research in Real Life Project module with my students and colleagues at the Amelo Technical Institute, Adjumani. Through the action research project, methods of teaching and learning impressed Active Teaching and Learning approach which turn improved the general learning of students at large. This therefore means that students will be trained using the most effective methods in order to acquire the necessary knowledge and skills needed in the world of work and the communities where they live.

1.4 Motivation Statement

My working on construction projects for past twenty years and teaching building construction practicals in various vocational institutions like Bobi Community Polytechnic, National Instructor's College Abilonino (NICA) and coupled with observations from situational analysis was the motivation to undertake the study on improving the performance of Real Life Project module for building students of Amelo Technical Institute in Adjumani district.

The researcher was actively involved in teaching and monitoring the teaching and learning of Real Life Project Module for NCBC student in Amelo Technical Institute and noted that the content coverage has always been inadequate. In light of this, the researcher was motivated to

find out why not all the components of Real Life Project module could be effectively handled amidst the institute having the qualified instructors and necessary equipment and tools.

1.5 Situational Analysis

Situation analysis is the process of assessing a complex situation within its wider context, systematically gathering information, identifying the main problems and needs within organisation and population, identifying the principal resources contained within that population, and analyzing the information gathered in order to facilitate the process of planning in a systematic, strategic, integrated and coordinated manner. The purpose of a situational analysis is to provide a broad basis of understanding. This was for two reasons; firstly, it provides a common reference point for the rest of the planning process; and secondly, it provides the background for the selection of priority areas of concern for planning. The situational analysis was carried out in the department of Building and Construction in Amelo Technical Institute in Adjumani district to establish the interventions that can bring about improvement in the teaching and learning of Real Life Project module for building students of Amelo Technical Institute, in Adjumani district. The researcher used observation and focused group discussion with stakeholders, who included the Administrators, Instructors, and students. It was noted that instructors lacked some competences to fully handle all the components of the course unit. This was based on the fact that some components of the module are completely left out during the teaching and learning of the module and yet they are part of the areas assessed by UBTEB.

1.5.1 Work process analysis

In line with the above findings, a work process analysis was carried out for the general work process of Building and Construction students in Amelo Technical Institute, which included;

admission process, planning learning activities, planning and organizing fieldwork, conducting training, assessment of tasks, projects, industrial training, evaluation and graduation. During the work process analysis, members agreed that only key activities regarding the teaching and learning of Real Life Project module were analysed as this module posed challenges in covering all the components fully. The major elements in the work process analysis included; planning the teaching and learning of Real Life Project, actual teaching and learning and lastly the assessment.

Planning and organizing teaching- learning activities: NCBC at Amelo technical Institute used the curriculum developed by National Curriculum Development Centre (NCDC) and the schedule for the teaching and learning programmes are as per the Ministry of Education and sports calendar, which is on termly basis. Prior to teaching and learning, the instructors are supposed to prepare schemes of work, lesson plans, work sheets, assignment sheets and information sheets.

The real teaching and learning was conducted impressing all the components of Real Life Project module. There was application of student centred learning approach, which observed professional ethics while carrying out the activity. It was a requirement for instructors to select adequate and appropriate resources to be used in teaching and learning processes.

Table 1.1: Work process analysis of NCBC students at Amelo Technical Institute

Item	Admission	Subject Delivery	Evaluation	Outcomes
Quality requirements	• Target S.4 leavers with credit in English and mathematics • Leavers of Uganda Junior certificate	• Learner Centred	• Continuous assessment • Formative • Participatory focused	• Innovative Practical problem solver
Materials	• Application form • Academic documents • Recommendations • Admission Guidelines	• Money • Logbooks • Pens • Printer • Assignment Sheets • B.O.Q • Architectural and structural plans • Sand • Cement • Aggregates	• Money • Rubrics	
Tools and Equipment	• Computer • Printer • Papers • Files	• Computer • Printer • Papers • Trowels • Squares • Steel float • Mixer • Tape measure		
Work Process	• Sort out legible applicants • Select according to merit • Issue admission letters	• Identify the project according the resources in the school • Formulate the general and specific objectives • Prepare the instructional materials • Implement the project • Make the project report	• Identify the examinable areas • Prepare the assessment rubric • Print the rubric • Carry out the assessment • Submit the results to UBTEB	
Competences	• General knowledge on admission procedures. • Documentation	Team work Communication skills Documentation Record keeping kills in	Writing skills Research supervision skills	

	• Record keeping. • Communication skills. • Appropriate computer skills.	relevant computer software Managerial skills Designing skills Building skills	ICT skills Documentation skills	

Source: Primary data

The above information was collected through observation by the researcher and focused group discussions. The population used in the discussion included ten students from Building and construction department in Amelo Technical Institute, three instructors for Building and construction department and two administrative staff. During the discussion, inadequate teaching and learning of Real Life Project module emerged dominant and it was agreed by all stakeholders that be subjected to a future workshop as a major area of concern to identify the root causes and plan for intervention measures.

1.5.2 Future Workshop

Having identified that the teaching and learning of Real Life Project module was insufficient in Amelo Technical Institute as per the findings from the situational analysis, a Future Workshop (FW) was organised to find out in details the causes of inadequate teaching and learning Real Life Project module. According to Jungk, (1987), FW is a tool used for problem identification in a given setting. In line with the research project, the future workshop was planned and carried out on 26th/January 2018 at 9:00 am, in Main hall at Amelo Technical Institute as shown in figure 1.1 and figure1.2. During the future workshop, five phases were observed; preparation phase, critique phase, fantasy/utopia phase, reality phase and implementation and evaluation.

1.5.3 Future workshop phases

a) Preparation phase

During the preparation phase, the researcher came up with a programme that was to be followed during the future workshop. The participants were invited through phone calls for the workshop. The room and local facilities for the workshop were established by the researcher and the organizing committee; writing materials were purchased (Pens, papers, markers and manila papers) and refreshments provided.

b) Critique phase

During the critique phase, the stakeholders brainstormed and identified causes for inadequate teaching and learning of Real Life Project of Building students in Amelo Technical Institute. These causes were brainstormed during group-focused discussions and stakeholder's future workshop. The causes were grouped according to short term, medium term and long term as indicated in table 1.2.

Table 1.2: Causes of inadequate teaching of Real life module for NCBC students

Short Term	Medium Term	Long Term
• Limited time allocated for Real Life Project • Inadequate training materials, • Lack of skills to handle report writing • Lack of time management by Students and Instructors • Inadequate tools and equipments, • Poor attitude of learners towards practicals • inappropriate formulation of intended objectives • Inadequate skills in use of some materials and equipments in building • Inadequate skills in preparation of Design and cost estimates • Lack of protective gears to be used during practicals.	• Lack of refresher courses for instructors • Indiscipline among learners • Lack of exposure for most teachers and learners • Lack of sick bay to handle cases of accidents on site • Inadequate equipments and materials • Poor relationship between instructors and learners • Gender imbalance in the department	• Low enrolment • Accommodation shortage • Poor fees payment • Poor quality of pupils admitted • High cost of training materials • Unfavorable weather conditions for practical training • Low enrollment

Source: Primary data

Figure 1.1 Stakeholders brainstorming on challenges

Figure 1.2 Supervisor attending the session

Basing on the time available and other resources, the researcher and stakeholders agreed to focus on solving short-term causes. The short term challenges as mentioned above were clustered to come up with the major ones as indicated in table 1.3.

Table 1.3: Causes in short term challenges clustered

	Un Clustered challenges	**Clustered challenges**
1	• Inadequate training materials • Inadequate tools and equipments • Lack of protective gears to be used during the training	Limited resources
2	• Poor attitude of learners towards Practicals	Poor attitude of learners towards Practicals
3	• Inadequate preparation by Instructors • Lack of skills in report writing • Inappropriate formulation of intended objectives • Inadequate skills in use of some materials and equipments in building • Inadequate skills in preparation of Design and cost estimates	Lack of skills to handle all the components of Real Life Project
4	• Poor method of assessment	Poor method of Delivery by Instructors
5	• Limited time allocated for Real Life Project • Lack of time management by Students and Instructors	Lack of time management by Instructors and students

Source: Primary data

The major causes of inadequate teaching and learning of real life are as follows:

- Limited resources;
- Poor attitude of learners towards Real Life Project module;
- Lack of skills to handle all the components of Real Life Project module;
- Poor method of Delivery by Instructors and;
- Lack of time management by Instructors and students.

Using pairwise matrix, lack of skills by instructors and students to handle all the components of Real Life Project emerged as a key challenge in the instructional process.

c) Fantasy phase

In utopia phase that is another name for fantasy phase, members attempted to work out an imagination, to draw an exaggerated picture of the future possibilities of the causes identified in the critique phase. All the ideas were collected basing on what was discussed in the critique phase and put in an "idea store", as suggested by the stakeholders.

The following were solutions brainstormed by stakeholders aimed at improving the teaching of Real Life Project module

i) Increase the time for practicals as compared to theory lessons;

ii) Increase contact hours in a day from six to eight hours;

iii) Retool the Instructors to adopt student centred learning pedagogy;

iv) Instructors be taken for refreshers courses on report writing;

v) Impress Information communication Technology(ICT) to boost and aid report writing;

vi) Instructors to be motivated by school administration to work beyond normal hours;

vii) Institute Career guidance;

viii) Sensitize learners about the importance of learning practicals in Real Life Project;

ix) Instructors to guide learners on how formulate the SMART objectives;

x) Encourage students to impress research as part of learning process in Real Life Project;

xi) Train learners on measurement and estimating process and procedures;

xii) Develop templates to be used in the project process.

Stakeholders brainstormed the above solutions imagining that every situation was possible and that resources were available to address the gaps in solving the problem of inadequate teaching and learning of Real Life Project module. This assumption was not realistic since resources are scarce and we had to prioritize the more pressing challenges that could be solved within our means amidst the scarce resources by use of pairwise matrix. Stakeholders further brainstormed on most workable solutions from the many listed above which were further moved to the reality phase of the FW as workable solutions to improve performance of Real Life Project module for NCBC students. This included:

i) Training Instructors to adopt student centred pedagogy;

ii) Develop templates to used and followed when carrying out Real Life Project module;

iii) Train students on how to write a project report.

d) Reality phase

Under this phase, the research together with the stakeholder agreed to revisit all the challenges with their possible solution to reach a consensus on what is possible to implement with the resource available. These challenges were ranked depending on what is most pressing and attainable in short term. To get the most pressing challenge, we used a pair wise matrix as seen in table 1.4 where inadequate teaching of practicals was ranked first. It was against this background that stakeholders agreed on improving the performance Real Life Project for building students Amelo Technical Institute.

Table 1.4: Ranking the challenges using pair wise matrix

	Limited resources (1)	Poor attitude of learners towards Practicals (2)	Lack of skills to handle all the components of Real Life Project (3)	Poor method of Delivery by Instructors (4)	Lack of time management by Instructors and students (5)	TOTAL	RANK
1		**1**	**3**	**4**	**5**	**1**	**4th**
2			**3**	**4**	**5**	**0**	**5th**
3				**3**	**3**	**4**	**1st**
4					**4**	**3**	**2nd**
5						**2**	**3rd**

Source: Primary

Considering the time and resources available stakeholders agreed on the following as ideal solutions to implement that can improve the teaching and learning of Real Life Project in Amelo Technical Institute:

i) Develop a process journal;

ii) Train instructors and students on use of process journal to enhance student centred learning approach;

iii) Train students on the basics of estimating and designing.

1.6 Statement of the Problem

In Real Life Project module for NCBC, students are supposed to carry out a project that should have the following activities: design of the project, cost estimates of the project, construction of

the structure and report writing as stipulated in the curriculum. Each of the component is allocated marks and failure to accomplish those components leads to loss of marks and hence leads to poor performance of the course module.

However, Instructors of Amelo Technical Institute have been using traditional method teacher centred as a learning approach in the teaching and learning of Real Life Project module. In this context, the instructors identify the activities to be done as Real Life Project and engage the students in the activity and thereafter make them to write the report and present it to UBTEB examiners. The students always score lowly and receive negative feedback from the examiners as a result of presenting substandard work. This has been because some components of the module are not effectively handled like report writing, cost estimating and design as expected. Furthermore the course unit being new in the curriculum some of the instructors did not do it during their vocational education and training. This situation if not addressed, Amelo Technical Institute will continue to produce graduates who cannot perform compete task and therefore not relevant in the world of work. This will result in grandaunts being neglected in the world of work will eventually impact on the enrollment of the school.

Therefore, the purpose of the study was to provide pedagogical tools that can improve the teaching and learning of Real Life Project module and promote student centred learning approach. The approach promotes a change from traditional approach using teacher centred to student centred approach where the prior knowledge and skills of students are necessary in order to produce a good vocational graduate.

1.7 Purpose of the study

The purpose of the research project was to improve the performance of Real Life Project module Building and Construction students at Amelo Technical Institute.

1.8 The specific objectives of the study

The specific objectives of the study were:

i) To assess the current methods in the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute;

ii) To develop a tool for efficient teaching and learning of Real Life Project module for Building students of Amelo Technical Institute;

iii) To implement the use of the developed tool in the teaching and learning of Real Life Project Module for Building and Construction Students of Amelo Technical Institute

iv) To evaluate the impact of the use of developed tool in the teaching and learning process of Real Life Project module for Building students at ATI.

1.9 Research questions

i. How is the teaching and learning of Real Life Project being conducted for Building students in Amelo Technical Institute?

ii. How can the tool to be used in the teaching and learning of Real Life Project module for NCBC students at Amelo Technical Institute be developed?

iii. How can the developed tool be used to improve the teaching and learning of Real Life Project module for Building students at Amelo Technical Institute?

iv. To what extent had intervention using the developed worked to improve the teaching and learning of Real Life Project module?

1.10 Justification of the study

The world of work expects graduates from Vocational Training Institutions (VTI) to be knowledgeable and equipped with all the skills and competences needed in construction industry. On the contrary, the students who come out of these institutions cannot stand alone with the skills and competences acquired from schools. Students are taken for internship to bridge up the

gap between what is taught and what is needed in the labour market. Therefore, the study has been conceived against this background. There are increasing cases bringing out incompetent graduates from these institutions that have resulted into collapse of structures under construction, making the study very relevant.

1.11 Significance of the study

This study sought to improve the performance of RLP so that this can make the trainees of building and construction at Amelo Technical Institute acquire holistic training, impressing knowledge and skill acquisition. In this context, knowledge was acquired through reviewing the related literature, report writing, designing the project, attitude was through observing safety and health on site while skill acquisition was through hands on application. This training made students more flexible in the field of building and further more equipped them with tendering techniques, which involve carrying out measurement, and estimating, which are applicable to the world of work.

The study will enable the researcher and other Vocational instructors to improve and change the way we think about our facilitation of vocational education practice, integration of theory into practice based learning and using the pedagogical approaches to improve our teaching methods.

The study will also help learners to enjoy learning and know their position in the learning process to enable them participate in creating new knowledge and experience into skills development training, have an understanding of responsibilities that will prepare them for the field of work and the society.

1.12 Scope of the study

The scope was sub divided into content scope, geographical scope and time scope.

1.12.1 Geographical scope

The research study was conducted in Building Department at Amelo Technical Institute, Pakele Sub-County in Adjumani district in West Nile region

1.12.2 Content scope of the study

The Action research constitute the integrating of learner centered approaches into the learning process of RLP, implementation of action strategies for boosting up skill acquisition in practical building of Real Life Project for Building and Construction student of Amelo Technical Institute to effectively link the learners to the labour market.

1.12.3 Time scope

The Action Research (AR) focused on the teaching and learning of Real Life Project module for the period ending in November 2018. Its implementation and evaluation was carried out for a period of three months from June 2018 to Sep 2018.

1.13 Chapter summary

This chapter presented the study of vocational pedagogy as a discipline, Vocational Education Training in Uganda, and National Certificate in Building Construction (NCBC) program, which focused on improving the performance in Real Life Project module using learner centered approaches for National Certificate of Building and Construction students at Amelo Technical institute Adjumani district. It presented the situation analysis, motivation statement, and statement of the problem, purpose of the study, objectives of the study.

In the proceeding chapter, the researcher employed the scholar material or related literature to back up the study and it was based on specific objectives in the context improving the performance in RLP for Building and Constructions students of Amelo Technical Institute through developing a process journal and using it in the learning process.

CHAPTER TWO

LITERATURE REVIEW/THEORIES

2.1 Introduction

This chapter presents literature reviews of various scholars in respect to my study. In this literature, the researcher considered information on theories about learning most especially active learning. This study focused on performance of Real Life Project module for Building and Construction students. Considering Vocational training as training that led individuals to the world of work. There was a need to equip trainees with skills that enable them to meet the demands of the world.

2.2 Performance of Students in Vocational Training Institutes

Performance is result or success level of a person as a whole during a given period in implementing tasks if compared to various possibilities, such as work results, target or goal or criteria have been determined first and have been agreed together (Rivai, 2005). Performance is the preparedness of a person to do an activity and complete it correspond to their responsibility with the result as they expect. In Real Life Project module, performance will mean completing the module components in stated time frame and producing quality product and achieve this level instructor performance is paramount. Instructor performance will be a work result, according to quality and quantity that can be achieved by students in teaching and learning process, which will be consistent with the responsibility assigned to him or her. Operationally, performance variable is measured by using three indicators (Davis K., 2005.), namely: Work result quality, Work time punctuality, and Work result quantity. Performance improvement will mean shifting from traditional approach of teacher centred to student centred learning approach achieve the performance variables mentioned in the above categories of quality, quantity and time bound.

2.3 Theories of Learning

Theories of learning which backed the conceptual framework relating to improving the performance the teaching and learning process of a practical lesson is Constructivism learning theory developed by Richardson, (2003) which says that people construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences. These theory was utilized by the study because it is relevant in solving practical problems, especially in a where instructors fall short of skills to teach a certain concept the student experience and knowledge bridges the gap and in this case constructivist theory to enables us to understand the purpose of self-constructed knowledge towards learning. In Real Life Project, students can use prior and experience to perform a task which the instructors tasks as difficult to handle.

2.4 Conceptual framework

A conceptual framework is a structure that the researcher can use to explain the natural progression of the phenomenon to be studied (Camp, 2001) It is linked with the concepts, empirical research and important theories used in promoting and systemizing the knowledge espoused by the researcher (Peshkin, 1993). It is the researcher's explanation of how the research problem would be explored. The conceptual framework presents an integrated way of looking at a problem under study. In a statistical perspective, the conceptual framework describes the relationship between the main concepts of a study. It is arranged in a logical structure to aid provide a picture or visual display of how ideas in a study relate to one another. The framework makes it easier for the researcher to easily specify and define the concepts within the problem of the study.

In figure 2.1 shows how the independent variables in the “improving the performance of Real Life Project module” are interlinked to the skill acquisition as the dependent variables. The independent variable in the study is the teaching and learning method that is taken to project based learning employing the approach of student centered. A tool was developed to be used improve teaching and learning in areas of streamlining the learning process and there was dependent variable skill acquisition which can be affected by teaching method applied and approach. This outcome will include acquisition of skills in report writing, designing the structure, cost estimating the project and approach assessment technique that targets all the learning outcomes. To attain those intended outcomes there were also intervening factors which supported the independent variables in causing the effect on dependent variable and this included: learner’s interest; availability of learning resources and internal as illustrated in figure 2.1

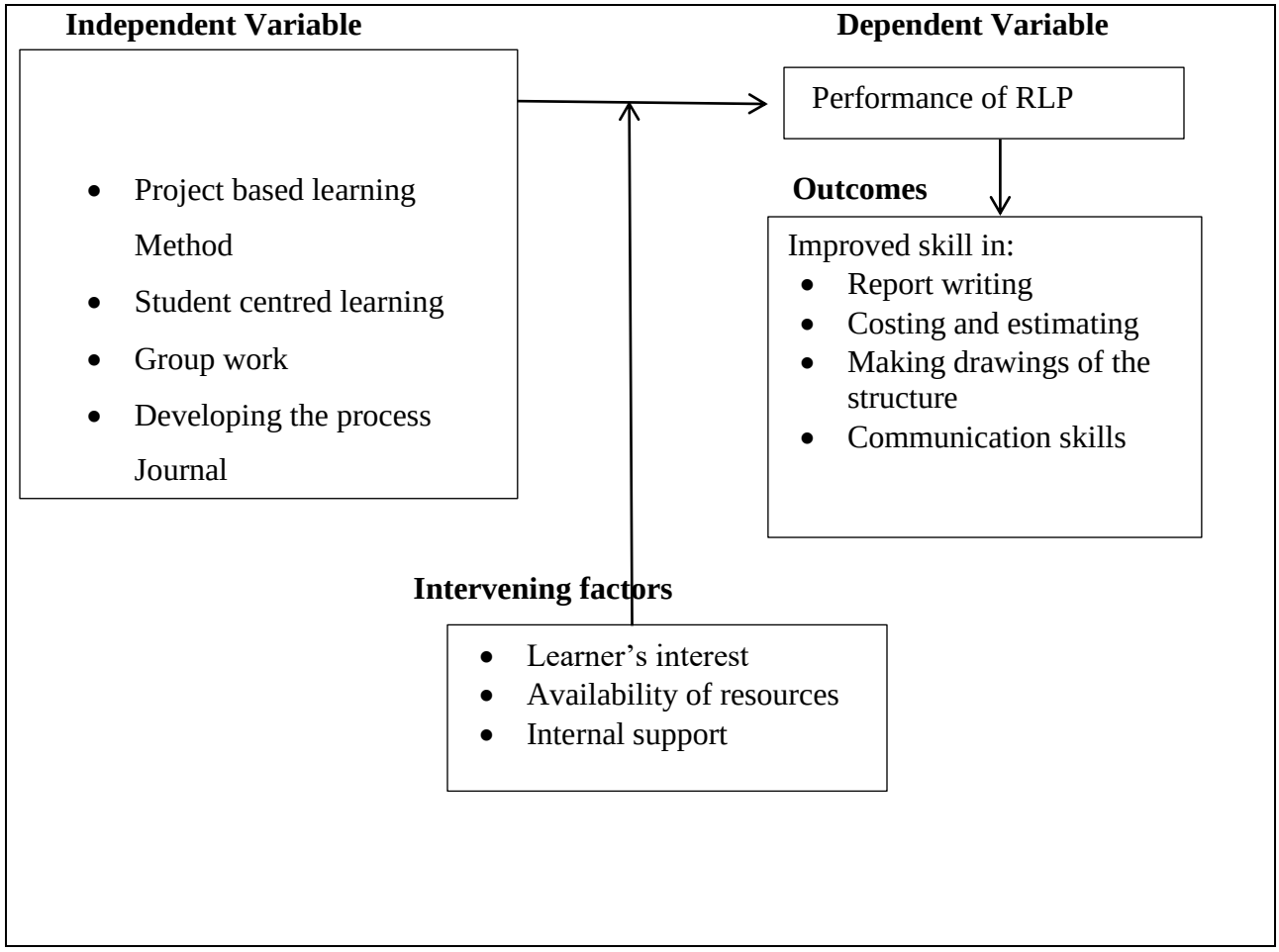

Figure 2.1: Conceptual framework showing the relationship between the variables

2.4 Strategies to improve the performance of Real Life Project

2.4.1 Student centred learning approach

The Student centred learning approach is a situation where the needs of the learners like interests, prior knowledge and their desire to participate actively in the teaching and learning process are considered first. In that respect, the role of instructor shifts from "sage-on-the stage" to "guide-on-the-side" Nation, (2008).This can create challenges for the instructors, requiring additional training, support and resources. Actually, the common description of the instructors' role in the teaching and learning of Real Life Project is that of "facilitator" (Morgan, (1983). As

Stauffacher,(2006) explain: “The instructor’s role changes from a distributor of knowledge to a process manager, helping students in their learning process by initiating reflection processes and supporting them, if necessary, on substantive matters”. Basing on above argument, I adopted the constructivism, as a theoretical background to back up my study. The student centred approach of learning is the backbone of Active teaching and learning in the sense that if you the former approach then it will automatically induce the later.

The student centred learning approaches are important for the development of all students, but they are essential for the low-achievers that have difficulties with traditional teaching methods where instructions are given and it takes long to internalize them. Advancing low-achieving students is an on-going challenge for educational systems. Routing low-achievers into low-learning tracks creates a vicious circle. The school system has low expectations of the students; the trainees accumulate a history of failure; and the teachers emerge as having low self-esteem and low professional image Barak, (1994,). These students require attractive learning environment and resources that propel them to relate to their real world and answer their needs. Similarly basing on the above argument there is need for instructor to acquire competencies that can make deliver such training.

Instructors therefore, should be aware of the learning environment that can engage the learners in activities that relate to the world outside school. A rich, flexible learning environment is necessary for accelerating the learning of at-risk students. A student who is given the opportunity to create a prototype deals with designing, making and evaluating. Through such experiences, he/she realizes that much depends on him/herself. Consequently, he/she may gain self-esteem and personal responsibility (Waks, 1995).

According to Richardson (2005, p. 3), Most constructivists would also agree that the traditional approach to teaching – the transmission model – promotes neither the interaction between prior and new knowledge nor the conversations that are necessary for internalization and deep understanding. The information acquired from traditional teaching, if acquired at all, is usually not well integrated with other knowledge held by the students. Thus, new knowledge is often only brought forth for school-like activities such as exams, and ignored at all other times.

The theory views learning as an active process in which learners strive for understanding and competence on basis of their personal experience. Learning is constructivist because previous knowledge is revised, reorganized and even reinterpreted in order to reconcile it with new input (Mjelde & Daly, 2006, p. 89). If instructors adopt student centred approach of learning it can yield a number of advantages that may include among other the following;

i) Improved academic achievement;

There was evidence based on the literature student centred learning approach improves the academic achievement. Barak and Dory (2003) compared the results of two groups of undergraduate Engineering students, one using traditional methods; the other student centred learning to construct computer models of molecules. He found out that in both qualitative and quantitative measures, the Student centred approach achieved better results than the traditional group in their post-test assessment and final examinations.

However, one study by Mills, (2003) found that while students were generally motivated and demonstrated better teamwork, communication skills and understanding of professional practice, “they may have a less rigorous understanding of engineering fundamentals”, suggesting improvements in academic standards cannot be assumed.

Basing on the above literature and on my own experience and observation for the period I have been an instructor, there are always high academic achievements by trainees using student centred only it is well administered.

ii) **Motivation and enjoyment**

There are higher levels of motivation because of impressing student centred learning approach. Some scholars have used a wide range of research methods to evaluate students' perceptions of their learning experience. Frank, Levy & Elata, (2003), for instance, used observation and analysis of semi-structured interviews with students and student reports to establish that they enjoyed this type of learning and felt it increased their motivation to learn.

Meehan, (2006)used analysis of the reflective element within student reports, videos of debriefing meetings and audio taped informal interviews to establish that students were positive about the project work. Similarly, Spronken-Smith, (2009) student course evaluations demonstrated that students enjoyed their project work and that the rating of the course quality improved following the introduction and subsequent adaptation of Active teaching learning approach. Conversely, Stauffacher et al., (2012) found that "a sizeable number of students were always reserved or reluctant" and attributed this to their unfamiliarity and resistance towards a new learning style with non-traditional forms of assessment.

Basing on the above literature on the motivation and enjoyment of using student centered learning approach in the learning process of project module can only yield fruits only if the instructors and students are fully prepared and equipped with necessary skills and resources to impress it as method and technique in the learning process.

Therefore, to fully implement the Active Teaching and learning, stakeholders especially the instructors should be retooled to acquire the key competencies that can make them fully ready

to use student centered approach to deliver the teaching and learning of Real Life Project module. Pedagogical learning methods that can impress student centered include the following:

2.4.2 Process journal

A journal is one type of writing assignment that requires the writer to think about something, and to record his/her thoughts about it. In our context of Real Life Project, it will be referred to a template in form of a questionnaire to aid the training process. Process journal may be called differently as per different authors referring to as a process journal others call it a learning journal (Walden, 1988). It is variously referred to as a personal journal (Dart, 1998).

Learning journal offers many useful benefits to both the instructors and the learners. It has been welcomed as a learning tool (Yinger, 1985) and a tool to promote lifelong learning skills (Walden, 1988), and it is widely recognised as one way of communicating the importance of writing (Yinger, 1985) and of actively engaging students in learning (Connor-Greene, 2000). It is argued that a learning journal offers an autobiographical approach to learning (Hettich, 1976), and a help to developing the course of one's own learning (Carroll, (1994). Summary of the main benefits of using a learning journal may include the following: allowing students to make sense of their own personal histories (Heldund, 1989), allowing students to assimilate and integrate new information (Hedlund et al., 1989). It encouraging students to learn to think more about the knowledge they have or are acquiring (Heldund, 1989), encouraging students to learn to use new knowledge (Heldund, 1989) and promoting long-term retention of course concepts (Croxton, 2001). It also stimulating critical thinking amongst students (Hettich P, 1990) giving students opportunities to express themselves and develop effective means of self-expression (Hettich P, 1990). It helps to build trust between instructor and learner (Lohman, 1996). It providing formative evaluation for the instructor and thus helps to identify the need to adjust teaching

strategies (Lohman, 1996). Providing students with developmental feedback on their learning (Hettich P, 1990). It helps students' cognitive and affective development (Lohman, 1996). It also helps students to improve their writing by focusing on processes rather than on products, emphasizing expressive and personal aspects, and serving as a record of thought and expression that is available for rereading (Yinger, 1985).

2.4.3 Project-Based Learning

Project-based learning, which in real sense is the Real Life Project module, offers a wide range of benefits to both students and teachers. A growing body of academic research supports the use of project-based learning in school to engage students, cut absenteeism, boost cooperative learning skills, and improve academic performance (George Lucas Educational Foundation, 2001). For students, benefits of project-based learning include increased attendance, growth in self-reliance, and improved attitudes toward learning (Thomas, 2000). Academic gains equal to or better than those generated by other models, with students involved in projects taking greater responsibility for their own learning than during more traditional classroom activities. There are also opportunities to develop complex skills, such as higher-order thinking, problem solving, collaborating, and communicating. For many students, the appeal of this learning style comes from the authenticity of the experience. Students take on the role and behavior of those working in a particular discipline. For teachers, additional benefits include enhanced professionalism and collaboration among colleagues, and opportunities to build relationships with students (Thomas, 2000).

2.4.4 Workshop learning

According to Mjelde (2006), workplace as a working and learning arena has a long tradition in vocational education. The relationship between practical life and vocational school is very

important. The combination of vocational trades taught in school workshops with subsequent apprenticeship makes the school workshops the major arena of learning in vocational education. Mjelde (2006) also stresses that, the vocational teacher takes on as a mentor to his trainees and would be consulted by employers who want good apprentices. She reveals the difference between the holistic and additive learning theories and then shows how the vocational teachers develop a work plan that will be implemented to bridge the existing gap. Mjelde (2006) observes that the characteristic background of a vocational teacher is a practice-based world from a sector of working life that is outside the education system.

As a result, the participants gained the knowledge and skills of developing teaching aids as well as produced a teaching aid that can be used in class to facilitate the teaching and learning process. According to Ramsden, (2003, p. 9) to achieve change in the teaching and learning we ought to rather look carefully at the environment in which a teacher and the system of ideas which that environment represents.

2.5 Summary of Chapter Two

This literature explains the demands of the world of work in relation to vocational education training at international and national perspective. Scholars show that various parts of the world recognize that the demand of the world of work for the 21st century requires vocational instructors and graduates of VET to have technical skills with experience from the world of work.

In order to skills acquired from VET, the government of Uganda has set some interventions to improve vocational education training as highlighted through the Ugandan vision 2040, BTVET strategic plan. Various scholars were consulted to share their view of the vocational education training considerations and various views are presented about; sharing ideas and working in

teams, adopting and adapting new methods of teaching and linking training with the world of work.

This project was about improving the performance of Real Life Project module for building students at ATI through adoption of learner centred approach by training instructors and students on use of process journal implementing the use process in the teaching and learning of RLP. In that, line literature was reviewed about student centred learning approach, which was backed by constructivism learning theory.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology employed in the project and it encompasses methods used in data collection and data analysis procedures. It also states the research design and strategies, population sample and size, sampling strategy, methods and instruments used in the data collection of the study, data collection procedure, and ethical considerations of the study.

3.2 Research design and approach

The researcher employed a descriptive research design in a participatory action research in order to bring forth the empirical data. The descriptive survey is concerned with information generally obtained by means of interviews or mailed questionnaires and other sources that include reports or statistics (Mugenda and Mugenda, 2003). Most of the data was obtained through field notes generated from observation of the researcher and those of the participants and reflective logs; interviews; minutes from the meetings. Other than written information, other forms of data and evidence such as photographs, voice recordings and video clips in the study were also used.

3.3 Implementation of Action Research

This research project employed a five-stage action research model. The stages are identifying the problem, action planning, taking action, evaluation which involves studying the importance of an action. Nevertheless, since the problem had already been identified through the future workshop described in a situation analysis in chapter one, at this stage only the implementation activities were highlighted. The action points as agreed upon were further studied to allocate tasks to

participants. This involved stating the students' roles, instructors' roles and the researcher roles together with the stipulated periods as shown in the action plan.

Table 3.1: Action Plan

Activity	Tool	Responsible Person	Duration
Examine challenges that causes inadequate teaching and learning of Real Life Project	• Situational analysis • Work process analysis • Future workshop	• Students • Administration • Instructors • Researcher • Mentor	01/01/2018 To 31/04/2018
Give strategies of improving the performance of Real Life Project	• Future workshop	• Students • Administration • Instructors • Researcher • Mentor	01/01/2018 To 31/04/2018
Implement the possible strategies for improving the performance of Real Life Project	• Develop the templates to be used in the pedagogical process • Trainings • Give tasks • Develop the rubric to be used in the evaluation the evaluation process	• Students • Administration • Instructors • Researcher • Mentor • Supervisors	02/04/2018 T0 28/05/2018
Evaluate the possible strategies for used improving the teaching and learning of Real Life Project	• Meetings	• Students • Administration • Instructors • Researcher • Mentor • Supervisors	02/06/2018 T0 28/06/2018
Mocks, viva presentations.		• Mentors, Administrators and supervisors	01/07/2018 T0 30/08/2018
Submission of Thesis		• Administration, researcher, supervisors	01/09/2018 To 05/10/2018

Source: Primary data

During implementation, we hired expert from National Instructor's College Abilonino who piloted in the development of the process journal and a worksheet as tools used in the implementation of the Real Life Project module for students. The expert conducted workshop training use of process journal in the teaching and learning of Real Life Project. Instructors practically prepared the work sheet for teaching the module. The processes involved core steps, which included topic selection, research, product formulation, report writing and presentation. Data was analyzed, interpreted and reflected upon in stakeholders' workshops for planning new strategies for sustainability.

3.4 Study Population

A population is the total of all the individuals who have certain characteristics and are of interest to a researcher. The population size of Amelo technical institute according to the 2018 enrolment is 35 students with 29 (90.6%) male and 6 (9.4%) female; with 16 instructors 12 (75%) male and four female (25%). However, with special reference to this study, the target population comprised of fifteen participants in the following categories: ten students, three instructors and two administrators.

3.5 Sample Size and Selection

A total of 15 participants was drawn from a population of 29 participants. This included 10 students, 3 teachers and 2 administrators.

Table 3.2: Composition of study Participants

Category of participants	Study population	Sample size	Sampling technique
Students	10	10	Purposive
Teachers	15	03	Purposive
Administrators	04	02	Purposive
Total	**29**	**15**	

Ten students of Building and Construction department were purposively selected because they formed the entire population of the department. Three instructors were purposively selected because they belonged to Building and Construction department (a trade which is under study) and helped in the implementation of the agreed strategies for the improvement of the performance in Real Life Project. Two administrators were purposively selected because they are the decision makers, influential and can promote the implementation of the recommendation of the study. This enabled the researcher to collect valid information relating to the study and follow up the implementation processes with key participants.

3.6 Sampling Techniques

The researcher used purposive sampling for selecting key participants for the case of this research. Second year students, instructors and administrators who were the key informants were purposively selected using purposive sampling technique to aid the researcher in ensuring that the required information is gathered from the right respondents.

3.7 Methods of data collection

The following were the methods of data collection which were used while collecting information.

3.7.1 Questionnaire Survey

In this study, a questionnaire was used to collected data from respondents at Amelo Technical institute. It was advantageous in that it collected data from a relatively large number of respondents from their natural setting, cheap and saved time. The questionnaire method involved use of a set of questions printed in a logical order (Kothari, 1984). This enabled the respondents to freely express their views on the key variables of the study. The method also allowed the respondents to record what they feel, think and believe is true or false. The questions were closed ended to facilitate administration and analysis (Mugenda, 2003). This method was used to lay strategies to improve the performance of Real Life Project by instructors and administrators.

3.7.2 Interviewing

Interviews enabled the participants to describe their situation hence offering the researcher access to participants' ideas, feelings, and recollections in their own words, rather than the words of the researcher. Unstructured, interviews were used to collect data from the stakeholders on challenges encountered during the implementation process of the identified strategies intended to enhance the competencies of instructors on delivery of Real Life Project module for Building and Construction students of Amelo Technical Institute.

3.7.3 Observation

The researcher as a participant in the action research took keen observation, listen and took notes in all stages and most especially in noting how the strategies were being implemented. In the process of observation, the researcher endeavored to be a genuine participant observer in the research. Observations were undertaken in order to: observe the activities, participants and physical aspects of the situation and engage in activities that are appropriate to a given situation.

In this way, the researcher observed the students participation in the different activities, particularly during the implementation phase using the observation tool that was designed.

3.7.4 Focus group discussions

Focus group discussion is a participative method that involves a homogenous group of respondents in the discussion of issues of common concern through a moderator. Study involved focused group discussion, which was held with participants together with the researcher, first and second year students and Instructors from the Department of Building and Construction and members of the Institute administration. The researcher introduced guiding questions and opinions of individuals and group respondents were recorded as the research continued. The discussions were organized during the time that was convenient for the participants. The discussion were based on modalities of the improving the performance of Real Life Project module by conducting workshops on use of process journal as tool to induce Active Teaching and learning, implementing the strategies contained in the process journal and evaluating the impact of using process journal in the implementation of the project.

3.7.5 Future Workshop

These are techniques developed by Jungk, Luiz and Muller in the 1970's. It enabled a group of people to develop new ideas and solutions in a collaborative effort towards existing problems. A future workshop emphasis critique learning, team work, democracy, and empowerment (Lauttamäki, 2014)

The future workshop started with self-introduction of the researcher followed by a brief introduction of the purpose of the gathering, participants were encouraged to brainstorm on their expectations and fears in regards to the workshop and in the critical stage they gave their views

Following the above, the researcher presented and explained to the stakeholders the guiding principles of the action research, future workshop as being collaborative, democratic, equity and transparency. By being collaborative and democratic, any action research agenda and is inseparable linked with dialogue and freedom necessary in the empowerment of all stakeholders in attendance that are affected by the issues at hand.

3.8 Data collection tools

3.8.1 Questionnaire

This consisted of the questions which the respondents answered. According to Mugenda (2003), a standard questionnaire contains a list of possible alternatives from which respondents select the answer that best suits the situation. Structured and unstructured questions gave the respondents a degree of freedom to bring out some information in detail due to the open ended nature of some questions. It accommodated a wide range of close-ended questions giving room to cover more areas of interest as far as desired data is concerned. A liker scale of 1-5 was used to measure the variables under objective two. In this sense, 1 represented Strongly Agree, 2 for Agree, 3 represented strongly Disagree 4 for Disagree and 5 for Undecided.

3.8.2 Interview guide

An interview guide was used to collect data from administrators at Amelo Technical Institute. According to Dillman, Smyth and Christian, (2009) a semi-structured interview guide was used as a tool in business and social sciences. The results of the interview guide helped to confirm the results of the questionnaires making the study significant. Smart phones were used to record audios and photos during the process of interviewing. An interview guide was used to collect data on all the study objectives.

3.8.3 Visual in Participation (VIP) cards/manila cards

Using VIP cards, questions were posed to the participants in groups and feedback were obtained from participants writing their responses on the card or flip charts distributed to them. It was used to collect the views from the participants about the challenges in instruction and assessment of Real Life Project in the institute, possible strategies to improve and recommendations on the strategies.

3.8.4 Logbook

Students and Instructors filled logs whenever we had any activity on Real Life Project. They recorded their experiences and reflections as they occurred. The logs provided a detailed evaluation of each activity that we had planned. Each time we had an activity, students had to write what had happened, experiences that they had gone through, reflections and how best to improve. The instructors as well wrote their reflections of the day after the students had written. Reflections formed a basis for improvement of the next activity.

According to McIntosh, (2001) students should use learning logs frequently. Using them every day is not necessary, but they should be used frequently whenever it is deemed necessarily. They also noted that the purpose of writing in learning logs is to have students reflect on what they are learning and learn while they are reflecting on what they are learning. Students therefore filled logs during the teaching and learning of Real Life Project. The logs had guiding questions concerning; Event/Activity, Experience/what happened, Reflections /Remarks, Way forward. The importance of the logs was to ensure that students analyze how a particular activity was done and suggest possible ways to improve. As noted by McIntosh, (2001), “responding to specific prompts in learning logs encourages students to address the teachers concerns”. As students reflect on what has been taught, I believe they are able to identify exactly what areas

that need improvements that helps the instructor to ensure that all learners concerns are addressed.

3.8.5 Observation Guide

Observation is a systematic data collection approach (Mugenda, 2003). The researcher used all the senses to observe the career progression, attitude of the students towards the courses they do and work shop interaction. The observation check list was the tool utilized to guide the exercise while a smart phone and note book were used to record the observations. An observation checklist was used to observe the career progression, attitude of the students towards the course they do and work shop interaction.

3.8.6 Focus Group Disussion Guide

A Focus Group Discussion guide is an organized discussion check note that guides the researcher in a structured way. The researcher conducted focus group discussions with Administrators both male and female in order to capture their responses regarding the research topic. A focus group discussion guide was used to get detailed verbal information on all the objectives of the study. Smart phones were used to record audios and photos during the process of interviewing.

3.9 Data collection procedure

The data was collected basing on the research objectives using the future workshop, which involves five phases: preparation, critique, utopia/fantasy reality/implementation and follow-up phase within the focus group discussions. In the preparation phase, the researcher presented the introductory letter from Kyambogo University and further explained the purpose of the research to the principal of Amelo Technical Institute (ATI). In that process, the researcher was seeking for permission to carry out research at Amelo Technical Institute. The researcher carried out a

meeting to draw the work plan for all the activities to be done during the research, and set the rooms and materials to be used.

3.10 Validity

This refers to the extent to which results can be accurately interpreted and generalized to other populations (Oso and Onen, 2008). These writers further define validity as the extent to which instruments measure what they are intended to measure.

This approach measured the degree to which the test items were represented the domain or universe of the trait or property being measured. In order to establish the content validity of a measuring instrument, the researcher identified the overall content to be represented. Items were then randomly chosen from this content that was accurately represent the information in all areas.

3.11 Reliability

According to Sekaran (2013), reliability is consistency of measurement or the degree to which an instrument measures the same ways each time it is used under the same condition with the same subjects. The instrument whose validity was tested and assured already was thereby tested for reliability through carrying out a pre-test or pilot study.

3.12 Data analysis

Data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Both qualitative and quantitative data was analyzed as shown below;

3.12.1 Qualitative data

Qualitative data analysis involved both thematic and content analysis and was based on how the findings were related to the research questions. Content analysis was used to edit qualitative data and reorganizes it into meaningful shorter sentences. Thematic analysis was used to organize data into themes and codes were identified (Sekaran, 2003). After data collection, information of same category was assembled together and their similarity with the quantitative data created, after which a report was written. Qualitative data was interpreted by composing explanations, photos or descriptions from the information. The qualitative data was illustrated and substantiated by quotation or descriptions.

3.12.2 Quantitative data analysis

Data from the questionnaire was analyzed where 1 represented Strongly Agree, 2 for Agree, 3 represented strongly Disagree 4 for Disagree and 5 for Undecided. Quantitative data was edited, coded and analyzed using frequencies. It is known as the best method of measuring the association between variables of interest because it is based on the method of covariance. It was used in order to give the study a statistical representation.

3.13 Ethical considerations

As a researcher, I sought for permission from administration to allow me to carry out research at Amelo Technical Institute and the information obtained from the participants was kept confidential and was only used for research purpose. Real names and identities of participants were confidential and unrecognizable. There was free discussions and every one's idea was considered. No one was to be victimized because of his/her view. All participants were to be requested to be honest when giving their views.

3.14 Summary of Chapter Three

This chapter has presented a discussion of the qualitative research design and action research approach. Information discussed in this chapter also included data collection tools, population sample and analysis. A key point to note was how the researcher controlled his powers to avoid influencing the findings from the project.

The next chapter presents the findings from the field with some of the theories earlier discussed in the literature review to give a theoretical backing to my actions. The findings and actions are presented in phases and thereafter evaluation as the last phase.

CHAPTER FOUR

PRESENTANTION, ANALYSIS AND INTEPRETATION OF RESULTS

4.1 Introduction

This chapter presents the findings recorded from observations, interviews and logs. The findings presented included that was acquired as students and instructors participated in the project as well as that obtained from interviews. The study was conducted in phases, and have felt it necessary to present the findings in phases to ensure that all information is presented. It also presents a description of how the activities in the phases occurred.

The researcher carried out an action research project that which aimed at improving the performance of Real Life Project in Amelo Technical institute, Adjumani district. Action research involves; systematic collaboration in planning, carrying out, evaluation and critical analysis of teaching and learning process, with the aim of improving and documenting new knowledge of teaching and learning processes in school and work life.

It was on this background that it was deemed necessary to involve all the concerned parties especially the students and colleagues in the Building Department and Agriculture whose knowledge was thought necessary for the project. At this stage, it was thought necessary for the instructors to keep reflecting on the way they practiced their teaching and learning of Real Life Project as module.

Participants carried out the project in phases owing to the time we had and basing on the specific objectives intended to be achieved. The phases followed during project process are based on the objectives set and the action research cycle, which included; inculcating the learner centred approaches in the learning and teaching process of Real Life Project module by conducting a workshop on use process journal, implementation of the stated strategies and Evaluation.

4.2 Phase One: To assess the current methods in the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute;

Under this phase, the researcher presents and interprets data that he considered vital and relevant in relation to the factors affecting the learning and teaching of practicals at Amelo Technical Institute. The researcher employed informal conversation interviews that sought to find out the students, teachers and administrators experiences regarding the topic at hand.

Stakeholders at Amelo Technical Institute unanimously agreed that;

"There was a problem in the teaching and learning of Real Life Project module at Amelo Technical Institute"

It was quite evident that in the particular module learners find it difficult to carry out the following activities; draw the plans of projects using computer make Bill of Quantities for a project and writing the academic report. The Principal noted that all the departments hardly complete the project module on the stated period.

According to researcher's observation, the instructional methodology used to induce motivation and interest of learners in the learning process. According to Koschmann, (1996) an effective instructional method should promote activeness in learning, through self-direction, goal setting, problem finding, and problem solving and self-testing. It should also engage the learner in problem solving that requires the aggressive inquiry, reasoning and reflecting demanded of ill-structured problems and knowledge domains. It therefore follows that to be effective instructor, it is necessary to involve learners in the teaching and learning process.

According to one of the learners of Building and Construction;

"Much as active teaching and learning is very important this calls for sufficient sources to search for necessary information like the internet, which is lacking in Amelo"

An instructor in Building department lamented that;

"There is no clear guideline on how the Real Life Project module should be conducted. Each institution carries out the project as it wishes and at the end of the training period, some parts are not handled"

One of the learners complained that it is difficult for them to carry out the drawing using Auto CAD since the content they cover in this module is not sufficient to enable the carry out the drawing using these programme.

The instructor in charge of Real Life Project module for NCBC complained that;

"The course module has no assessment criteria to be followed when assessing the trainees though the areas of interest are out spotted but there should clear scoring guide to outline the assessment of all the intended competencies"

In order to create an active learning environment, it was therefore necessary for the learners to address their own problems in the teaching and learning process of Real Life Project. The instructors gave learners enough time to determine the issues they needed to solve and in this case, it was building a piggery house to enhance skill acquisition for NCBC and NCA students of Amelo Technical Institute.

4.3 Phase Two: Developing a process journal as a tool for efficient teaching and learning of Real Life Project module

According Huberman, (1994) Process journal are tools or guide that are used to describe and/or guide the process of project implementation. The researcher being ATL practitioner together with help and guidance from instructor training college formulated the process journal/ guide using the sample from ATL manual to suit the teaching and learning of Real Life Project. The process has five phase that included topic selection; research; product development; presentation and worksheet. Each phase comprise a number of journal as explained hereby. The process journal as a tool in the teaching and learning of RLP was intended to improve the teaching and

learning process by: streamlining the learning process; induce student centred learning approach; improve on report writing and presentation; be used as a tool for assessment; promotes collaborative learning; improves skills in design of the structure; improve skills in cost estimating and induces moral and motivation of learner. The following are the phases in the process journal:

i) Process journal phase one:

Deals with topic selection. Here the instructor together with learners establish a goal, to outline how they plan to carry out the project and to create final product. The journals found in this include;

- Journal #1: which deals with the goal of the project;
- Journal #2: The key activity undertaken to create a product e.g. to (make/ organize/ present/ design/ create/produce/ perform);
- Journal #3: Explains how project link with the curriculum;
- Journal #4: Explains how the project interact with the real world;
- Journal #5: States how one plans to implement this project;
- Journal #6 : Having completed journals #1 to #5 they can form the introductory part of the academic as seen in table 4.1

ii) Process Journal Phase 2 – Research

In this second phase of the process, one needed to research information that will help him/she to create the final product. This phase contains the following journals:

- Journal #7 - Process Reflection: Review the process of project journal of phase 1 (journals #1 to #6);
- Journal #8 - Purpose of the research: What kind of information are some looking for;

- Journal #9 - Planning for Research: One identifies the resources that are needed to find information in the library (e.g. a book, a web site, a movie, etc.);
- Journal #10: Documenting the Research: Evaluate the research;
- Journal #11: Reflection;

iii) **Process Journal Phase 3:** Product Development & Academic Report:

*The product may take many different forms, but the **academic report** must follow a set structure and must not exceed 3500 words. The structure is as follows:*

i) Title page

ii) Table of contents

iii) Executive summary (optional)

iv) Introduction (use journal #12)

v) Description of the process(use journal #12)

vi) Analysis (use journal #12)

vii) Conclusion (use journal #12)

viii) Works cited (use Journals #7-10)

ix) Appendices, where appropriate (this is a good place to put pictures of your product)

- Journal #12:It is concerned with reflecting on the work and writing the academic report

Once completed, the outline stated above ultimately become the academic report.

iv) **Process Journal Phase 4**: Presentation or Exhibition

- Journal #13: Planning the Exhibition: The Exhibition is the final component to the real life.

v) **Process Journal Phase 5**: Worksheet. It contains working drawing; work process and assessment rubric.

vi) Sample of the developed process journal

"PROCESS JOURNAL/GUIDE FOR IMPLEMENTATION OF REAL LIFE PROJECT MODULE

Process Journal Phase 1: Topic Selection and Goal Setting

In the first part of the project, the instructor together with learners need to establish a goal, to outline how they plan to carry out the project and to create final product.

Journal #1: The goal of my real life project is to:

……

***Journal #2:** To achieve my goal I am going to (make/ organize/ present/ design/ create/ produce/ perform) the following product(s):*

……

***Journal #3:** How does this project link with the curriculum?*

***Journal #4:** How does this project interact with the real world?*

……

***Journal #5:** How do you plan to implement this project?*

steps	*Activities to carry out*	*Time needed*
Step 1:		

Journal #6

Using the notes you wrote in your previous five journals, fill-in the following lines.

Once completed, these lines will constitute the introduction to the academic report of your Real Life Project.

*The goal of my **Real Life Project** is:*

The project links with the curriculum as follows:

The project links with _____ (Area of Interaction) because:

I will take the following steps to achieve my goal:

At the end of the process, I will have created/developed/organized:

Process Journal Phase 2 – Research

In the second phase of the process, one needed to research information that will help him/she to create the final product.

***Journal #7 - Process Reflection:** Review the process of project journal of phase 1 (journals #1 to #6). And based on these, one can plan to make any changes to project? If so, what changes will you make and why?*

Journal #8 - Purpose of the research: *What kind of information are you looking for? What are you hoping to learn as a result of your research?* ---

Journal #9 - Planning for Research:

Identify the resources you will use to find information ***in the library*** *(e.g. a book, a web site, a movie, etc.)*

Identify the additional resources you will need to access ***outside of the institute*** *to get enough information on your topic (examples: interview, benchmarking visit, museum, event, email communication, etc.)*

Journal #10: Documenting the research

Evaluate your research. Based on the information found, write a paragraph explaining the product that you will create in the next phase of the project: ---

Identify the materials/equipment you need to create your product, how you will obtain them, and how much they will cost

Define the amount of time needed to create the product:

Also, reflect on your performance so far. What are you proud of? ---

What do you need to improve on your work? ---

Process Journal Phase 3: Product Development & Academic Report

The product may take many different forms, but the ***academic report*** *must follow a set structure and must not exceed 3500 words. The structure is as follows:*

1. *Title page*
2. *Table of contents*
3. *Executive summary (optional)*
4. *Introduction (use journal #12)*
5. *Description of the process(use journal #12)*
6. *Analysis (use journal #12)*

7. *Conclusion (use journal #12)*
8. *Works cited (use Journals #7-10)*
9. *Appendices, where appropriate (this is a good place to put pictures of your product)*

As one goes through the process of completing the product, complete the following academic report organizer (journal #12) to keep track of your progress.

Journal #12: Reflecting on your work and writing the academic report

Once completed, the following outline will ultimately become your academic report.

Introduction

The goal of my real life project was to----------

The project links with _____ (Area of Interaction) because:

To achieve my goal, I did the following activities:

My plan for creating my product was (what you planned to do, not what actually happened):

Step 1:
Step 2:
I needed to research the following things to achieve my goal

Description of the Process

This is what really happened, not necessarily what you planned to do

This is what I did to make/organize/design/create my product		*Date*
Step 1	*What I did:* *My reason for doing this was:*	
Step 2	*What I did:* *My reason for doing this was:*	
Step 3	*What I did:* *My reason for doing this was:*	

This was the best way to create the product because: ----------

Analysis

Analysis of the inspiration

What inspired you to undertake this particular project?

Analysis of the influences guiding the work

Who influenced the ways in which you researched and created the final product? How did they help you?

Analysis of the findings and decisions made

What challenges did you meet and how did you overcome them? Why were your decisions the right ones?

Analysis of the resulting product

How successful was your product? How do you know? What are you proud of?

Conclusion

What was the impact of your project on yourself, on your school and on others?

What new perspectives did you develop as a result of this project?

Appendix Section

Attach any pictures, illustrations, work samples, graphs, charts, or diagrams that clarify or illustrate what you document in your academic report.

Process Journal Phase 4: Presentation or Exhibition

Journal #13—Planning the Exhibition

The Exhibition is the final component to the Real Life Project. Your work will be on display in the institute for the UBTEB Examiners and entire community.

Together with your instructors, sketch how you will display your project and identify the resources you will need (examples below):

Elements to display	***Resources needed***
Process journal	*Photocopies*
Academic report	*Photocopies*
Product	*Presentation stand/table to present the*

	product
Pictures, drawings, etc.	*Board to display pictures, drawings, etc.*
Power point presentation	*Laptop and projector*
Visitors' positive/negative comments book	*Notebook*

Together with your Instructors, analyse the comments received during the Presentation. What are the most positive/negative ones? ----------

Based on the experience of this Real Life Project, how will you improve on future projects?

Final comment from the Head of the panel: ----------

After the exhibition, please submit a copy of your finalized process journal and academic report to:

- *The Head of the project Committee "*

Process Journal Phase 5: Worksheet

WORK PROCESS

	CRITERIA	***STEP 1 DESIGN/DRAWING***	***STEP 2 ESTIMATES***	***STEP 3 CONSTRUCTION/ FINISHINGS***	***STEP 4 REPORT WRITING***	***STEP 5 PRESENTATION***
01	***Quality requirement***					
02	***Materials***					
03	***Tools and equipment***					
04	***Work procedure***					
05	***Competencies***					

ASSESSMENT RUBRIC FOR REAL LIFE PROJECT (BUILDING A PIGGERY UNIT)

CANDIDATES' REG.NO.

#	Assessment criteria	Scoring guide	Total				
1	Design/Drawing	Identifies basic functional requirement of a piggery house	5				
		Makes appropriate orientation of the building	5				
		Develops appropriate drawing	10				
		Uses appropriate tools	5				
		Carries out site investigation	5				
		SUB-TOTAL	30				
2	Bill Of Quantities	Carries out Measurements	2				
		Uses standard units	1				
		Determines Quantities	1				
		Fixes Unit rates	2				
		Calculates Cost of materials	3				
		Ability to negotiate labour	1				
		SUB-TOTAL	10				
3	Product development	Observe safety and health at site	3				
		Select appropriate materials	3				
		Select correct tools and equipments	3				
		Follow the sequence of operation	4				
		Sets the structure correctly	4				
		Constructs the structure to the completion	10				
		Cures the concrete products	5				
		Plasters the structure and makes general finishes	10				
		Carries out general cleaning after the construction	3				
		SUB-TOTAL	45				
4	Academic Report and presentation	Report:	2				
		Introduction	2				
		Related Literature	2				
		Description	2				
		Analysis	2				
		Conclusion					
		Presentation					
		Arrangement	3				
		Audibility	2				
		SUB TOTAL	15				
		TOTAL	100				

Training instructors and students on use of process journal

A workshop was conducted to train instructors and students of Amelo Technical Institute on the use of process journal as tool to streamline the implementation of the teaching and learning of Real Life Project module. The workshop took place on 13/07/2018 at the institute main hall. In attendance were the instructors and students of Building and construction department, instructors of Agriculture and administrators. The session minutes are in the appendix D. The agenda of the workshop is in appendix E but briefly, there was presentation on process journal and worksheet.

The researcher being ATL practitioner facilitated the workshop and all the thirteen journals were deliberated on giving members confidence to enter into the implementation phase were the tool was used as a guide.

Democracy was key during the meetings. Members had equal rights during the meeting and teachers' powers did not influence students' ideas. Participant made decisions consulting all members and they had to agree unanimously without affecting any member.

Reflection. A member expressed fear that the since the school has no internet connection the issue of research may become complicated as indicated in figure 4.1 and 4.2 below;

Figure 4.1: Stakeholders attending the workshop **Figure 4.2: Supervisor attending the Training session**

Considering what was observed from phase one, they provided the foundation of what to do in the next phase.

4.4 Phase Three: Action implementation of strategies to improve the teaching and learning process.

Participants addressed concerns raised from the previous phase. This is because those issues greatly affect the output in this phase. Taking in mind that this was an action research, the implementation followed the sequence stated in the process journal listed. Under the headings stated in the phases that included Topic selection, research, Product development/academic report and worksheet

4.4.1 Topic selection.

Here the instructors together with learners established the goal of the project as stated in journal (# 1), and further outlined how they had planned to carry out the project and to create final product.

Two projects were suggested by stakeholders which included: constructing road paves and constructing piggery house. Members voted in favour of constructing piggery house. This was because the piggery house could serve as Real Life Project for two departments i.e. Building and construction and Agriculture. Therefore, stakeholders agreed that the goal of the project was to construct piggery house to enhance their practical skill acquisition of building. A member further noted that the project would not only link with curriculum but also interact with real world as most of the NGOs are advocating and promoting piggery project in the refuge settlement and host communities.

Stakeholders brainstormed on the key activities that should carried in order to up the product and this included: design of the project, carry out the cost estimates, construct and write the academic report and lastly make presentations.

4.4.2 Project design

Project design goes beyond making drawings but covers other elements already stated in journal # 1 to journal # 5. For the purpose of the study, we limited ourselves to only making the drawing of the piggery house and the following functional requirements were taken into consideration as an agreement reached by stakeholders during the training workshop: identifying basic functional requirement of a piggery house, making appropriate orientation of the building, Develops appropriate drawing and using appropriate tools.

The trainees were grouped into two groups to carry out the drawing of the piggery house. One group used the AutoCAD but their work was corrupted in the computer drawing it manually as seen in figure 4.3. This section is awarded 30 marks as per the assessment rubric.

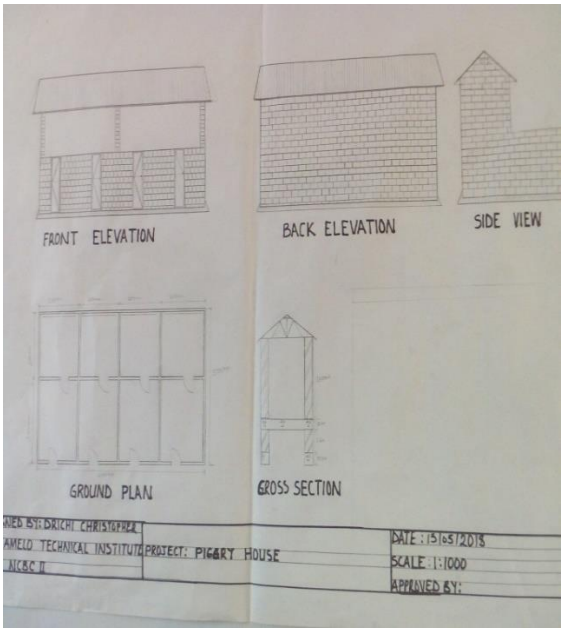

Figure 4.3: The Plan of the piggery house

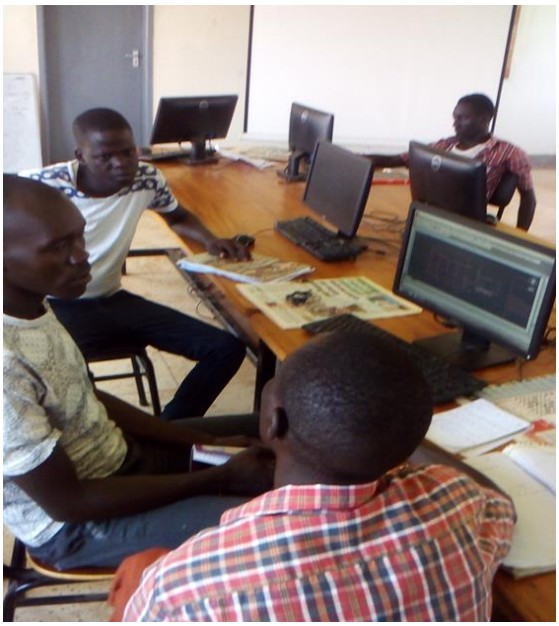

Figure 4.4 students drawing using computer

4.4.3 Cost estimates

After the trainees were taken through by the expert on the basics of carrying the cost estimates during the training workshop and still in the same groups as they did with the design were instructed to use the drawing they produced to estimate the cost of the project. The areas of concern included the following: Carrying out measurements, Use of standard units, determining quantities, fixing unit rates, Calculates Cost of materials and Ability to negotiate labour. This section was awarded 10 marks. All the groups produced the cost estimates of the building but the total amount for both groups varied from that estimated by the instructor as seen from figure 4.5. This was later harmonized and adopted the one for student as more workable and realistic. Trainees used the prior knowledge and basics acquired during the workshop training come up with Bill of quantities

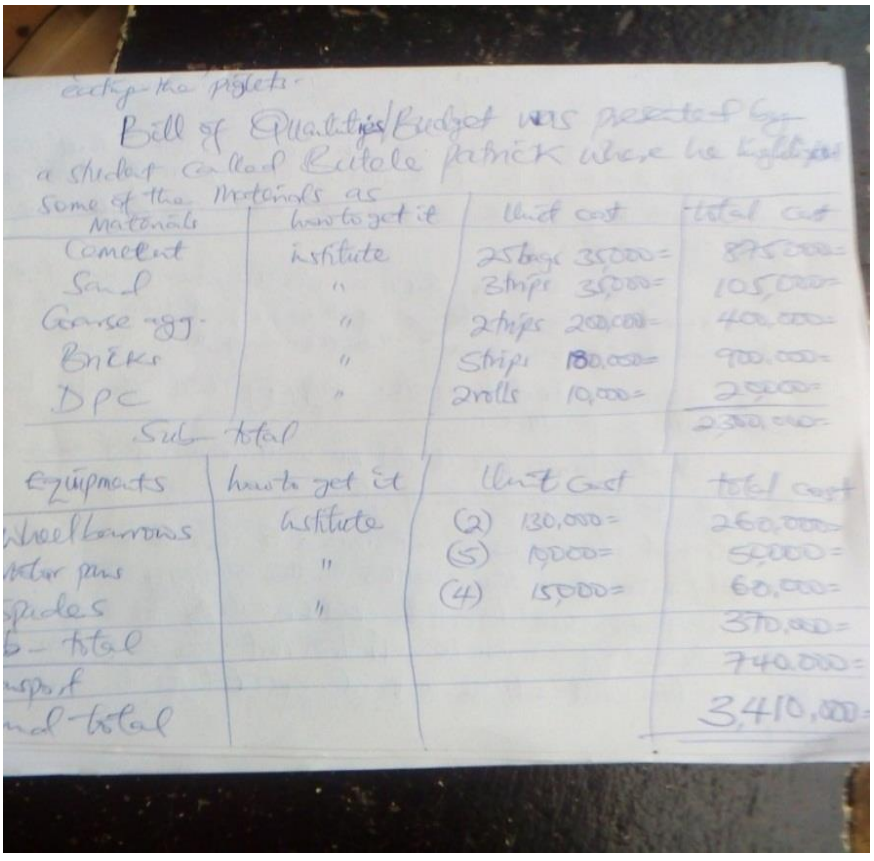

Figure 4.5: Cost estimate prepared by students

4.4.4 Product development

The activity of product development was under project process journal phase three. During this phase students carried out the construction of the of the piggery house through all the steps of constructional steps which included setting out, excavation, construction of the brick wall and roofing the structure.

The Building and Construction students were only concerned with the construction of wall up to wall plate and the roofing was left for the carpenters. At end of the construction stage, the learners targeted to have achieved the competencies of leveling, Plumbing, laying brickwork, carry out the finishes and observe health and safety at the site.

The students were left to carry out the tasks involved in the construction. Instructors guided the learning and learners consulted them where necessary. According to Stevenson, (1994) in Kerka, (1997) the vocational teacher's role is not to set tasks but to organize experiences that allow learners to develop their own knowledge and understanding therefore since the focus is on the learner, vocational education should be conceptualized as a learning process not a teaching process and could only come if students needed some consultation on some activities that proved problematic to them.

As mentioned earlier the students identified the suitable location for the construction that was a bit far from the living structures which was functional requirement for the piggery house. This for the reason that the waste materials have a strong smell that can affect the comfort of the human occupants.

After identification of the site, they carried out site clearance and excavation of the trench foundation. They casted the concrete foundation, laid the plinth wall and later put the damp proof course limit the penetration moisture into main as seen in figure 4.7. As the construction proceeded, the instructor provided a close supervision as seen in figure 4.8.

In the figure 4.9 and 4.10, shows students of Building and Construction of Amelo Technical Institute under taking the activities of construction of the piggery house.

Figure 4.6: Students beginning the construction

Figure 4.7: Instructor giving instructions

Figure 4.8: Construction in Process

Figure 4.9: Construction in Process

Figure 4.10: Construction in completion state **Figure 4.11: Construction Completed**

After the completion of the brick-wall construction students, now targeted the last stage of writing the academic report.

4.4.5 Reflections made from this phase

Reflections in this phase were made by both the students and the instructors and were intended to discuss how the phase was conducted, find out the challenges experienced and therefore try to find solutions. It was also necessary to evaluate the phase to ensure that participants followed the plan.

Students suggested that it would be good for the instructors to put up a mechanism in place to monitor those who dodge the work. This was because they released that some members were not participating as expected..

Students noted that instructors did not interfere with their work this time. The instructors only intervened to help them when required. They consulted instructors after discussing amongst themselves about the activity that seems not to have been done as required by the specifications and would only inform the instructor on what they had agreed as a group. This was noticed when they decided to change the location doors from real elevation to the front elevation. This was very creative and it showed that students could think critically before taking a decision.

This was also in line with Soparat, (2015) who noted that; the need to know by students; students see the need to gain knowledge, understand concepts and apply skills in order to answer the "driving question" and create project products, beginning with an "entry event" that generates interest and curiosity.

Instructors noted that students applied leadership skills and learnt to be responsible for their learning. This was realized when they had to request for building materials from the institute administration on their own. The instructor' role was to direct them where to obtain them and at what cost. In this way, they learnt how to communicate with others especially people ahead of them in a higher administrative level.

Students worked as a team, observing and monitoring activities of all the members. Where a member did not work as expected, the student leader cautioned them and work resumed as expected. This was a very good attribute to the group because the instructor did not have to keep monitoring the students to make them learn. Students had a chance to learn on their own and to teach themselves without the teacher being very active.

As the project progressed, students made their own notes. The teachers did not have to read notes to the students therefore teachers role was to facilitate and provide an appropriate environment for learning to take place.

Material wastage was a big challenge to eliminate. Students did not to collect mortar dropping as they thought this was time wastage and at end of the project value for was not realized. There was element of time wastage. Students spent a lot of time on just one activity especially when they were involved in endless arguments and others who deliberately choose to always report late on site. Therefore, students agreed that time management was part of the assessment criteria and therefore for those who wasted time should be penalized by giving them less marks.

4.4.6 Writing the academic report and presentation

As the construction phase progressed, the students made observations and wrote logs to indicate what had happened during the phase. The information from logs and observations made and by the format agreed on in the process journal students the report consisting of five chapters that included Introduction (used journal #12), description of the process, analysis and conclusion. During the process, instructors monitored the exercise closely and made an input that made the write up a success.

Students presented their academic report to the panel of the academic staff who individually awarded the marks as per the guideline in the worksheet. Marks awarded by instructors were later harmonized by getting the average for individual students. In figure 4.13 shows some students Building and construction typing their report and figure 4.14 shows a student's making the presentation before the academic staff.

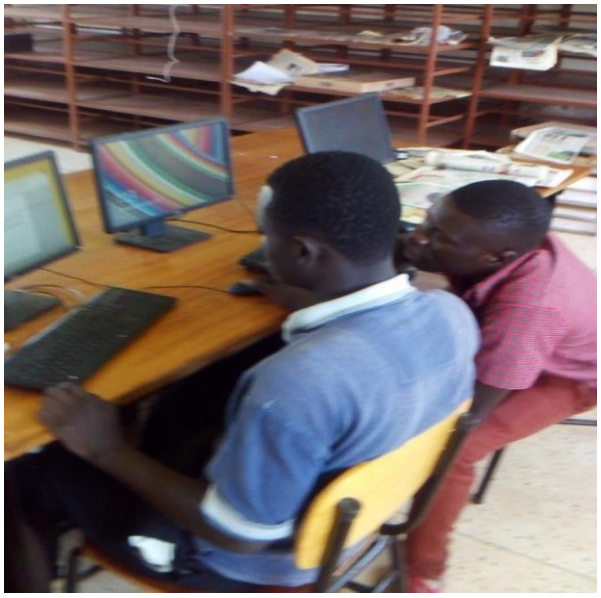

Figure 2.12: Students typing the academic report

Figure 4.13: Student presenting a report

Reflections: Both the Instructors and students made the reflections. The reflections were in line with the idea of making writing academic report and make presentations. The purpose of reflections was to help participants to evaluate the phase and come up with an overview of how the phase was conducted, find out the challenges experienced.

As noted by Ertmer, (2015) Evaluating their process and reflecting on experience can increase learning from actual experiences and can eventually be used in future". As part of students' experiences during this phase, they noted that;

"At first we thought we could not write project academic report and to our surprise using the format that was in process journal we have managed to write and present the academic report. Using that tool, we have also learnt to work together, develop project title, link the project to the curriculum and real world of work, develop the work process, implement, document and the presentations. Working as a group was another good idea because some people had good information that they shared during group working process. This could not happen if we had worked as individuals".

Instructors noted that Learners enjoyed working with challenging activities. Challenges made them to think faster to find solutions to the selected challenges. Solving a problem entailed thinking critically and evaluation of the possible ideas generated. According to Koschmann et al. (1996, p. 90) an effective instructional method should promote activeness in learning, through self-direction, goal setting, problem finding, problem solving and self-testing. It should also engage the learner in problem solving that requires the aggressive inquiry, reasoning and reflecting demanded of ill-structured problems and knowledge domains.

Learners also have a wealth of knowledge that when given the right environment, students share this kind of knowledge with their fellow students. This was realized when the issue of waste disposal emerged as a critical issue on site but the agriculture students devised a means collecting the materials and turning them into Manuel to be used in agricultural fields.

The instructors noted that the worksheet developed actually streamlined the teaching and learning of Real Life Project module by providing a means of developing the work procedures and assessment guideline. They noted that it was easier for them to carry out the implementation of Real Life Project using the worksheet and process journal tools as compared to last academic year. Research project; actions in the previous phase greatly affected those in the subsequent phases and therefore successful completion of one phase led to the next phase.

4.5 Phase Four: Evaluation of improvement in performance of Real Life Project as result of use of process journal

In evaluation phase, participants consolidated all the reflections from the different phases as noted by instructors and trainees to evaluate the entire project. Both the trainees and instructors participated in the evaluation phase. This was done to establish whether we had achieved what we earlier planned. Improving the performance of Real Life Project by module. During the evaluation of the impact of intervention strategies, the researcher used the interview guide for

administrators, instructors and students and feedback is as per table 4.6 and 4.7 respectively. Observations and reflection were also used where the data was recorded as per the progress of the project.

Skills were improved in performance of Real Life Project module after training and using process journal in the teaching and learning process as per the assessment in table 4.6.

Skills acquired by Building students after undertaking the project of piggery house construction included the project: cost estimating, correct materials and tool selection, drawing of project plans, use of ICT in learning, construction techniques of piggery house, report writing and Presentation

Figure 4.14: Instructors in evaluation workshop

4.4.1 Responses on the improvement performance of Real Life Project by instructors and administrators

Table 4.1: Responses on the improvement performance of Real Life Project by instructors and administrators

S/No.	Strategy	Responses								
		1		2		3		4		
		f/7	*%*	*f/7*	*%*	*f 7*	*%*	*f 7*	*%*	
01	Induced student centred learning approach (Active participation of learners)	04	57	02	29	00	00	01	14	
2	Improved project academic documentation/ presentation	05	71	02	29	00	00	00	00	
3	Enhanced performance of estimating and costing	02	29	03	43	00	00	02	29	
4	Simplified method of design	03	43	02	29	00	00	02	29	
5	Inculcated research in the study	01	14	04	57	01	14	01	14	
6	Assessment appropriate to the task and the learning outcomes	05	71	02	29	00	00	00	00	
7	Enhanced the instructor competence in applying ATL methods and techniques in the teaching and learning process.	05	71	02	29	00	00	00	00	
8	Motivation.	03	43	03	43	01	14	00	00	

Source: Primary data (n=7 ***f=frequency)***

Key: 1= Strongly Agree, 2= Agree, 3= Disagree, 4= Un-Decided

Active participation of learners; The results in Table 4.1 indicate that majority respondents 57% strongly agreed and 29% agreed that the use process journal increased student's participation in learning process but 14 remained un decided.

Report writing and presentation simplified; from the table 4.1, 71% of the responds strongly agreed and 29% agreed that the process journal simplified the report writing and presentation.

Costing and estimating technique; from the table 4.1, shown 29% of the responds strongly agreed and 43% agreed that use of process journal as a tool in active Teaching and Learning enabled learners to carry out the costing of the project whereas 29 remained un-decided

Simplified design from the table 4.1, 43% of the respondents strongly agreed and 29% agreed that use of process journal as a tool in active Teaching and Learning simplified the process of designing the piggery house whereas 29 remained un-decided

Research in the study; from table 4.1 shows majority of the respondents 57% agreed and 14% strongly agreed that the process journal as a tool induced student to under research as part of the study whereas 14% disagreed with same while 14% remained un-decided

Appropriate assessment; from the table 4.1 above, majority of respondents 71% strongly agreed and 29% agreed that using the process journal improved the assessment of RLP especially with the aid the developed rubric.

Improved instructor competence; from table 4.1 shows majority of the responds 71% strongly agreed and 29% agreed that the using process journal as a tool improved the competence instructors as far as the ATL methods and techniques are concerned.

Motivation; from table 4.1 shows majority of the respondents43% strongly agreed and 43% agreed that the using process journal as a tool motivated learners to actively participate in the project whereas 14% disagreed with the statement.

Feedback from evaluation was collected from 10 students during a focus group discussion. Their responses on the factors that affect the performance of RLP in ATI are presented in table 4.2

Table 4.2: Responses on identified strategies to improve teaching and learning of RLP by students

S/No.	Strategy	Responses								
		1		2		3		4		
		f/10	*%*	*f/10*	*%*	*f 10*	*%*	*f 10*	*%*	
01	Induced student centred learning approach (Active participation of learners)	05	50	04	40	00	00	01	10	
2	Improved project academic documentation/ presentation	06	60	04	40	00	00	00	00	
3	Enhanced performance of estimating and costing	04	40	04	40	00	00	02	20	
4	Simplified method of design	03	30	04	40	01	10	02	20	
5	Inculcated research in the study	03	30	03	30	02	20	02	20	
6	Assessment appropriate to the task and the learning outcomes	04	40	04	40	01	10	01	10	
7	Enhanced the instructor competence in applying ATL methods and techniques in the teaching and learning process.	02	20	04	40	02	20	02	20	
8	Motivation.	08	80	02	20	00	00	00	00	

Source: Primary data n=10 ***f=frequency***

Key: 1= Strongly Agree, 2= Agree, 3= Disagree, 4= Un-Decided

Active participation of learners; The results in table 4.1 indicate that majority responds 50% strongly agreed and 40% agreed that the use process journal increased student's participation in learning process and 10% remained un-decided.

Report writing and presentation simplified; from the table 4.1; indicate that majority responds 60% strongly agreed and 40% agreed that the process journal simplified the report writing and presentation

Costing and estimating technique; from the table 4.1, indicate that majority responds 40% strongly agreed and 40% agreed that use of process journal as a tool in active Teaching and Learning enabled learners to carry out the costing of the project whereas 20% remained un-decided

Simplified design; from the table 4.1, indicate that majority responds 40% agreed and 30% strongly agreed that use of process journal as a tool in active Teaching and Learning simplified the process of designing the piggery house whereas 10% disagreed while 20% remained un-decided

Research in the study; from table 4.1 shows majority of the respondents 30% strongly agreed and 30% agreed that the process journal as a tool induced student to under research, as part of the study whereas 20% disagreed with it while 20% remained un-decided

Appropriate assessment; from the table 4.1 above, majority of respondents 40% strongly agreed and 40% agreed that using the process journal improved the assessment of RLP especially with the aid the developed rubric and 10% disagreed while 10% remained un-decided.

Improved instructor competence; from table 4.1 shows majority of the responds 40% agreed and 20% strongly agreed that the using process journal as a tool improved the competence instructors as far as the ATL methods and techniques are concerned and 20% disagreed while 20% remained un-decided

Motivation; from table 4.1 shows majority of the respondents 80% strongly agreed and 20% agreed that the using process journal as a tool improved the competence instructors as far as the ATL methods and techniques are concerned.

4.6 Summary of Chapter Four

This chapter presented the data from the field, which was presented in phases depending on the specific objectives. Each phase has been described in details as it occurred, with specifications of all those who participated. Reflections that participants noted at every phase have been presented.

The findings presented addressed what the researcher recorded from the observations, interviews conducted during the project. The project majorly focused streamlining the implementation of the teaching process using process journal as tool in the implementation.

Reflecting on the above theories, it is evident that the gained the skills project implementation in terms of topic development, research, construction and academic report documentation. The data presented also points out the different activities of the participants in the action research project, which was an indication to ensure that the researcher did research with people. The data also presents learners as active participants in the teaching and learning process, which ensures that their learning is not passive.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the findings, discussed the results coming from the actions of the teaching and learning processes presented in chapter four. The discussions of the results depended on the interpretation and description of the processes based on the researcher's experience, observation, reflection, and on the perceptions and views from the participants of this research and literature. In this discussion, the researcher incorporated related views, theories and concepts from various scholars to back up the analysis of results.

After discussing the results, the researcher also put down conclusions based on his learning and understanding acquired through the research process and the recommendations that would reveal the way forward for this research study.

5.2 Summary of findings

5.2.1 Current methods in the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute

They study revealed that teacher centered learning approach was the current method in the teaching and learning of Real Life Project module for the students. This was evidenced when the instructors could just select projects for students and instructs them to carry on. In this type of learning environment, students become passive learners, or rather just recipients of teachers' knowledge and wisdom. They had no control over their own learning. Instructors make all the decisions concerning the project, teaching methods, and the different forms of assessment.

The study also found out that that instructors and learners spend more time preparing learners for examinations and pay little attention on how the learners acquire practical skills of building. Amelo Technical Institute as vocational Institution is also affected by this syndrome of being examination oriented and that why trainees were concerned with the method of assessment technique as challenge to them.

5.2.2 Tool for efficient the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute

From findings of the study, instructors, expressed their satisfaction that the developed process journal contained all the necessary components of the module. According to the curriculum of Building and construction, the following are key components of real life module: design and structural drawing which found in process journal phase one, costing and estimating of the project found in journal phase one and two and the product development and academic documentation and presentation guide by phase three and four.

5.2.3 Implementing the use of developed process journal in the teaching and learning of Real Life Project module

The finding of the study revealed that using the process journal as tool improved the instructor/ student relationship. This was evidenced when the trainees were in constant consultation with instructors during the product development and report writing.

The study revealed that, participants were motivated with the results of the project especially process journal to aid the implementation of the project. They also appreciated the fact that learners were active participants in all the activities involved in the project.

The study further revealed that teaching and learning in groups could yield better results and therefore improve the quality of trainees. This is because during the project, students were able to

express themselves especially when describing the procedures followed when constructing piggery house to people who came to visit the site.

The study found out that instructors need to pay more attention to the methods of teaching utilized during a given subject matter. It is also necessary to consider learners as sources of learning instead of subjects that need to be taught. Students need to be part of all the learning and teaching activities especially during planning, implementation phases, and the evaluation of their achievement in the project. Instructors need to help learners to evaluate their own work as well as that for their colleagues.

5.3 Discussion of findings

5.3.1 Current methods in the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute

They study revealed that teacher centered learning approach was the current method in the teaching and learning of Real Life Project module for the students. This was evidenced when the instructors could just select projects for students and instructs them to carry on. In this type of learning environment, students become passive learners, or rather just recipients of teachers' knowledge and wisdom. They had no control over their own learning. Instructors make all the decisions concerning the project, teaching methods, and the different forms of assessment. These findings are in line with Duckworth (2009) who asserted that teacher-centered learning actually prevents students' educational growth. In contrast to teacher centered learning approach there was need to make a paradigm shift to student centered learning approach. Learner-centered instruction is most suitable for the more autonomous, and more self-directed learners who not only participate in what, how, and when to learn, but also construct their own learning experiences. The learner-centered approach is rooted in constructivist philosophy of teaching.

The conceptual frame of the was backed by the theory of constructivism where students prior knowledge and experience is very virtual in the learning process. Similarly, Michael, (2006) said that student centered instruction refers to an instruction approach in which students influence the content, activities, materials and pace of learning. This model places the learner at the center of the learning process. The instructor provides students with opportunities to learn independently and from one another and coach learners in the skills they need do so effectively.

The study also found out that that instructors and learners spend more time preparing learners for examinations and pay little attention on how the learners acquire practical skills of building. Amelo Technical Institute as vocational Institution is also affected by this syndrome of being examination oriented and that why trainees were concerned with the method of assessment technique as challenge to them.

After analyzing the teaching and learning process in the department of Building and construction particularly for RLP at ATI, during situational analysis, it was realized that there was need to improve the performance Real Life Project module to enable the graduates gain competencies necessary to meet the demand of the real world. Instructors felt that there was need to embark on the values of vocational education majorly contained the book entitled “skilling Uganda” that will to produce an all-round graduate that could work effectively after school. This therefore meant that in addition to other interventions, there was need to tackle all the components of course modules using Learner Centred approach of teaching and learning. These findings are in line with Akhuemonkhan, (2013),TVET is a specialized education designed to empower learners through the development of their technical skills, human abilities, cognitive understanding, attitudes and work habits in order to prepare learners adequately for the world of work or positioned them practically for self-employment after graduation**.** This, therefore, follows that vocational education is recognized as the major education that can transform the country’s

economy. According to Tusiime (2015), the formal vocational systems in Africa aim for the most part to equip graduates with certificates for progression in the learning system. They become managers who are not highly skilled in their areas of specialization, workers who cannot practically meet the ever-changing needs in their local societies. As a result, students and instructors work very hard to ensure that students can get good grades on the certificates regardless of the skills and knowledge acquired.

As noted by Koschmann, (1996) an effective instructional method should promote activeness in learning, through self-direction, goal setting, problem finding and problem solving and self-testing. It should also engage the learner in problem solving that requires the aggressive inquiry, reasoning and reflecting demanded of ill-structured problems and knowledge domains.

From the data got from the instructors, the expert from the world of work and the principal of ATI noted that there is need to change the teaching methods to those that actively involve the learner in the teaching and learning process. “Active methods in teaching and learning have been requested in many educational debates at national and international levels” (Corno, 2000; Stern &Huber, 1997) in Niemi, (2002). This therefore means that the intervention we made to change the methods was timely.

5.3.2 Tool for efficient the teaching and learning of Real Life Project module for Building students of Amelo Technical Institute

From findings of the study, instructors, expressed their satisfaction that the developed process journal contained all the necessary components of the module. According to the curriculum of Building and construction, the following are key components of real life module: design and structural drawing which found in process journal phase one, costing and estimating of the project found in journal phase one and two and the product development and academic

documentation and presentation guide by phase three and four. Process journal streamlines the product development process and assessment. The student commented that the process journal developed was good but was worth too much". He lamented the content should be reduced in such way other elements like that of research completely removed and be left with only topic selection, product development, academic report and presentation. The study further revealed much as the national and researcher were the key drivers of the development of the process journal, students were deliberately given considerable freedom in deciding how they would the tool to look like and what it should contain, with discretion over issues such as precise content and format, style and approach.

These findings are in line with Duckworth (2009) who asserted that teacher-centered learning actually prevents students' educational growth. In contrast to teacher centered learning approach there was need to make a paradigm shift to student centered learning approach. Learner-centered instruction is most suitable for the more autonomous, and more self-directed learners who not only participate in what, how, and when to learn, but also construct their own learning experiences. The learner-centered approach is rooted in constructivist philosophy of teaching. The conceptual frame of the was backed by the theory of constructivism where students prior knowledge and experience is very virtual in the learning process. Similarly, Michael, (2006) sAid that student centered instruction refers to an instruction approach in which students influence the content, activities, materials and pace of learning. This model places the learner at the center of the learning process. The instructor provides students with opportunities to learn independently and from one another and coach learners in the skills they need do so effectively.

5.3.3 Implementing the use of developed process journal in the teaching and learning of Real Life Project module

The finding of the study revealed that using the process journal as tool improved the instructor/ student relationship. This was evidenced when the trainees were in constant consultation with instructors during the product development and report writing. According to Lohman & Schwalbe, (1996), appreciated that using journal as a learning tool helps to build trust between instructor and learner.

The study revealed that, participants were motivated with the results of the project especially process journal to aid the implementation of the project. They also appreciated the fact that learners were active participants in all the activities involved in the project. This was an evidence the learning process was collaborative. Learners were able to work in collaboration with the experts from the world especially in the matters concerning design and estimating.

In the view of Ertmer, (2015) who agreed, *"Collaboration is essential in the world after school. Most learners find themselves in jobs where they need to share information and work productively with others".*

The study further revealed that teaching and learning in groups could yield better results and therefore improve the quality of trainees. This is because during the project, students were able to express themselves especially when describing the procedures followed when constructing piggery house to people who came to visit the site.

As a result, learners were able to perfect their communication skills. They were also able to discuss their reflections and observations and solve problems. A number of these skills like communication skills, collaborative and problem solving skills cannot be achieved if the learners are not given chance to express themselves whenever opportunity allows. This therefore means

that in addition to vocational skills, learners also need employable skills that are very necessary in the 21st century.

From the data discussed about the teaching and learning process, it therefore follows that instructors need to pay more attention to the methods of teaching utilized during a given subject matter. It is also necessary to consider learners as sources of learning instead of subjects that need to be taught. Students need to be part of all the learning and teaching activities especially during planning, implementation phases, and the evaluation of their achievement in the project. Instructors need to help learners to evaluate their own work as well as that for their colleagues.

5.4 Conclusion

i. In conclusion, instructor capacity building should be enhanced through training to handle all module components yielded poor performance of the Real Life Project module for Building students of Amelo Technical institute.

i. It was concluded that instructors be retooled to improve on areas they exhibit incompetence in order to improve the performance of Real Life Project module. Project process journal as tool induced student centered learning by increasing the active participation of learners in the project implementation process hence causing motivation to study.

ii. It was also concluded that the use of process journal streamlined the implementation of project process and improved technique of estimating and designing. The worksheet in the process journal improved the assessment technique to the project. On general note, it was concluded that the intervention of using a process journal as tool in student centered learning approach improved the performance of Real Life Project by empowering the instructors with skills that were necessary in teaching and learning process of real life

module. This further instilled confidence in students about the success of the project training.

iii. Similarly, the interventions improved the performance of RLP as this was evidenced by project being completed before the given date line, and trainees these time around wrote the academic report following the guideline given in the process journal there were no serious complains as it used be previously.

5.5 Recommendations

In view of the findings and conclusions, the researcher together with participants made the following recommendations, which can help to make the project supportable.

i) The study recommended that the department chooses and implements projects of interest to students and have real world significance.

ii) The study further recommended that the institute should give priority to provide the required materials to be used in Real Life Project in time.

iii) The study also recommended that instructors of RLP should make inclusion of time and space for students to reflect on their learning throughout the project.

iv) The study recommended that instructors make assessment that is appropriate to the task and the learning outcomes.

v) The study recommended that process journal be rolled out to other departments other than Building and Construction department to improve on the performance of RLP.

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APPENDICES

APPENDIX A: Work Plan

Activity	**Tool**	**Responsible Personnel**	**Duration Schedule**
Examine challenges that causes inadequate teaching and learning of Real Life Project	• Situational analysis • Work process analysis • Future workshop	• Students • Administration • Instructors • Researcher • Mentor	01/01/2018 To 31/04/2018
Give strategies of improving the teaching and learning of Real Life Project	• Future workshop	• Students • Administration • Instructors • Researcher • Mentor	01/01/2018 To 31/04/2018
Implement the possible strategies for improving the teaching and learning of Real Life Project	• Develop the templates to be used in the pedagogical process • Trainings • Give tasks • Develop the rubric to be used in the evaluation the evaluation process	• Students • Administration • Instructors • Researcher • Mentor • Supervisors	02/04/2018 T0 28/05/2018
Evaluate the possible strategies for used improving the teaching and learning of Real Life Project	• Meetings	• Students • Administration • Instructors • Researcher • Mentor • Supervisors	02/06/2018 T0 28/06/2018
Mocks, viva presentations.		• Mentors, Administrators and supervisors	01/07/2018 T0 30/08/2018
Submission of Thesis	•	• Administration, researcher, supervisors	01/09/2018 To 05/10/2018

Appendix B: Pairwise Matrix

	Limited resources (1)	Poor attitude of learners towards Practicals (2)	Lack of skills to handle all the components of Real Life Project (3)	Poor method of Delivery by Instructors (4)	Lack of time management by Instructors and students (5)	TOTAL	RANK
1		**1**	**3**	**4**	**5**	**1**	**4th**
2			**3**	**4**	**5**	**0**	**5th**
3				**3**	**3**	**4**	**1st**
4					**4**	**3**	**2nd**
5						**2**	**3rd**

APPENDIX C: Budget Real Life Project. Building a Piggery Unit

S/N	Description	Unit	Quantity	Unit Cost	Amount
01	Bricks	No.	4000	100	400,000/=
02	Cement	Bags	20	40000	800,000/=
03	Iron Sheets	No.	20	20000	400,000/=
04	Timber	Pcs	30	10000	300,000/=
05	Nails	Kgs	20	5000	100,000/=
06	Papers	Reams	1	15000	15,000/=
07	Transport				100,000/=
08	Refreshments				400,000/=
	Grand total				**2,515,000/=**

Appendix D: Questionnaire for Administrators

Rate the following strategies that can address the improvement performance of Real Life Project by instructors and administrators

Key: 1= Strongly Agree, 2= Agree, 3= Disagree, 4= Un-Decided

No.	Strategies	1	2	3	4	5
01	Induced student centered learning approach (Active participation of learners)					
2	Improved project academic documentation/ presentation					
3	Enhanced performance of estimating and costing					
4	Simplified method of design					
5	Inculcated research in the study					
6	Assessment appropriate to the task and the learning outcomes					
7	Enhanced the instructor competence in applying ATL methods and techniques in the teaching and learning process.					
8	Motivation.					

Appendix E: Questionnaire for Students

Rate the following strategies that can address the improvement performance of Real Life Project by instructors and administrators

Key: 1= Strongly Agree, 2= Agree, 3= Disagree, 4= Un-Decided

No.	**Strategies**	1	2	3	4	5
01	Induced student centred learning approach (Active participation of learners)					
2	Improved project academic documentation/ presentation					
3	Enhanced performance of estimating and costing					
4	Simplified method of design					
5	Inculcated research in the study					
6	Assessment appropriate to the task and the learning outcomes					
7	Enhanced the instructor competence in applying ATL methods and techniques in the teaching and learning process.					
8	Motivation.					

Appendix F: Interview Guide

i. How is the teaching and learning of Real Life Project being conducted for Building students in Amelo Technical Institute?

ii. How can the tool to be used in the teaching and learning of Real Life Project module for NCBC students at Amelo Technical Institute be developed?

iii. How can the developed tool be used to improve the teaching and learning of Real Life Project module for Building students at Amelo Technical Institute?

iv. To what extent had intervention using the developed worked to improve the teaching and learning of Real Life Project module?

Appendix G: Focus Group Discussion Guide

i. How is the teaching and learning of Real Life Project being conducted for Building students in Amelo Technical Institute?

ii. How can the tool to be used in the teaching and learning of Real Life Project module for NCBC students at Amelo Technical Institute be developed?

iii. How can the developed tool be used to improve the teaching and learning of Real Life Project module for Building students at Amelo Technical Institute?

iv. To what extent had intervention using the developed worked to improve the teaching and learning of Real Life Project module?

Appendix H: Observation Check List

Points to observe	Comments
Factors affecting performance of RLPM	……
Opinions of students on project	……
Opinions of instructors on the project	……
Interaction during workshops	…… ……
Time management in the workshops	……

Appendix I: Introductory Letter

Figure 4.5: Cost estimate prepared by students

Figure 4.5: Cost estimate prepared by students