

MASTERS THESIS

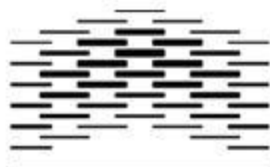
MASTERS IN VOCATIONAL PEDAGOGY

AUTUMN 2016

DEVELOPING TEACHING AIDS TO IMPROVE THE TRAINING DELIVERY SKILLS
OF VOCATIONAL STUDENT TEACHERS.

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Abstract

A good teacher is measured by the ability to use multiple teaching methods and mediums to convey the same information. In my view, development of teaching aids gives the teacher the opportunity to prepare good content, set appropriate goals, plan appropriate methods of training delivery and evaluation of learners. In this action research project, my aim was to improve training delivery skills of student teachers by taking the participants through the process of developing teaching aids. I carried out this project with student teachers under the programme of Diploma in Instructor Technical Teacher Education (DITTE) at Nakawa VTI at the department of instructor training department in Kampala in Uganda. In my study, I sought to establish the challenges the student teachers encounter while developing teaching aids, determine the factors they should consider when developing teaching aids, describe the importance of teaching aids and demonstrate the construction of teaching aids.

I draw the project conceptual framework from the Hiim didactical model which describes the relationship between fundamental educational concepts: students learning resources and needs, pedagogical framework conditions and scope, educational aims and goals, subject matter / content, teaching and learning methods and evaluations. During this project, I used the didactical model concept to develop the training delivery skills through the process of developing a teaching aid. The process of developing teaching aids justified the relationship of the educational factors expressed in the didactical model. Through this project, I provided the student teachers with learning resources and under some pedagogical framework and conditions, they underwent a learning process. This process involved the participants sharing ideas through discussions, demonstrating skills and presenting their products. Evaluation of the teaching aids developed based on the interrelationship of the educational concepts expressed in the didactical model. This concept helped the teachers develop teaching aids that satisfy all factors linked to the teaching and learning process.

In this study, I used the qualitative approach and data collected through interviews, focus group discussions and observations. The data collected indicated that the students the main challenges participants encounter in developing teaching aids were the scarcity of resources, negative attitudes, the methods of teaching they employ, inadequate technical skill, insufficient pedagogical orientation and lack of support from their supervisors. They also indicated that developing teaching aids was time consuming. This implied that they lacked the experience in recognizing the importance of teaching aids. They indicated to me that the factors they should consider when developing teaching aids are the learning objectives, the content, methods of

teaching, the age of the learners and the available resources. Results in this study showed that great learning experienced by teachers in the same area of specialization work together in solving teacher related problems.

Therefore, my conclusions in this study are that the teacher's failure to develop teaching aids is insufficient material in addition to the background of the education system from primary school to their work profession. Therefore, engaging participants in challenging situations that require thinking and putting ideas together in their areas of specialization can improve their ability in training delivery skills. Hence, I recommend that the teacher trainer should not sit back but work hard through research and help them establish the student teachers' problems and solve the problem in a more practical approach.

Acknowledgement

I would like to express my appreciation to the Norwegian Government for the support rendered to me through the Quota scholarship scheme.

Special thanks go to my supervisor Professor Jan Stålhane for the guidance and support he accorded me during the entire programme.

I thank all the professors who initiated me in this course last year for the good the foundation knowledge on which I base my ideas and ability to write this thesis. Special thanks go to Mette Høie who mentored us through the project one and project two.

Am grateful for all the lecturers and facilitators who have participated in this course in any way for all the supported they have rendered to me which has enabled me to complete this course.

Am grateful for all my colleagues Alice, Emmanuel, Bruno, David, Ivan and Richard on the same programme for the cooperation they accorded me that enabled to finish my work.

I would like to extend my appreciation to the Board of Governors, Management, colleagues in the department and the entire staff members of Nakawa VTI for giving me their views that contributed to the success of my project. I wish to thank all my participants for sparing their time to participant in this study that was very hectic.

Dedication

I dedicate this thesis to my children Hilda, Karen and Josiah for all the hard time they went through especially during the time I was away.

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Chapter one: Introduction

1.0 Overview

This project focuses on improving student teachers' training delivery skills through developing teaching aids. According to (Shabiralyani, Hasan, Hamad, & Iqbal, 2015, p. 226), visual teaching aids are those instructional aids which are used in the classroom to encourage students learning process. Teachers rarely develop teaching aids to facilitate training delivery yet they need authentic materials prepared by them to exactly match with the learning goals, content learning methods and evaluation of learning. Development of teaching aids deepens teacher's knowledge, improves methods of teaching and training delivery. Shabiralyani et al. (2015, p. 227) add that "learning can be reinforced with different teaching/ learning resources because they stimulate, motivate as well as focus learners attention for a while during the instructional process." The teaching aids in focus included charts, videos and models, which could enable learners, visualize and concretize concepts that do not exist in their daily life but are included in the teaching and learning process.

This project is an action research, which aims at improving the student teachers' training delivery skills with the objectives of establishing challenges the participants encounter when developing teaching aids, determining the factors one should consider when developing teaching aids, describing the importance of teaching aids and establish skills and knowledge acquired in establishing the learning experiences acquired through demonstrating the developing of teaching aids. To achieve this, the project process considered the development of the teaching aids in relation to the content, learning objectives, teaching methods and the learners' assessment. According to (Mazgon & Stefanc, 2012, p. 174), educational materials should be specially prepared materials intended for teaching and learning process of specific educational content and achieving goals defined in the syllabuses.

1.1 My Personal background

In this section, I wish to introduce to my readers my academic and professional background to enable you to understand my ability and my drive in conducting this project.

1.1.1 Academic qualifications

I would like to briefly take you through my academic background to show you how the various competencies I acquired through my academic life contribute to my ability to conduct this project. After my high school, I joined a college of agricultural mechanization and obtained a diploma in agricultural mechanics. This training had a rich curriculum ground on competence-based training. I acquired knowledge and skills in trades like welding and fabrication, motor vehicle mechanics and tractor maintenance, fitting and machining. Through this training, I gained a wide technical knowledge and skills to do fabrication works and tractor maintenance. However, I did not have the ability to transfer the knowledge and skills to others.

Therefore, when I gained the interest to teach, I went to study and acquired a certificate in technical teacher education from Kyambogo University. In this course, I was equipped with pedagogical skills, which I integrated with technical skills and qualified me as an instructor at Nakawa VTI. I underwent training in vocational training enhancement in Japan. This training elevated my understanding of vocational education systems; in addition to teaching, I was equipped with vocational training management skills.

As I got deeper into vocational training the demands for knowledge increased. I further upgraded my qualifications to Bachelors in vocational technological studies with education at Kyambogo University. This training helped me understand vocational education needs and how to handle them.

The master's degree programme at Oslo and Akershus University in Norway has further strengthened my academic development. This programme has transformed my perception as a senior instructor on how I view training; I was educated about vocational pedagogy and didactical models that have enabled me to understand other factors related to vocational education. Vocational didactics has widened my perspective on vocational education like understanding the relationship between major factors in training such as learning resources, pedagogical framework and conditions, learning process, aims and goal of training. Through conducting action research, I have interfaced with many concepts about vocational education. Beyond measure, it has given me the ability to solve professional problems and caused change at my workplace. Now than ever am able to give my students relevant skills in line with what I expect them to find in their fields of practice.

1.1.2 Professional Experience

I joined the world of work as a mechanic where I worked in a road construction company. We worked on a rotational basis in the maintenance, repair and supply department. After one year, I gained a wide experience and exposure to the various work challenges and work dynamics. I got the hands on practice, teamwork and leadership skills. When my contract ended, I joined teaching profession.

My first experience in instruction I taught metal fabrication and engineering materials. Combining my learning experience and the exposure in the world of work made me an exceptional instructor. Working as an instructor took me through the experience of preparation of teaching material, class management, training delivery and learning evaluation. These activities strengthened my understanding of teaching and learning process. According to Weir (2014, p. 31) cited (Huntly 2008), teacher competence exists through five specific professional attributes including demonstration through preparation, a sound knowledge base, effective class management, professional communication with a range of stakeholders and an accurate sense of self-awareness.

Besides being an instructor, I also participated in setting, moderating, administering and supervision of national examinations like Uganda National Examinations Board (UNEB) and Trade Test. As an instructor, I gained more understanding of my field.

Currently, I am a senior instructor under the department of instructor and manager training teaching. I teach in service vocational instructors and teachers. I teach educational technology, general methods and specific methods. In these course units, I teach my students how to prepare teaching materials like teaching aids, lesson plans, Assignment sheets, worksheets and methods of training delivery.

Before taking my students through any module, we normally start by listing their challenges and expectations. This helps me as their trainer refer and consider their interests in line with the content. In so doing I help my students to use the knowledge and skills they acquire during training to solve their problems. According to (Sims & Sims, 1995, p. 3) adult learning activities need to be based on the learners' interests so as to create opportunities for learners to analyze their experience and application to their work and life situations. (UNEVOC, 2012, p. 5) acknowledges that the effectiveness of any education system also strongly depends on the interactions and relationships that occur between the teacher and the students.

My experience with the students in my course units is that their interests are high and they regard them as the core of their studies. As noted by Ekelund cited in (Nasaza, 2015, p. 12) that people who are willing to learn are easier to teach. In educational technology, for example, students work in groups and have a forum where they present and criticize their work for improvement. At first, this normally looks tough but as time goes on, they all appreciate the method when they also observe improvements in their work. In this, module student teachers learn a lot through sharing ideas. Like (Wenger, 1991, p. 15) also observes that learning is a process that takes place in a participatory framework, not in an individual mind.

During school practice supervision, I normally get the opportunity to visit many institutions in the Uganda to assess my students' abilities to teach in the real classroom setting. I have noted that there are gaps between the training and the practice. I observed that many teachers could not illustrate what they are teaching even when examples are within their surroundings. Those who endeavor to use some teaching aids do not have the ability to do so.

Failure of the teacher to illustrate the content creates an image of incompetence in training delivery. Egau in her paper about challenges in vocational education in Uganda she commented that, if teachers are poor deliverers of their content, they are likely to produce poor graduates with low motivation and confidence (Egau, 2002, p. 5). The inability of a teacher to deliver is dependent on many factors such as the availability of training material, method of teaching, teacher's skills and knowledge among others.

However, trained teachers should endeavor to create all means of making their students learn by developing teaching aids from materials available in their surroundings. This project will concentrate on the developing of teaching aids as the product and sharing knowledge and skills to improve the participants' training delivery skills. I will make use of my experience, the student teacher subject matter and see how it can cause change to a vocational teacher. Therefore, when I reflected on the way I conduct my subjects I realized that I needed to create a link between educational technology and teaching methods. According to (Ball, 2000, p. 246), teachers' training tends to fragment practice and leave individual teachers with the challenge of integrating subject matter knowledge and pedagogy in the context of their work. Therefore, by taking the participants through developing teaching aids in relation to the content, method of training delivery, learning objectives and available resources will help the teacher integrate knowledge to practice. Hence this the project will create an impact on these teachers' competences when they finally get to the field of teaching.

According to (Union, 2007, p. 9), the delivery of quality TVET is dependent on the competence of the teacher: competence measured in terms of theoretical knowledge, technical and pedagogical skills as well as abreast with new technologies in the workplace.

The development and use of teaching aids is not all about having many resources around you, what matters to any teacher is the ability to be creative and mindful of the learning outcomes. This implies that teachers need to apply both technical and pedagogical skills. I feel we have not yet exhausted what is available. Therefore, my project focuses on teaching aids, how appropriately they are prepared and used during the teaching and learning process. (Ball, 2000, p. 246) noted that teacher training problems can be solved by teaching the student teacher what they need to know, how they have to know and helping them learn how to use it by grounding the problem of teachers content preparation in practice. I believe that by the end of this project the student teachers besides improving their training delivery abilities; they will share knowledge, deepen their understanding and acquire new skills, which may not be in their areas of specialization.

1.2 Background of the project

The idea of this project originated from my previous research projects that we conducted from the very beginning of this programme of Masters in Vocational Pedagogy. The first project was a group work, which aimed at finding out the challenges that affect vocational education in Uganda. Results from this study indicated that many challenges among which were; poor attitudes of the students, unskilled teachers, inadequate infrastructure. As an outcome, most people in Uganda in their views they regard vocational graduates as “half-baked graduates” implying that graduates who cannot perform in the field of work after undergoing the training. The negative attitude towards vocational education is one of the key issues sighted in the first project. This prompted us in our group to conduct another study in Norway about students’ attitudes towards vocational education in comparison with Uganda. Being an instructor of teachers, I was touched when the issue of quality of teachers was highlighted in the first project. Therefore, in my third project, we conducted an action research project with my students that sought to find how to improve the student instructors training delivery skills using group work presentations.

I developed this idea during my first day in class with the students when I asked them to indicate what they expected to achieve in the course. So many expectations we expressed but we leveled them and agreed on what was common to almost all (the student instructors expected

to have improved their training delivery skills). This impressed me as their teacher, together we agreed on what parameters to consider, and how we were going to improve their training delivery skills. During this project, our objectives were to establish the challenges the student teacher encounter during training delivery and find out how these problems would be solved through group work presentations. Our focus during the implementation of this project centered on the teacher's ability to interact with the student with the interest of fostering active learning, time management in content delivery, mastery of subject matter, ability to develop and use teaching aids.

The result of the project indicated that through group work presentations the student instructors identified their weaknesses and worked hard to see that they improved their skills in training delivery. Consequently, there was a tremendous improvement in the confidence of the student instructors in the way they introduced the lesson, organization of training content, and the creation of the conducive learning environment. However, I observed that there were inappropriate skills in the development and use of teaching aids that are sufficient to facilitate teaching and learning process. I also observed that preparation of training delivery materials like lesson plans, teaching aids and content had a big bearing on the quality of the presentations. The student teachers were unable to accomplish what they had prepared to present; many questions arose from the audience due to the misconception of concepts to mention but a few. My considered view is that in Uganda education system teacher-centered methods of teaching dominate teaching and learning process. This limits development and use of teaching aids to enhance students learning.

As earlier mentioned in the abstract, the nature of technical and vocational education majorly involves system, processes, arrangements and operations that students rarely interface in their daily life. This implies that this knowledge turns out to be abstract if not reinforced with the use of a teaching aid. In support of my observation, (Otaala, Maani, & Bakaira, 2013) cited Aggarwal (2001) and Mcber (2000) who emphasized that the role of instructional materials in enhancing students learning since many abstract concepts in any course or subject can be represented using illustrations, pictures or models. When teachers use teaching aids, they explain concepts by showing and demonstrating the content to the learners that converge their imaginations to the goals of learning. The main goal of introducing students to scientific concepts is to help them understand their application in technology.

For example, in electrical engineering, the magnetic effect has many applications but students never interface with simulations, pictures or models that illustrate this concept. You find that

teachers never take the trouble to make learners concretize this concept in reality. Therefore, to excel scientifically and technologically, learning spaces and learning resources are such important tools to provide opportunities for students to explore ideas and knowledge collaborate, solve problems, knowledge and skills.

We all appreciate that as a country we are still struggling with the basics, we cannot afford to have sufficient numbers of such aids but we strongly need to see skills and knowledge transferred to learners. Therefore, student instructors must be equipped with the skills to be innovative and creative in preparation for training delivery. Hence, the need to improve the quality of training by developing teaching aids from locally available resources to increase learning achievement. Hence the problem that this study sought to resolve of how developing teaching aids can improve the student teachers training delivery skills.

1.3 Problem statement

How can developing teaching aids improve of student teachers training delivery skills?

1.4 Description of the problem statement

Vocational instructions should lead learners to hands learning by integrating scientific concepts into technology. This implies that the teacher should be in position understand the individual learner's needs, and tailor instruction to increase learning achievement. Therefore, the teacher needs to select appropriate teaching aids and align them to the goals and objectives of learning. This implies that during the development of teaching aids there is a need to consider the kind of learners, what he/ she wants to teach, how it will be taught and the learning outcome. In so doing the teacher masters the subject matter to be taught plans the methods of teaching and improves the teachers innovative and productive skills which in turn has an impact on the pedagogical skills. Therefore, to help the student teachers appreciate that development of teaching aids has impact on their pedagogical skills they need to; appreciate that teaching aids contribute to their abilities to teach, establish their weaknesses in developing teaching aids, consider the factors that need to be considered when developing teaching aids and the practically participate in the development of teaching aids. From this point of view this study will be guided by the following objectives as listed below:

1.5 Objectives

1. To describe the importance of teaching aids during training delivery.

2. To determine the challenge student instructors experience when developing teaching aids.
3. To establish factors one must consider when developing teaching aids to enhance learning.
4. To justify learning experiences acquired in developing appropriate teaching aids from locally available materials.

1.6 Organization of the thesis

This report contains seven chapters, which are; introduction, conceptual framework, theoretical background, methodology, data presentation, discussion, recommendation and conclusion.

Chapter one

This chapter consists of the introduction of the study under which I highlight my academic background and work experience to give my readers an insight of my personal background. In my academic background I have an engineering foundation with a diploma in Agricultural Mechanics, I upgraded my academics to bachelor's in vocational education and now pursuing a master's degree programme. In my experience, I describe my experience which started a mechanic, to an instructor and now a senior instructor. In this chapter, I briefly describe the origin of this study and how I generated the problem under study. I state and describe the problem statement. From the problem statement, I developed the four objectives that guided the entire project. These objectives focus on the importance of teaching aids, the challenges the student instructor face in developing teaching aids, the factors they need to consider while developing teaching aids and the justify the learning experiences acquired in demonstrating the development of teaching aids.

Chapter Two

In this chapter, I present the conceptual framework this study was based and how we used this framework to achieve our set objectives. This chapter explains what we had planned and what actually happened. The conceptual framework follows the Hiim and Hippe 1987 didactical model. The description model illustrates educational concepts following a pattern from the; pedagogical framework and conditions, the learners' resources and conditions, learning goals and objectives, educational content/ subject matter, learning process/ methodology and evaluation.

Pedagogical framework and conditions, explains the conditions under which the participants conducted the project. It explains the how we fit the project in the institute schedule, the available equipment and programme in general.

The pupil learning resources and needs explain the resources required in learning in terms of the materials and personnel. I look at what was available and how managed to get what was not available.

Goals and objectives we considered the educational goals of the teacher training curriculum and the goals of the craft curriculum the student teacher are required to implement when they finish the training.

Educational content/ subject matters this explains the subject matter of the teacher training that contributed to the development of the teaching aid as well as the content of the craft curriculum that was carried in the teaching aids developed.

Learning process describes the learning how the participants were able to learn throughout the process and how the participants would be in a position to use the same learning process in the project. The learning process expected and implemented included demonstration, discussion and sharing experiences.

And evaluation explains what we were to evaluate and how we evaluated the entire project. We evaluated the achievement of the set objectives, the quality of the product and the learning experiences as attested by the participants.

The process of this project engaged the participants into producing teaching aids following the interrelationship of the concepts indicated in the model. At the same, time the product that is the teaching aid, to correspond to the requirements of the learning resources.

Chapter Three

This present the concepts and related literature in the area of teacher quality and teaching aids. The related literature presented is in line with the study objectives. I consulted literature about the international perspective about the vocational teacher quality. The literature illustrates how other countries have handled the issue of vocational teacher training and the improvements made to match vocational education and training with the demands of the 21st century. The same chapter presents the challenges facing teacher training in Uganda and challenges affecting the on vocational teacher performance. this is followed by a brief explanation of the interventions in vocational teacher training which includes how the instructor-training

programme started at Nakawa VTI and how it runs. To add more strength to my topic I included views of other writers about the importance of teaching aids and factors to consider when developing teaching aids. And finally the summary of the chapter.

Chapter Four

The chapter describes the methodology that used in collecting and presenting the data during the study. It contains the research design, methods, population, reliability and validity. In addition, ethical consideration. This study was action research that followed the Kurt Lewin cycle. The project was qualitative in nature and employed interviews, focus group discussions and observations as research methods. The participants in this study were student teachers in four fields of study electricity, electronics, civil and motor vehicle engineering.

Chapter Five

The chapter presents the data obtained from the entire project and how the entire of the research. The Data presented was in phases, which included the problem identification, planning, product development, presentation and evaluation. The data presented also considers the objectives of the project.

In the problem identification phase, I describe how we came up with the problem statement from analyzing the previous project. In planning, I describe the formation of focus group discussions and the discussion as conducted by the participants. The results include the participants' views about the importance of the teaching aids, the challenges they face during developing teaching aids and the factors they consider in developing teaching aids. In the product development phase present the results obtained from the learning experiences acquired by the participants during the study. During presentation stage, I present results obtained from the participants' every time they presented their work. We also had an evaluations stage where the participants and other stakeholders evaluated what the participants had prepared and their explanations on how they were to use the teaching aids they had prepared. They also presented their reflections on the entire project. The results are summarized in form of themes that correspond to the objectives of the study.

In Chapter six,

This chapter present discussion of findings. The findings discussed derive from the project objectives, translated into themes. These are; challenges in developing teaching aids, factors to consider when developing teaching aids, the importance of teaching aids and learning

experiences acquired in developing teaching aids. Every theme had sub-themes which were discussed in line with the theories obtained from the theory chapter. The results are discussed and supported by the literature presented in chapter three.

Chapter Seven

This chapter contains the conclusion and the recommendations drawn from this study.

The conclusions made in this report based on the findings obtained during the study. The conclusions draw from the objectives of the study and the conceptual framework. This part indicated the general conclusion considering the conceptual framework, the objectives and the data presented. The recommendations further help the student instructors improve their professional development through research. They should identify their problems and work in groups to solve problems within their areas of specialization. Some literature obtained from the theory chapter was used to support my conclusion and recommendations.

After looking at the organization of the report, in the next chapter, I will be looking at the conceptual framework of this study.

Chapter two: Conceptual framework

2.0 Overview

The conceptual basis of my study is based on a model of didactic relation (Hiim&Hippe, 1989 based on Bjørndal & Lieberg, 1978) This didactical model describes the relationship between fundamental educational concepts: students learning resources and needs, pedagogical framework conditions and scope, educational aims and goals, subject matter / content, teaching and learning methods and evaluations. According to (Hiim, 2011, p. 20), the main aim in this approach to teacher education is that student teachers learn to analyze didactic relations in various contexts and situations and to involve pupils and colleagues in the analysis with the of continuous development and improvements.

Hiim (2015, p. 154) explains that the main principle of the didactic core principles of education, teaching and learning are learned and developed on the basis of real practice situations and experience. This study looks at building teachers professional knowledge through the development and use of learning resources like teaching aids. I selected this particular model because of its systematic interrelationship of the major educational factors that enabled us to solve the problem at hand holistically.

Using this model as illustrated below, we considered a teaching aid as pupils learning resource designed to help a teacher achieve some goals during the teaching and learning process. In this project, I considered the participants as the learners, provided with learning resources to undertake a project through pedagogical framework conditions and scope to attain specific goals and objectives. I expect them to take account of their educational content and through a learning process to make a product that meets certain criteria set for evaluation.

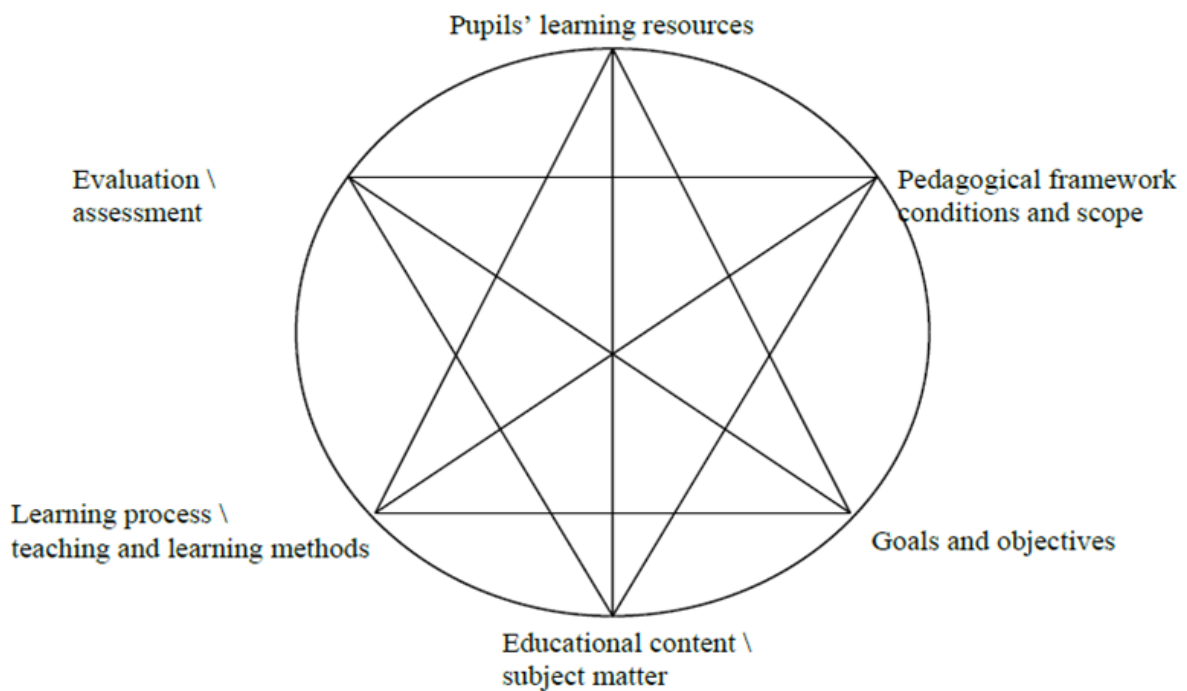


Figure 1: A model of didactic relations (Hiim&Hippe, 1989 based on Bjørndal&Lieberg, 1978) cited in (Hiim, 2011, p. 20)

2.1 Pedagogical framework conditions and scope

This project was conducted with Diploma in Instructor Technical Teacher Education (DITTE) student at Nakawa VTI under the department of instructor training. Nakawa VTI has eight departments offering craft courses in; Electronics, Electricity, Machining and fitting, Motor Vehicle mechanics, wood working, building and concrete practice, Plumbing and sheet metal and welding and fabrication. Instructor training takes place in the department of Pedagogy however when it comes to skills training the instructors students share facilities with the craft students. Instructor training is offered in five trades namely; Electronics, Electricity, Motor vehicle, Metal fabrication and Civil and building Engineering.

The institute has a motto “We strive for skills, knowledge and attitude” which represents competence. The primary objective of Nakawa VTI is to produce and upgrade craft men and craft women needed by the growing industry in the country. The training is 75% practical and 25% theory with attitude incorporated within. Training of full-time students is conducted in three sessions. The first session is normally theory training and runs from 0800 hours to 1000hours. During his period, all machines switch off to avoid interference from noise created by operating machines. The students normally have a short break of about thirty minutes and

are required to return to class for the next session at 1030 hours. After this break, they may continue with theory or start practical depending on what their instructor has prepared for them.

Nakawa VTI is one of the well-equipped institutions in Uganda but has a big number of students of about 1500 students, which limits the access, and use of the facilities. It is by the school regulation that from 1400 hours, all students should be in practice. This implied that the students had access to the workshop facilities for only two hours in a day. Having the participants work under the same time schedule meant that the time would not be enough so I encouraged my students to work on the weekends when the workshops were not so busy.

Most of the works in this project were practical. Some of the processes involved these students working in other workshops that are not in their areas of specialization. Through the teamwork system, we call technical cooperation; I contacted my colleagues in other departments for technical support. We had to fix work schedules for the students to access the facilities to produce the assigned products. For example, the motor vehicle students, part of their work involved turning wood on the wood lathe in the wood working department. The head of departments ensured that one of his staff was around to teach the students how to operate the wood lathe. The students were able to turn the wood to obtain the shape they wanted. To monitor the progress of the work we occasionally met after learning hours in the pedagogy classroom. We discussed the progress of the project and set deadlines to remind the participants of the speed they needed to accomplish the project. In Nakawa VTI we implement the (Plan – Do- Check- Action), PDCA cycle we made use of this cycle to ensure that the students were able to remain on track and accomplish the tasks on time.

The institute being Japanese supported we have adopted the Sort, Sweep, Set in order, Standardize and Sustain (5S culture). Through this culture, the students always organized the working area, selected only that they needed to use at a time in the project enabling them work in an accident-free environment. Besides this project, the students had to prepare for their end of semester examinations. They needed to plan their time so well. This project likely enough included part of what they needed to answer in the examinations. Therefore, their participation in this project helped them to revise that module and this was part of what motivated them to do and finish the project.

2.2 Pupils learning resources

Learning resources refer to any person or any material (whether acquired or locally produced) with instructional content or function that is used for formal or informal teaching/ learning purpose (Davies, Richardson, & Gaudet, 2008, p. 2). He adds “learning resources may include but not limited to print and non-print materials, audiovisual, electronic and digital hardware/ software resources and human resources”. We anticipated using locally available materials like waste wood, papers, and plastics, metal off cuts etc. We really wanted come up with simple projects from which we could demonstrate how to use teaching aids.

For example, the civil students selected pieces of wood, sawdust, Plywood, papers and broken glasses to construct a model of the storied building. The electronics students picked components from the dump yard of radios, televisions that were beyond repair and made a light sensor. Electrical students picked plywood, a copper wire, paper and magnet from a spoilt radio and made a simple fun. As the students discussed their projects they came up with brilliant ideas and innovations, I could not block. They suggested additions of some materials that were not locally available. This meant that we had to purchase some components to add value to their project. For example, the electronics students asked functioning bulbs to show the operation of light sensors, the civil students needed an iron sheet to roof their model of the storied building and electrical students needed batteries for their fun to operate. Other costs arose when we wanted to join these pieces together we needed binder, nails and bolts so we bought them. We also bought varnish and paint to add good finishing to the students’ works.

We also used print materials like textbooks and the craft curriculum, from which we obtained learning objectives and the content, portrayed in the teaching aids. Besides, we need human resources in conducting activities in other departments where the process needed skills that were not of participants’ areas of specialization.

2.3 Goals and objectives

Marzano (2009, p. 1) asserts that if teachers are not sure of instructional goals, their instructional activities will not be focused and unfocused instruction activities do not engender students learning. To achieve this, we considered the instructor-training curriculum and the craft curriculum objectives and goals to obtain relevant skills within the context.

According to student teachers training curriculum, by the end of the training, the student teachers should be able to make and use teaching aid. The overall objective of this project was to improve the student teachers training delivery skills through developing teaching aids that can facilitate teaching and learning of abstract concepts. This project also aimed at showing these participants that it is possible to develop teaching aids from locally available materials. To achieve this goal, we anticipated that by the end of the project a student instructor would be able to identify a concept in his or her field, select materials, develop a teaching aid and demonstrate its use during the teaching and learning process. This would be achieved by students being able to select materials around them put the material together and come up with teaching aids, identify their weaknesses and work upon them through demonstrations to improve their skills in developing the teaching aids.

We considered the goals and objectives of the craft curriculum for the specific fields. During the demonstrations, the participant clearly stated the objectives and explained how he/ she used the teaching aid to address the set objectives. Therefore, in addition, the appropriateness of the project, effectiveness and relevance were addressed.

2.4 Educational content\ subject matter

The educational content considered in this study comes from the students' curriculum of teacher training under the modules of educational technology, Workshop practice and teaching methods. According to (Alvior, 2015), subject matter is significant, if it is selected and organized for the development of learning activities, skills, processes and attitude. In educational technology, they study about the characteristics of a good teaching aid so such as, size, durability, the age of the learners, cost, content to be delivered were considered. Workshop practice equipped the students with craft skills like cutting. Filing, drilling, chiseling etc. The teaching method equipped the students with the different ways they can use to impart the knowledge and skills to the learners. This project required the integration of the content of these three modules. We also put into consideration of the content of the craft curriculum, which corresponds with the teaching aids developed.

2.5 Learning process.

The learning process was student centered and involved much of active teaching and learning. We used mainly group discussions, demonstrations and hands-on practice. According to

(Bonwell & Eison, 1991, p. 5), active learning strategies include a wide range of activities that share the common element of involving students in doing things and thinking about these things they are doing. Through sharing experiences and knowledge, the students were able to upgrade their skills in various fields. (Haynes, 2007, p. 3) explains that experiential learning involves a number of steps that offer student hands-on collaborative and reflective learning experience, which help them fully, learn new skills and knowledge.

The project started by discussing the analysis of the previous project, from which we agreed with the conclusion and recommendations made. Through a brainstorming exercise, we deliberated on how to conduct the next project. We agreed that we come up with proposals of the projects we can undertake. The students worked in groups according to their areas of specialization because the focus on the learning content was paramount. Then every group came up with a number of proposed projects and after their presentation, they chose the best two. The group of civil and building combined their projects and come up with one project. They further developed the content of the project that they had finally selected and presented to the class indicating their ideas as per the set objectives. From the very start, they were learning how to use the teaching aids during the teaching and learning process.

According to (Prince, 2004, p. 1), the core elements of active learning are the students' activities and engagement in a learning process. In short, active learning requires students to do meaningful learning and think about what they are doing. This project was broken down into five phases; problem identification, planning, product development, presentation and evaluation. At all these stages the students made logs indicating the stages, the knowledge, challenges and their reflections. The students took charge of their learning and most of the developments done entirely basing on their decisions.

2.6 Evaluation

At the beginning of the project, we agreed with the participants on our intentions and it was very clear to all the participants. Davies et al. (2008, p. 19) argue that "learning resources can be evaluated following specific criteria under content, instructional design and technical design and social consideration." The assessment based on the fulfillment of the objectives in terms of the craft curriculum and the instructor training curriculum. On the side of instructor training, our main target was to evaluate how well the instructor was able to make use of the teaching aid, this included the objectives set, correspondence and how the instructor referred to it and related it to the educational content.

The evaluation of the project considered the concept the participants chose, the processes involved, the craft curriculum and the instructor training curriculum. The evaluation of the project included three levels, which were; the individual level, Group level and classroom. The students after every stage made self-judgement expressing the challenges they experienced at every stage. They shared and showed what they thought was difficult and how they thought they would overcome next time when they came back to make the other presentations. I emphasized the objectives at every stage of the work to ensure that was achieved the set objective.

2.7 Summary of chapter two

In summary, this chapter gave a description the of the conceptual framework that guided this project of improving training delivery skills through developing teaching aids. Cook-Sather et al cited in (Placklé et al., 2014, p. 119) contends that it's up to teachers and teacher educators to further develop teachers competences for creating a learning environment that takes into account students preferences on teaching and learning in vocational education. We placed the teaching aid at the center of focus in relation to pedagogical framework conditions and scope, students learning resources, content/ subject matter, learning process, goals and objectives and evaluation. The consideration of the objectives of the project was the key guide to the conceptual framework. Therefore, learning involves change: the modification of existing schemata, the interpretation, categorization and application of knowledge (Mjelde & Daly, 2006, p. 87). Through the conceptual framework this project will be focused and at the same time include all the details of the requirements of necessary considerations which can improve the training delivery skills of the vocational teachers.

In the next chapter, we shall consider the related literature to support the actions and decisions made in this project

Chapter three: Theoretical background

3.0 Overview

This chapter presents literature reviews of various scholars in respect to my project. In this literature, I considered the quality of vocational instructor from the international perspective and local perspective, challenges of teacher training in Uganda, challenges of vocational teachers in Uganda, interventions in instructor training in Uganda, considerations for vocational teacher training, the importance of teaching aids and factors to consider when developing teaching aids. This study focuses on developing teaching aids to improve the training delivery of vocational teachers. Considering Vocational training as training that can lead individuals to the world of work. There is a need to equip vocational teachers with skills that enable them to deliver to meet the demands of the world.

According to (Barron & Darling-Hammond, 2008, p. 3), the teaching and work demands of the 21st century and reported that the changing workforce and need for the so called 21st skills have changed and now demands that institutions gives every child an education that prepares them for a productive life. The productivity of the learners highly depends on the teaching and learning process. They add it is no longer enough to transmit information that students memorize and store for the future. This implies that instructors should help students learn how to learn so they can manage demands of changing information, jobs and social condition. Therefore, the teachers of this generation should be equipped with pedagogical and technical skills that can address these emerging demands.

In the same perspective, (Nsamenang & Tschombe, 2011, p. 16) argue that student teachers or teachers of the 21st century are being called to shift from a product oriented teacher into a process focused facilitator, equipped to conduct classroom and other types of research as well as incite learners curiosity and zeal to discovery learning. That is the reason I draw this study from my previous project that I conducted earlier as indicated in the previous chapter. During the previous project, I observed that preparation by the teacher has a great bearing on the effectiveness of teaching and learning process. To be more precise, I think teaching materials developed and used contribute tremendously to the facilitation of teaching and learning process.

3.1 International perspective of vocational teacher training

Technical Vocational Education and Training (TVET) in the whole world is view as the redeemer to unemployment and develop of all nations. In this dimension, TVET is referred to as a range of experiences that are relevant for employability, portability of competences and qualification and acquisition of skills, decent work opportunities and lifelong learning in the related world of work. This report further explains that this concept embraces the importance of innovation, competitiveness, productivity and growth of the economy. Considering that, innovation creates a new approach to education and training to meet the demand of new skills(UNESCO-UNEVOC, 2006, p. 2). In my view teachers are key players in the achievement of a successful TVET of any nation. Therefore, if we are to consider TVET to produce competent, innovative and productive graduates, then there is a need to put more attention to vocational teachers training. Then the factors of teacher professional development are paramount for quality achievement. To achieve this many countries have laid several strategies to ensure that Vocational teacher training matches with the demands of changing world.

(Avis, Morgan-Klein, Canning, Simmons, & Fisher, 2012, p. 16) analyzed Vocational teacher education in England and Scotland which showed that initially, these two countries did not have a streamlined system for vocational teacher education. In England before 1999, there was no requirement for VET teachers to have a teaching qualification. They thought through experience one can acquire teaching skills. With the new demands from the workforce this has radically changed, part of the new labor strategy focuses on the VET teachers and as we stand today most of the VET teachers in England have been equipped with teaching skills. In the same study, they indicated that in Scotland, teacher qualification was generic skills based on pedagogic curriculum rather than a subject basis or specialized based pedagogy. In response to the new work demands, the Scottish government has recommended that their initial teacher education staff should undertake at least six days per year of continuous professional development.

The demands of the world of work are not about replication of skills like it used to be in apprenticeship there is a need to solve problems as they come through creative and innovative ways. Therefore, the kind of teaching should be in position to stimulate the learning thinking, reasoning and analysis of situations in the field. This implies the pedagogy of skilling learners must change to suit the required demands of the world of work. The government recognized the being highly skilled does not mean one has the ability to teach.

The American Management consultancy firm McKinsey and company investigated the factors that explain the most successful education programme in Asia, Europe, North America and the Middle East. The report concludes that certain education systems achieve substantially better because they have produced a system that is more effectively by getting more talented people to become teachers, developing these teachers to become better instructors and ensuring that these instructors deliver consistently for every child in the system (UNESCO, 2014, p. 19). In my understanding of the changing technology today, teaching and learning need to be learner-centered so as to explore the learner's capacity and contribution to learning. This is only possible if the teacher is highly skilled in that particular field and has the pedagogical ability to guide the learners to achieve in their learning.

The focus on vocational education is not only in Europe and other developed countries, it also follows in Africa. The African Union underlines the importance of TVET a support mechanism for economic growth and as a means for empowering individuals to lead sustainable livelihood. The strategic framework identified instructor quality as one of the eleven key priorities and therefore highlighted that the delivery of quality TVET is dependent on the competence of the teacher; competence measured in terms of theoretical knowledge, technical and pedagogical skill as well as being abreast with new technologies in the workplace (Commission, 2013, p. 35). The Strategy further suggests that teacher training colleges focus on recruitment of students who already have the requisite level of subject mastery and some enterprise experience so that teacher training can carefully focus on the pedagogical aspects. To my understanding, vocational teacher training delivery is the center of focus in the whole world. Therefore, as a vocational teacher trainer, the focus of quality training delivery should be key during training of vocational teachers.

The European Centre for the development (Cedefop) study of curriculum reform in Europe (2012) demonstrated that the introduction of competence-based approaches to design of curriculum does not lead to the expected changes in outcomes for learners if teacher students fail to change their teaching and learning behavior, and that curriculum reform can lead to perverse consequences. The follow-up study by Cedefop describes how teachers interpret and implement written curriculum and show that if teachers are effectively trained and supported this can lead to innovations in pedagogy which are associated with improved outcomes for learners (UNESCO, 2014, p. 21).

The reform of European VET systems is leading to major changes in the way in which VET teaching is organized. This has led to diversifying and expanding teachers roles, forcing them

to adopt new teaching practices and placing new requirements on their professional skills(P Cort, A Härkönen, & K Volmari, 2004, p. 34).Therefore, as a teacher trainer considering the new trends in vocational teacher training, I revisited my way of training to integrate the technical and pedagogical in this project as a way of preparing my students for the needs of the world of work today.

3.2.1 Challenges in the teacher training system in Uganda

In Uganda is teacher training conducted under two departments; the Teacher Instructor Education and Training (TIET) department in the ministry of Education and Sports and Kyambogo University. TIET has three divisions, namely; health tutors and instructor, the preprimary and primary teachers' education PTE division which is responsible for training Early Childhood development and secondary education(TISSA, 2013, p. 43). The mission of TIET department is to provide support, guide, coordinate, regulate and promote quality teacher, tutor and instructor education for the production of adequate competent and ethical teachers, tutor and instructors.

Primary teachers' colleges (PTC) train teachers to teach in primary schools. A small group of teachers who train in these institutions teach in pre-schools. The number to date, of which 7 are privately owned. Kagoda and Ezati (2013, pp. 40-41) in their study of the primary teacher training curriculum showed that the primary teachers in Uganda are trained as general teachers and are expected to teach all subjects, all classes from primary one to seven. They further added that the PTC curriculum does not integrate pedagogical content and competences to enhance the academic and professional proficiency of the student teachers. Besides many PTC do not provide teacher trainees opportunities to practice teaching as such they enter the class for the first time during school practice. Another challenge highlighted in this study is inadequate teaching learning materials. This attributes to the latest release from government grants. As a result, colleges are not in position to expose teacher trainees to practical subjects, field studies and co-curricular subjects.

My interest in looking at the primary teacher training college challenges is to show how this eventually affect the untrained teacher in TVET as a product of the system. In my own view, I think, a teacher that undergoes training without practical involvement is bound to use only teacher centered kind of teaching because that he / has been trained that way. Then the students who have undergone the same system will grow thinking that is how teaching should be conducted and the chain continues. Actually, if I can remember well since my primary

education I grew up thinking a teacher never makes any mistake and is the master of knowledge. (Okello, 2011, p. 189) explains that the nature of Uganda's education system is that it is generally theoretical. He adds that even courses that are practical they are taught theoretically. These challenges leave the quality of teacher graduates still demanding. TISSA (2013, p. 69) also highlighted challenges in PTCs as the inability by the PTC graduates to apply a number of essential methods of teaching and the curriculum mainly focused on what to teach (content) rather than how to teach (pedagogy) in there is low emphasis in specialization in terms of teaching.

National Teachers Colleges (NTC) train teachers who teach in secondary schools. Some primary school teachers who intend to upgrade can also train at NTCs. There are six colleges in Uganda of which one is private. (Otaala et al., 2013, p. 107) found out that the use of instructional materials in teacher training at Kyambogo University varies from faculty to faculty. Results obtained from the lecturers indicated that the instructional materials mostly used are chalkboard, charts, overhead projectors, textbooks, internet and handouts. They also observed that instructional materials are mostly used by science and vocational studies lecturers. However, due to the inadequate training materials, students do not get enough hands on as they should. (Otaala et al., 2013, p. 110) in their conclusion, they said that the university offers adequate curriculum but the methodology is insufficient. In my view methodology is very key as far as teacher training is concerned so the university should reconsider the implementation of the programme to ensure that the students are given appropriate pedagogical skills which enable perform successfully. They add that teachers meet large class sizes and inadequate instructional materials which impact negatively on teachers and lecturer's methods of teaching. Due to the pressure of national examinations, teachers centered methods in order to cover as much content as possible with a view to improving students' grade. Then teachers need to change their methods of teaching so as to match with the diverse conditions in the field of teaching.

(Malunda, Onen, Musaaazi, & Oonyu, 2016, p. 119) cited CURASSE 2007) report from the National Curriculum Development Centre (NCDC) indicate that in Uganda teachers in secondary schools do not adequately prepare for lessons and may still use teacher centered instead of student centered pedagogies. In the same perspective they Cited (UNEB 2012) report which further add that teachers are still bent on teaching students to cram subject materials for passing national examinations rather than to equip students with high order of thinking and life skills. Besides this challenge, they went on to quoted (Kalule 2014) who established that head

teachers who are expected to conduct formative teacher evaluation lacked the required training and skills need for the job. (Donaldson & Peske 2010) cited in (Malunda et al., 2016, p. 122) said the failure of school administrators to conduct a formative evaluation and lack of competences and skills to effectively appraise and provide quality evaluation of teachers that could inform professional growth was responsible for the ineffective teaching of several teachers. The challenges in PTCs continue and follow the chain to also NTCs.

Instructor training is currently offered by four instructor-training institutions: Kyambogo University, Abilino Instructors' college, Nakawa VTI and Jinja VTI. The (TISSA, 2013, p. 53) cited (MoES TISSA 2013 indicated that the BTVET sector also suffers from qualification issues among its teaching staff. A massive 30 percent of the estimated 5,000 instructors have minimum requirements to teach (40 per cent in public and 21percent in private institutions); this translated into 3,500 instructors in need of upgrading training especially incompetence related to occupational skills, industrial experience and instructional skills. Comparing the two reports of Nakawa VTI and TISSA 2013, it implies that what has so far been done is just a drop of water in an ocean.

The (TISSA, 2013, p. 67) cited (MoES 2012) report which analyzed the challenges in the NTCs and concluded that NTCs, PTC and (instructor training colleges) ITC suffer from various challenges ranging from understaffing, inadequate and dilapidated infrastructure, insufficient teaching and learning materials, lack of institutionalized continuous professional development programmes and little government funding.

3.2.2 Challenges faced by vocational teachers in Uganda

In Uganda Vocational and technical education is offered at three levels that is Uganda Junior technical certificate (UJTC), the craft certificate and the technician diploma level. Vocational teachers who teach the craft and UJTC are expected to be at least graduates of technician diploma level who have undergone vocational teacher training. They are required to have both technical and pedagogical skills before they start teaching. Due to the shortage of instructors, many of the BTVET institutions are full of instructors who are not pedagogically trained.

Inadequate training materials and equipment

Many studies conducted about VET in Uganda have highlighted the issue of inadequate materials and equipment in the VET institutions. According to Okinyal (2006) cited in (Arinaitwe, 2011, p. 26) BTVET institutions lack instructional materials and infrastructures like

lecture room, teacher houses, workshops, tools equipment, books and libraries. This limits the teacher's ability to conduct practical training for the learners in these institutions. The most worrying situation is that technology is moving very fast and when learners get to the world work, they have very limited skills to cope with the competition. It would be better if they had enough practice and then build their skills when they reach the world of work.

Besides looking at the methods of teacher training, effective teaching cannot be accomplished in the absence of certain ingredients that create a conducive environment for teaching and learning (Osam, 2013, p. 77). He adds that these materials include the right quality and quantity of teachers, well-prepared workshop and laboratories with up to date and adequate tools and other materials.

Insufficient funding from the government

It is evident that vocational training requires intensive funding if it is to yield the expected results of producing productive, creative and innovative graduates. According to Nalumansi et al 2002 cited in (Arinaitwe, 2011, p. 99) BTVET is relatively expensive in addition that even the government cannot afford to equip training institutions. The (TISSA, 2013, p. 67) cited (MoES 2012) report which analyzed the challenges in vocational educations indicated that little government funding is one of the biggest challenges upon which most problems revolve. In my own observations, even some of these little funds from the government also come untimely, by the time they come they find a hell of needs. This limits the capacity of the vocational teachers as they implement training under very constrained conditions.

Inadequate skills of teachers and institutional managers

According to Nalumansi et al 2002 cited in (Baryamureeba & Nahamya, 2014, p. 21) these institutions lack trained teachers or instructors with up to date technologies and appropriate vocational pedagogical skills that can enable them to equip learners with the adequate knowledge required by the world of work. Taking an example of the teachers we enroll in Nakawa VTI, they claim to be in service but in most cases, they come with very limited pedagogical skills. Some of them cannot even write well on the chalkboard, write schemes of work and communicate clearly when given the task to make a presentation. TISSA 2013 indicated that the BTVET sector also suffers from qualification issues among its teaching staff. A massive 30 percent of the estimated 5,000 instructors have minimum requirements to teach

(40 per cent in public and 21 percent in private institutions); this translated into 3,500 instructors in need of upgrading training especially incompetence related to occupational skills, industrial experience and instructional skills.

Inadequate exposure of the instructors to the world of work

In the report about the strategy on TVET in developing countries, it was noted that most developing countries Uganda inclusive, most educators do not have direct contact with the labour market (though short term) periodic attachment which would modernize and upgrade their practical knowledge on the actual technologies being employed in the workplace as well as offer insight into practical needs of the labour market (NICHE, 2010, p. 5). In my observation vocational teacher once they join training institutions they disconnect themselves from the world of work and concentrate on the mastery of the curriculum content. (Grijpstra & Papier, 2014, p. 11) contend that quality of vocational teacher education determines not just the quality of the educated skilled workforce but also the productivity and capability to come up with innovative resources for the well-being of the society. According to (ILO, 2010) innovations also require very close contact with enterprises and other stakeholders including employment services, labour markets institutions and social partners with other vocational teachers and of course with TVET students for the purpose of effective teaching/ training, career guidance and more.

Inadequate and outdated curriculum

The curriculum in vocational training institutions in Uganda continues to have limited hands on training. This is attributed to the fixed and structured nature of programmes and the expenses involved in offering practical training (Baryamureeba & Nahamya, 2014, p. 21). Vocational teachers have ensured that they strictly follow the curriculum to implement training. As a result (Okou & Officer, 2002, p. 4) said that the education system is still dominated by examinations at all levels without provision for assessment of other objectives of the curriculum such as promotion of moral values, practical skills and participation of in social and cultural activities. Another issue I observed about the curriculum is the emphasizes scientific concepts whose applications are not translated into the training. Therefore, the teacher's mastery of how to teacher these calculations without showing the learner how they are applied in there are of specializations renders the curriculum inadequate. According to (Rafui, Mal, Kamin, & Said, 2013, p. 75), inadequate instructor training, obsolete training equipment and lack of

instructional materials are some of the factors that combine to reduce the effectiveness of training in meeting the required knowledge and skills objectives.

3.3 Interventions to improve the quality of vocational teacher training in Uganda.

Uganda's vision is to move from a peasant society to a modern and prosperous country by 2040. One of the key aspects that have been highlighted in this movement is the improvement of education. It is noted in the TISSA report 2013 that the quality of teachers determine the quality of education meaning that good teacher training is a condition for the development of quality education (TISSA, 2013, p. 22). In that dimension vocational teacher education stands to be recognized for consideration because it is one of the strategies to equip the youth with skills.

The government of Uganda is committed to utilize TVET as an instrument of empowerment of its people through the acquisition of appropriate portable skills at all levels of training (Lugujjo, 2003). The aim of the TVET system is to merge from an educational subsector into a comprehensive system of skills development for employment, enhanced productivity and growth.

In that perspective, various policy documents and plans in the Ministry of Education and Sports such as the BTVET act, Education Sector Strategic plan (ESSP 2004) and the UVQF road map, exceedingly indicate that success of BTVET reforms will depend on properly trained instructors with sufficient knowledge and skills that correspond to the UVQF (Okinyal, 2012, p. 15).

That is the reason the strategic plan envisages the bold involvement in the development and upgrading of BTVET instructors to develop and urgently needed corps of additional instructors and to make existing instructors fit the new competence requirement in the course of Uganda Vocational Qualification Framework (UVQF) implementation (Education & Sports, 2012, p. 13) Competence as a notion includes more than just knowledge. It includes action, motivation, problem-solving and learning context (Oser, Salzmann, & Heinzer, 2009, p. 65).

Nakawa VTI in the year 2007 conducted a survey with the support of the Japan International Cooperation Agency (JICA) that assessed competencies of instructors in both government and private institutions in the whole country. The study revealed that there were over 4,000 instructors in technical institutions who did not have technical and pedagogical skills to train students in those institutions. The report proposes a training concept whereby training

programmes be designed in competence based and the modular manner in line with the upcoming UVQF basic principles. In June 2007 a contemporary project for Instructor Training Vocational Education Training (ITVET) was instituted. The project aim was to upgrade the competences of in-service vocational training instructors in pedagogy and technical skills in Electronics, Electricity Motor vehicle and Metal Fabrication.

Eight master trained II were selected from Nakawa VTI and trained in Japan both in Pedagogical and technical skills. Thereafter the curriculum was drafted and the training of instructors leading to the award of Certificate in Vocational Training Instruction (CVTI) and Diploma in Vocational Training Instruction (DVTI) were started. This programme focused majorly on the instruction in class, which emphasizes preparation of instructional materials, curriculum development and training delivery. Through this training, the instructors were equipped with both technical and pedagogical skills.

The instructors that trained at Nakawa VTI were awarded (CVTI) and (DVTI) whereas at Kyambogo University they were awarded Certificate in Technical Teacher Education (CTTE) and Diploma in Technical Teacher Education (DTTE).

In line with the various policy documents and plans in the ministry of education and sports such as the BTVET act, Education Sector Strategic Plan (ESSP) and the UVQF road map emphasize that the success of BTVET reforms will depend on properly trained instructors with sufficient knowledge and skills that correspond to UVQF.

Therefore, in 2012 the department of Teacher Instructor Education Training (TIET) in the ministry of Education Science and technology by then found it fitting to harmonize DTTE, CTTE, DVTI and CVTI in one qualification to have all technical teacher and instructors become highly skilled with similar qualification. Several workshops and consultation were held and content of four courses was summarized into one course now called DITTE. The programme is run under two categories of intake; the pre-service and in-service. The training of instructors was not done only at Nakawa VTI this was also conducted at Kyambogo University and at National Instructors College at Abilonino in the Northern region of Uganda.

Nakawa VTI trains in-service and this takes only one year. These instructors are trained both in technical and pedagogical skills. The harmonized programme is assessed by Kyambogo University. This programme is now run in five trades and has so far sent off two batches of trained instructor.

In addition, in the move to improve the quality of vocational and technical training, the Kingdom of Belgium is implementing a teacher training programme that helps instructors, tutors and secondary school teacher improve their quality of teaching through sustainable Active Teaching and Learning. Active teaching and learning aims to explain the concept and give teachers the opportunities, simulations and tools to change their teaching practice and promote the role of students in active learning (Impact, 2015). The primary role of the teacher is to engage students in inductive hands-on activities, group work and reflection to promote critical thinking, self-evaluation and integration of knowledge across tradition subject area(Vavrus & Bartlett, 2013, p. 5). The development of teaching aids blended with the active teaching and learning improves the quality of the teacher.

The quality of teacher education in the sub-Saharan Africa focuses specifically on education for sustainable development that is part of a global discourse. Learners are encouraged to develop “green” lifestyle and to mainstream sustainability issues(Griffin, 2012, p. 14). In comparison with other writers who have written about the challenges in teacher training emphasizing the inadequacy to materials, tools and equipment, in this project, I seek to use the available tools and equipment to improve vocational teacher training delivery. The materials that may be regarded as waste can be put into use elsewhere in the system. These may include things like papers, off cuts from wood, metals and broken glasses. Therefore, this project sought of using locally available materials to develop teaching aids improves the teacher’s ability to be innovative, master subject matter, employ appropriate well planned methodology of teaching which contributes to quality training delivery.

As a result, the participants will have 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 rather look at carefully at the environment in which a teacher and the system of ideas which that environment represents.

3.4 Vocational teacher training considerations

Continuous professional development

Vocational teacher training in Uganda must consider that the needs and demands have changed internationally all over the world as such they need to up skill from the traditional teaching to

new techniques employed worldwide. As stated by (Griffin, 2012, p. 13) Professionalism in the Sub-Saharan is characterized by authoritarian. This is because teacher education tends to perpetuate traditional, unreflective and teacher-centered pedagogy rather than challenge it, often resulting from the fact that teacher education provides itself authoritarian and reproductive preparation for teaching in schools. Given the conditions under which the vocational teachers work they are bound to use teacher-centered styles of teaching which do not match the demand of the world today. According to (Maclean & Wilson, 2009, p. xcvi), teachers must be transformed from those who impart knowledge to those who facilitate learning.

(Harwell, 2003, p. 4) asserts that the content for professional development should center on the subject matter, pedagogical weakness within the organization, measurement of student performance and inquiry regarding professional questions that are relevant to the setting in which professional development is delivered. She adds that these skills are usually gained through further academic study, training, qualification/certification status as well as being based on academic such as knowledge of subject matter and teaching knowledge. In my observations, vocational teacher training should consider training a teacher as a whole. At the same time looking at the Ugandan education system it seems to me that teachers from the lowest level need to upgrade their skills to matched with the demands of the world today. Therefore, as long as one decides to be a teacher there is need to consider that learning continuous. In the same way (Sequeira, 2012, p. 1) said that it is an accepted concept that teachers are not born but they are made. He adds that good teachers nurture their knowledge and skills through constant and deliberate efforts.

Sharing ideas and working as teams

According to (Pia Cort, Auli Härkönen, & Kristiina Volmari, 2004, p. 20) Today teachers need to work in teams, they have to be able to guide trainees more than just knowledge and they must be able to plan, describe and reflect on their own teaching practice. In my observation, one of the major factors that has hindered the development of vocational teacher is their inability to work together. Yet if the different subject teacher in the same field put their ideas together they can come up concrete and innovative ventures. In my experience, I have seen teachers who think they have nothing to learn from their colleagues. (Harwell, 2003, p. 4) asserts that when teachers take the time to interact, study together, discuss teaching and help one another put into practice new skills and strategies, they grow and their students' behavior improve accordingly.

Adopt and adapt new methods, strategies and techniques of training delivery

Teachers need to embrace new teaching and learning theories which are learner-centered such as collaborative learning, experiential learning, constructivism and behaviorism to be able to implement the various methods and techniques such as demonstration, group learning, collaborative learning and project-based learning to mention but a few. According to (Kerka, 1997, p. 2) in using a constructivist approach, teachers facilitate learning by encouraging active inquiry, guiding learners to question their tacit assumptions and coaching them in the construction process. This means the role of a teacher is changing from being a knowledge giver to a facilitator. According to Lynch 1997 cited in (Kerka, 1997, p. 5) the essential role of vocational education is to facilitate construction of knowledge through experiential contextual and social methods in real world environments. Through engaging the learners in group learning, they share experiences and as a result they construct their own knowledge than the teacher being the center of knowledge as it has been before.

(McCrone, O'Beirne, Sims, & Taylor, 2015) opine that effective vocational teaching and learning is most effective when teacher and trainers acknowledge that each learner is different and it's important to meet the needs of diverse range of learners in order to prepare them for the workplace. Darling-Hammond (2002) cited in (Marphatia, Legault, Edge, & Archer, 2010, p. 18) defines teacher quality as skills used by teachers to create open and interactive learning which help children flourish, excel academically and become well-rounded and grounded individuals. Schröder (2013, p. 12) contend that the development of competences embedded in an action-process, enhanced by problem-solving and enriched by demand oriented inputs all of which are accompanied by increasing strivings towards innovation, effectiveness, efficiency and excellence. Technology is changing at a very high speed that teachers need acquire both pedagogical and technical skills to be able to train learner who can work independently by solving the problems in their workplaces. Problem-solving and innovations carry meaning if the learners are more actively involved in the learning process.

Link training with the world of work

According to (CINTERFOR 2000) cited in (Maclean & Wilson, 2009, p. ciii) The changing role of TVET instructor involves linking occupational related (academic) studies with technical subjects. Vocational education in Uganda has not been regarded very important because of the gap that exists between training institutions and the world of work. This implies vocational teacher must find time to get attached to industries periodically to ensure that they upgrade their skills and knowledge what is needed in the industry and link it to training delivery to the learner.

In Uganda is Teacher training conducted under two departments; the Teacher Instructor Education and Training (TIET) department in the ministry of Education and Sports and Kyambogo University. TIET has three divisions, namely; health tutors and instructor, the preprimary and primary teachers' education PTE division which is responsible for training

In Uganda is Teacher training conducted under two departments; the Teacher Instructor Education and Training (TIET) department in the ministry of Education and Sports and Kyambogo University. TIET has three divisions, namely; health tutors and instructor, the preprimary and primary teachers' education PTE division which is responsible for training Early Childhood development and secondary education(TISSA, 2013, p. 43). The mission of TIET department is to provide support, guide, coordinate, regulate and promote quality teacher, tutor and instructor education for the production of adequate competent and ethical teachers, tutor and instructors.

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3.5 Teaching aids and their importance

Teaching aids are called various names depending on different writers. Some refer to them as instructional materials, learning materials, instructional aids or teaching and learning resources. These are materials used to assist a teacher to facilitate teaching and learning. (D. E. N. Elom, 2014, p. 83) cited Onah 2005 who notes that learning material is any device with instructional content or function that can be used for teaching and learning process. He further illustrates that these may include magazines, charts, pictures etc. These materials are used to supplement and complement the teacher's work.

(Oladejo, Olosunde, OOjebisi, & Olawale, 2011, p. 116) state that instructional materials are in classes such as audio or aural, visual, or audiovisual. They further elaborate that audio instructional materials refer to those devices that make use of the sense of hearing only such as radio, audio tapes recorders and television. Visual instructional materials are those that appeal to the sense of sight only such as chalkboards, charts, and slide and filmstrips. Audiovisual instructional materials appeal to both hearing and seeing such as television, motion pictures and

the computer. Therefore, teaching aids are any materials that teacher can use to during teaching to facilitate learning process. According to Carroll 1968 cited in (Levin & Long, 1981, p. 32), the use of teaching aids enhance learning by making use of a variety of senses.

(Hilda Ng'etich Tuimur & Chemwei, 2015, p. 225)explains that the use of instructional materials in the classroom has the potential to help the teacher explain new concepts, clearly resulting in better student understanding of the concepts being taught.

According to Edgar Dale, 2001 cited in (Eshetu, 2015, p. 194) audio-visual materials supply a concrete basis for conceptual thinking, they give rise to meaningful concepts enriched by meaningful associations, hence they offer the best antidote for the disease of verbalism. In addition to that (Nasaza, 2015, p. 12), noted that it's the role of the teacher to harness the thoughts of the learner so that they focus their attention on the training programme and get as much benefit from it as possible.

Saglam (2011) cited in (Stefanc, 2012, p. 175) further explains that Teaching materials provide a great deal of continence in teacher's ability to convey a message to students in an accurate, proper, clear and understandable manner in making an abstract knowledge concrete and in enabling students to comprehend complex ideas through simplification. In my view, the use of sketches, pictures and simulations help to converge the learner's imagination to focus on the learning objectives because of similar images shown in the teaching aids. This helps the teacher to deal with the discourse of terminologies as perceived by different learners. Stefanc adds that when properly used, printed materials, audiovisual materials and experience giving methods help make the learning process easy and enduring. This study concludes that the number of senses activated by teaching material used is directly proportional to an easy and enduring learning process. In my own observation if the learners follow the lesson closely their attention span becomes longer.

(Birisci & Metin, 2010, p. 3)in their study about developing instructional materials using the concept cartoon cited (Balim Inel & Eurekli, 2008) contend that visual cartoons are seen as tool that allow teachers to gain student attention, visually focus them on the lesson and create an environment where students can construct or reconstruct their views on a certain topic. I used to think that cartoons are for children under the age of five years until when I saw cartoon being used to make advertisements and they attract many peoples' attention. When I came across this concept of visual cartoons I see big prospects of their used in facilitating learning.

(Broderick, 1956) quotes that the encyclopedia of educational research states that in harmony with findings of the American council on education study, good utilization of instructional materials means that the teacher is acquainted with the materials before he attempts to use them, that the class group is prepared to use the materials and that there is follow-up activity after the materials have been used. Therefore, vocational teachers should be in position to prepare their own instructional materials which they understand from first principles. It also follows that the teacher can be in a position to determine the method of teaching most especially how to engage the learner for maximum learning achievement. In my view when the teacher takes the trouble to developing teaching aids, this helps him to further understand the subject matter and improves his skills as well.

3.6 Factor for designing and selecting teaching aids

Teaching aids are designed for a purpose of promoting the teacher's ability during the teaching and learning process. It, therefore, implies that to achieve this some factors must be put into consideration. (Ohio State Univ, 1977, p. 9) explains that the design of teaching aids must consider factors such as the abilities of learners and their needs; the variation in student learning styles and the visual aspect of learners. Dick, Carey, and Carey (2001, p. 19) asserts the design to develop original material will depend on the type of learning, the availability of existing materials and development resources available. According to (Weston & Cranton, 1986, p. 268) selection and use of instructional material depends on the number of factors: the instructional technique or method in which the instructional material is to be included, the rate at which the information is to be presented to the learner, size of group the instructional material and the potential of the material to create interactive learning. They further state that out of necessity, such variables as the size of the class, physical facilities, availability of resources and material general student characteristics (such as previous learning and age), and to some extent, the subject area are usually considered.

3.7 Summary of chapter three

This literature explains the demands of the world of work in relation to vocational teacher training at an international perspective. Scholars indicate that various parts of the world such as England, Scotland, Africa, Europe, North America and the Middle East recognize that the demand of the world of work for the 21st century requires vocational teachers to have pedagogical and technical skills with experience from the world of work.

This study I consulted studies which presented findings about the challenges in the teacher training system in Uganda. These challenges the system faces include; understaffing, inadequate and dilapidated infrastructure, insufficient teaching and learning materials, lack of institutionalized continuous development programmes and little funding from the government. As a result, some scholars say it the reason Uganda education system is theoretical and teacher centered.

This review highlights that vocational teachers in Uganda experience challenges like inadequate skills training, insufficient materials, tools and equipment, inadequate exposure to the world of work and poor management systems. Yet considering the new trends of the labour market today, teachers should shift from teacher centered type of teaching to learner centered teaching by involving learners through active teaching and learning.

However, the government of Uganda has set some interventions to improve vocational teacher training as highlighted through the Ugandan vision 2040, BTVET strategic plan, and harmonization of instructor training to the DITTE training programme.

Various scholars were consulted to share their view of the vocational teacher training considerations and various views are presented about; the continuous professional development, 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 developing teaching aids to improve the training delivery skills. In that line literature was reviewed about the importance of teaching aids to justify its connection to the learning achievement of the learners. Views from the various scholars indicate that teaching aids are important for motivating learners, supplementing and complementing the teacher's work, making abstract concepts concrete and increasing learning achievement. This chapters contains also review of the factors one should consider when developing teaching aid to meet the learning required of the teaching aid in the classroom or the workshop.

The next chapter describe the methodology employed to establish finding of the study.

Chapter four: Methodology

4.0 Overview

In this chapter, I describe the methodology I used in the study that aimed at improving student-teacher training delivery skills through developing teaching aids. According to (Rajasekar, Philominathan, & Chinnathambi, 2013, p. 2), research methodology is a systematic way to solve a problem. They add that research methodology is a science of studying of how research is to be carried out; including procedures by which the researchers go about their work of describing, explaining and predicting phenomena. In this chapter, therefore, I present the procedures, approaches, actions, methods and strategies that I undertook to conduct my study. I will further describe the methods that included interviews, Observations and focus group discussions that facilitated the collection of data. I continue with the description of the study participants, their roles and actions in the study. I describe the validity, reliability and the ethical considerations under taken in this project.

This project was generated from my previous project that looked at improving the student-teacher training delivery skills through group work presentations. During that project, I discovered that apart from the student teachers having inadequate skills to deliver during the teaching and learning process, the lack of appropriate teaching aids could hamper their ability to deliver during teaching and learning process. In this study, I focused on establishing the challenges student teachers face while developing teaching aids, the factors they can consider when developing teaching aids, describe the importance of teaching aids and explain the learning experiences acquired from the development of teaching aids. The process of developing the teaching aids is intended to develop the skills of the participants as teachers and the teaching aid developed as a learning resource that can be used by the participant to facilitate the teaching and process. As an outcome, this would holistically improve their training delivery skills. The project involved the application of both pedagogical and technical skills. By the end of the project, the participants were expected to be able to develop and use teaching aids with less difficulty through action research.

4.1 Research design

This study employed a participatory action research design. According to Reason and Bradbury (2001) cited in (Ozanne & Saatcioglu, 2008, p. 424) participatory action research is defined as

“a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes.” The participants identified their own problem and democratically put their views and actions together in order to solve their problem. The main aim of this study was to improve the training delivery skills of my students through developing teaching aids. Ozanne and Saatcioglu (2008, p. 430) adds that the purpose of research is to make people aware of their potential to be agents of change and to create more liberating social organization. Basing on the quotes from these scholars explained above, I decided to undertake a participatory action research where I would work together with my students to improve their training delivery skills through developing teaching aids. Through the participants sharing knowledge, experiences and working as a team they would learn from each other to improve their skills.

According to (Walter, 2009, p. 3), rather than taking a linear model, participatory action research is cyclic, working its way through various interactions of planning, acting, observing and reflecting. We started by planning how this study would best benefit the participants. The first meeting, we conducted involved a brainstorming session where the participants gave their views on how they thought this problem would be solved. (Ferrance, 2000, p. 14) explains action research projects influence thinking, sense of efficacy, willingness to share and communicate and attitudes toward the process of change. Through this session, the participants were able to come up with the proposals of the projects they were to undertake. They presented them to the group indicating the materials from which they were to develop their projects the competences, content and the methods of training they would use to deliver with the teaching aids.

During the presentations, the participants, shared views, made comments and critiques to reflect on the objectives of the project. This helped them further understand their problem and put all their ideas together to solve their challenges. (Denscombe, 2014, p. 126) regards action research as that research that should not only be used to gain a better understanding of the problem which arises in everyday life practice but actually set out to alter things to so as part and parcel of research process rather than get it on as an afterthought which follows the conclusion of the research.

This project also involved actions of demonstrating of the construction of the teaching aids. The participants collected materials from waste materials such as pieces of paper, wood, broken glasses, metal off cuts etc. from which they developed the teaching aids. They applied practical skills with the help of machine and hand tools to prepare and join the materials together. In their

respective groups, they shared views and skills of the processes they undertook. We held meetings and plenary sessions to plan and reflected on their actions at every stage.

This study followed the Lewin Kurt cycle of actions research that involved planning, acting, observing, and reflection. This action research was conducted in five phase which included problem identification, planning, product development, presentation and evaluation. These phases involved planning, acting, observing and reflecting with one phase linking to another phase. Denscombe further asserts that action research is a cyclic process which in involves a feedback loop in which initial finding generate possibilities for further change which are then implemented and evaluated as a prelude to further investigation. Through this cycle, the project was systematically conducted and the teaching aids were produced. The products were displayed and exhibition and the participants explained their projects to other members who came to see the exhibition. According to (Ozanne & Saatcioglu, 2008, p. 426), action research must demonstrate outcome validity- the research must lead to a successful resolution of the relevant resolution. Due to the continuous discussions, and the process development the participants had undergone, they made all the explanations with confidence and rich content mastery of the entire project. Enabling the participant to appreciate that development of teaching aids improved their ability to link the important educational concepts of the learning resources, the goals and objectives, pedagogical conditions and frame, the content or subject matter, the learning process and the methodology and evaluation of the learning achievement. All this as a result improved their training delivery abilities. They had the moments to reflect on their plans, discussions and actions The study started by the students generating proposal, they presented their plans and developed the teaching aids, observed their actions and regularly reflected on their actions and repeated the cycle as illustrate in the figure below.

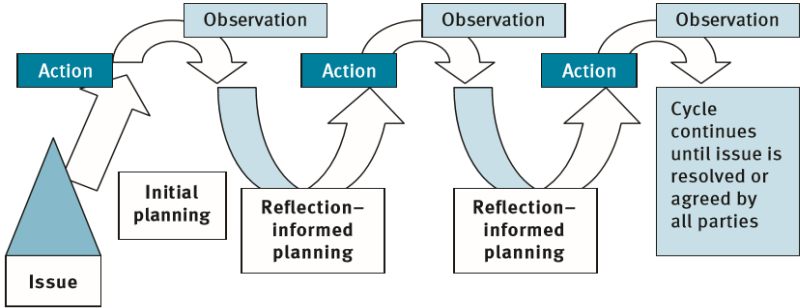


Figure 2: The iterative cycle of participatory action research (Walter, 2009, p. 3)

4.2 Research approach

In this section, we looked at the plan and procedure for research including the steps that were followed, assumptions, methods of data collection, analysis and interpretation of results. This could have been a quantitative or mixed approach but I found it fitting to use the qualitative approach given the nature of data I needed to obtain from the participants. According to (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005, p. 195), Qualitative research is a systematic approach to understanding qualities or essential nature of a phenomenon. In this study, I undertook a qualitative research that allowed me to explore the participants' expressions, views and reflections on the developing of teaching aids, ethnographic work, interview, and so on.

According to (Taylor, Bogdan, & DeVault, 2015, p. 10), qualitative research methods are designed to ensure a close fit between the data and what people actually say and do. I should also retaliante that since the study is intended to enable student teachers to construct new knowledge using the constructivist approach by the participants in order to develop and use teaching aids, their views in this project are paramount. Therefore, I chose the qualitative approach because the participant's activities were interactive which calls for socialization and practice through sharing ideas and consensus.

4.3 Participants

During my previous topic, my main focus was six participants out of the class of 25 students. My class is comprised of in-service instructors who come to upgrade their pedagogical and technical skills. They had been trained in all the subject areas that this project required. What was required of them was to integrate the knowledge in the various fields to improve their skills.

Among the participants, five were female and the twenty were male. I used this same group to enable them to build on what they learned from the previous study. This time round I had them grouped in their specialties. In this case, student instructors were grouped under Motor Vehicle, Electronics, Electricity and Civil and building.

In these groups, the participants designed, developed and presented the use of teaching aids of their choice in their respective fields of teaching. The interest was to see how they designed and developed teaching aids to connect to the content, learning objectives and their impact on the learning achievement. Finally, I asked the groups to reflect on the milestones and challenges

teachers experience while developing and using teaching aids and learn from each other's ideas. Two simulation learning sessions were organized to establish the students learning achievements progress.

4.4 Measurable variables

My interest in this study has been risen from the goal to change the attitudes of student instructors to developing teaching aids in the course in technical and vocational education. The aim was to ascertain how the development of teaching aids can improve the performance of the vocational instructor training delivery. As a result, increase learning achievement by learners in vocational training institutions. The question in mind was whether project work would create a difference in their attitudes and bring new skills development in their professional development. From the goal explained above, I had to find details about;

- The challenges participants experience in developing teaching aids
- The relationship of teaching aids to learning achievement
- How working together can influence communication skills, teamwork and knowledge sharing

4.5 Research methods

Research methods are all those methods or techniques that are used for conducting research (Kothari, 2004, p. 7). Research methods are tools for data collections which include things like questionnaires, interviews observations and documents (Denscombe, 2014, p. 3). In this study, I chose the observations, focus group discussions and interviews.

4.5.1 Interviews

(Harrell & Bradley, 2009, p. 13) defines interviews as discussions usually one on one between the interviewer and an individual meant to gather information on a specific set of topics. Interviews were conducted as a means of collecting data about the participant's views on how they thought the project was progressing and finding out the value they attached to the entire project. Kvale (2006, p. 481) contend that interviews give voice to common people, allowing them to freely present their life situations in their own words and open for a close personal interaction between the researcher and their subjects. Interviews were conducted after every presentation and during the processes development of the project. This was also to help understand whether the participants attach the same value to the process of the project.

Through interviews, the participant gave their individual views which they could not give when they are in groups. At every stage, I asked the participants the challenge they faced and how they overcame their challenges. I also asked them what they learned from the process at various stages. This project was entirely conducted to make the participant physically learn through group discussions, project work and sharing experiences such that they can also implement the same in their training delivery. However, on the other hand, they also needed to appreciate the importance to teaching aids and to make them ensure that they used teaching aids every time they conducted teaching and learning process. Therefore, to cause this change the participants' views were very important. As a teacher trainer, interviews help me establish some materials which I can further include in training to improve the teacher training programme. In addition, through the interviews, I was able to establish more areas I can use action research to cause more change in my training delivery.

4.5.2 Observations

Observations methods are useful to researchers in a variety of ways. They provide the researcher with ways to check for nonverbal expressions of feelings, determines who interacts with whom, grasp how participants communicate with each other and check how much time is spent on various activities Schmuck 1997 cited in (Kawulich, 2005, p. 4). The quality of teaching and learning can be observed through the actions of the teacher in relation to the teaching materials prepared, the objectives to be accomplished, the training content and the method of teaching. It is through this relationship that learning achievement takes place. Therefore, in this study, I chose the participant observation to be able to observe the participant's actions in relation to improving their training delivery skills.

Participant observation

According to (Kawulich, 2005, p. 4) cited DeWALT and DeWALT 2002 believes that "the goal of the design of research using participant observation is to develop a holistic understanding of the phenomena under study that is objective and accurate as possible given the limitation of the method". Therefore, through observations, we focused on the quality of teaching aids developed, how that teaching aid was connected to the learning objectives and the participant interactions and contributions towards the development of the work.

I observed the ability of the participants to explain the procedure and accounting for the particular actions that were involved in the project. The quality of work in relation to the set

measurement, workmanship and the product in particular. I observed the ways of learning that were involved during the entire process. We observed the presentation of the teaching aid in relation to the set objectives and the prepared content. In this case, observations were key components of the study.

Creativity and innovations in the development and use of the teaching aids was strongly emphasized in this project. Through observation, many aspects of student's responses, attention, motivations and performance of learners can be assessed during the Teaching and learning processes involves o to address learning outcomes. According to (Musante & DeWalt, 2010, p. 10), participant observation is both a data collection and analytic tool.

4.5.3 Focus group discussions

The participants were grouped in their area of specialization where they discussed and shared ideas through brainstorming and discussions. (Bhattacharjee, 2012, p. 78) explains that focus groups allows a deeper examination of complex issues that other forms of survey research because when people hear others talk; it often triggers responses or ideas that they did not think about before. They presented as a group showing what they are to do and how it contributed to teaching and learning process in their areas of specialization. The groups gave their contributions towards the work and the participants went back to ensure that efforts are made to improve on the work.

They started by presenting proposals which included drawings and the types of materials they anticipated to use. Materials that are very costly to purchase we improvised. I guided them to ensure that the study produced teaching aids that were relevant to their specific fields. In their groups, they identified the projects to undertake, discussed and selected the best and worked in their respective groups until they came up with products.

Through focus group discussion we discussed general issues like the challenges the participants encounter while developing teaching aids, the factors they should consider when developing teaching aids and the importance of teaching. This was intended to allow the participant share experiences and work towards improving their weakness from rich information obtained from the group. They discussed as group members I met them as a group to discuss the entire process of the projects.

In most cases, my focus on the challenges they encountered and how they overcame and the new knowledge each individual acquired during the process. The group data was collected

through the group leader who took charge of the comment that were made as they presented. I made my observation during the study and before we wound a session, we read summaries to make us have a common understanding of what could come next.

4.6 Reflections

Leitch and Day (2000, p. 181) cited Dewey (1933) considered reflection in practice as having a moral base, where professional actions would be treated as experiential and the individual would reflect on both their actions and their consequences. Numerous factors need to be taken into account for technical and vocational education to be successful. Good preparation is therefore, important, where the teacher should foresee numerous situations and create conditions for the simultaneous development of both subject perception and subject reception. The aspect of reflection was given attention.

After every stage, we convened general discussion session where I asked the participants to reflect on what was happening at every stage to enable them to track the changes and the new knowledge they acquired during the project. At the problem identification phase, the participants reflected on the teaching aids that were developed in the previous project. They agreed that these teaching aids were abstract in themselves so they could help in any promote learning process nor motivate learners to learn in any way. The whole group reflected on the other group project to ensure that the end products met the standards we had set. According to Pine 1981 cited in (Ferrance, 2000, p. 15), educators involved in action research become more flexible in their thinking and more open to new ideas. At the stage of product development, the through reflections they were able to solve the challenges they encountered such as operating machines not in their areas of specialization.

In areas where they had planned for materials and they were not available, they looked for other alternatives. In addition, as their instructor reflected on the how the sessions were run and always laid strategies to ensure that the participants did not abandon the project before it was accomplished. Through reflections, I was able to foresee what comes ahead and prepared for solutions in advance. This project was run at a time when students were approaching their final examinations. I included examinable elements in the project such that as a way, this kept them active because the participant thought it had a contribution to preparation for their examinations.

4.7 Data Analysis

Qualitative data analysis is the pursuing of the relationship between categories and themes of data seeking to increase the understanding of the phenomena (Hilal & Alabri, 2013, p. 181). Data was collected through making notes during interviews, observations and the focus group discussions. This was done by making use of coding while a taking notes during the process. As noted by Miles & Huberman in (Hilal & Alabri, 2013, p. 181) codes adhere to chunks of words, phrases, sentences or the entire paragraph. Through the coding method, I first considered my problem statement, which was looking at how to improve student instructors training delivery using the teaching aids. Then using my set objectives, I developed themes that enabled me structure, reduce, organize and explain the data that was collected.

Data transcription

According to (Grbich, 2012, p. 4), a detailed description of what is happening contributes to the understanding and eventual analysis of the setting studied. During this study, I transcribed all the data collected through interviews, focus group discussions and my observations to get rich data to the good analysis of data.

The data was transcribed locally using the field notebooks, session meeting minutes and the students' logs. During the project process, I collected the data following the themes and sub themes developed from the objectives of the study. In the discussions, I ensured that we discussed one theme at a time to avoid mix up of data during transcription. However, when the participant would bring points connecting to another theme while they were discussing the other theme, I would note such points immediately to avoid losing them out. Some data was also transcribed through the photographs and videos that were taken by the students during their group work presentations.

Data coding

According to Dey (1993) cited in (Basit, 2003, p. 144), coding or categorizing data involves subdividing data as well as assigning categories. To create a sense of the data collected during the study, I considered the research objectives that guided this study. The data collected from this study sought to answer four objectives. The data was coded into four themes and these were; the challenge the participants encounter when developing teaching aids, the importance of teaching aids, the factors they should consider when developing teaching aids and the demonstration of developing od the teaching aids.

Seidel and Kelle (1995) cited in (Basit, 2003, p. 144) view the role of coding as noticing relevant phenomena; collecting examples of those phenomena and analyzing these phenomena in order to find commonalities, differences, pattern and structures. This process was not easy despite the fact that I tried to categorize the data during the time of data collection. As noted by other researchers coding of data may lead to loss of some important information due to failure to qualify to fall under a certain category. As a result, some of this very good information was not coded.

Data presentation

According to (Chenail, 1995, p. 9), one of the strategies to present data by being natural. The data is presented in a shape that resembles the phenomena being studied taking an example of sequential order that represents the flow of the sessions itself. Following this strategy, the data was presented according to the phases through which the project was conducted. This project was conducted in five phases and these included; problem identification, planning, project development, presentation and evaluation. However, because the data was coded according to themes these themes were present in the phases as obtained. These phases described in detail what the participant did, how data was collected and interpreted.

Discussion

The discussions were based on the interpretations obtained from the presented data. The discussions were backed up by literature obtained from the theory chapter which was aligned to this study. According to Taylor 1976 cited in (Myers, 1997, p. 10), interpretation of data is the sense relevant to hermeneutics is an attempt to make clear, sense of an object of study. The data was interpreted in relation to reflections obtained from the participants, my reflections and discussed alongside the literature to support our views. During the discussions, data was presented, described and analyzed with the support of the related literature.

4.8 Validity and reliability

According to (Golafshani, 2003, p. 601) cited Patton (2001) validity and reliability are two factors any qualitative researcher should be concerned about while designing a study, analyzing results and judging the study. (Bhattacharjee, 2012, p. 58 &59) defines reliability as the degree to which the measure of a construct is consistent or dependable and Validity refers to the extent

to which a measure adequately represent the underlying construct that it is supposed to measure. In this project, we looked at the teaching aid as a learning resource and we aligned its use with other important factors like learning objectives, subject matter and teaching methods.

Through the didactical model on which the conceptual framework is based (explained in chapter two). We considered the following factors learning resources, learning goals and objectives, the content or subject matter, pedagogical framework and conditions, learning process and evaluation throughout the project specific content is obtained from the participants' activities without diversion.

I followed the action research cycle by systematically planning, taking actions, observing and reflecting on all the activities of the project. For every session, we planned together with the participants highlighting the activities and expectations and ensured that we set deadlines for all the stated activities. I record every information obtained from observations, interviews and focus group discussion in my field notebook.

According to Denzin 1970 cited in (Merriam, 1995, p. 54), triangulation involves the use of multiple sources of data or multiple methods to confirm the emerging findings. The main data collection methods were focus group discussions and my observations but I included interviews of the participants to triangulate the data. I interviewed the participants to confirm my observations and their views while in the group discussions.

Every time I went to collect data from the participants I revisited my research objectives to ensure that I obtained the correct data required in the study. I reflected on my observations after every session to ensure that I made informed decisions when the information was still fresh in my mind. At the base of this study to ensure the reliability of the results and the process of this project I ensured that we identify the problem together with the participants and work together towards a common goal. We aligned all the activities within their areas of study and as well as considering the field of practice.

4.9 Ethical issues

I consulted the school authorities for permission to conduct this study of all in our school about the DITTE students. According to (Mertler, 2008, p. 34), research ethics deals with the moral aspects of conducting research especially involving human being. She adds that consideration must be paid to how participants who are involved in the study are treated, the level of honesty and openness the participants afford and the manner in which results are reported. According

to me, I think when people work in groups they need guidelines on how they present their ideas to achieve the specified goals. Therefore, I facilitated the participant in generating rules and regulations to be followed especially during the group discussions to ensure that members catered for their views. Every group had a chairperson who moderated group discussions and they made minutes on a rotational basis to make all members responsible and active in the project.

All the participants were allowed the freedom to give their views through facilitated discussions but importantly, assured them that the information provided during the study would be confidential. According to (Berg, 2004, p. 197), this approach endorses consensual, democratic and the participatory strategies to encourage people to examine reflexively their problems or particular issues affecting their community. I ensured that I do not share what I had discussed with the other participants during interview, however, when realized that what I shared with the previous participants had an impact on the project, I brought views that would help the entire group.

According to (Ritchie, Lewis, Nicholls, & Ormston, 2013, p. 78), good ethical qualitative research means being able to anticipate what might arise but also respond to the unexpected working in a thoughtful and reflective way. I had selected the five students who had participated in the previous project but the school administration found it fitting for the all the interested students to participate. I aligned all the activities on the project to the curriculum to ensure that the participant benefit in the process of the project. I also considered the teachers' code of conduct that says, "Teachers shall not be allowed to involve students in activities that are for their benefit during the course of study". In response to that, I ensured that the participants greatly benefit, not to bridge this ethical close. During the discussions, we laid guidelines where everyone respected others views.

4.10 Summary of chapter four

I used the participatory action research in this study as a way to improve my student teachers training delivery skills through developing teaching aids. This helped me work together with my participants to discover many aspects of teacher education that I had never thought about. The study was done by 25 student teacher under the programme of Diploma in Instructor Technical Teacher Education (DITTE). These are in service teachers who come to upgrade their technical and pedagogical skills. Through this project, the participants integrated their experiences from the various background to come up with the teaching aids from abstract to

concrete objects. I collected data through qualitative methods which included observations, interviews and focus group discussions. Through observations, I obtained data I never expected to find from students of that category. Through focus group discussions I also acquired knowledge about the concepts the presented because this was done over a time using various methods. The interviews that were conducted helped to obtained data about individual participants which were vital and contributed a lot to the problem statement. The data was discussed following the themes that were developed during the data analysis. The reliability and validity of the study was ensured by considering the active participation of all the participants and aligning all the activities of the study to their curriculum. This study was guided by a conceptual framework which illustrated the relationship between key educational concepts: the pupils learning resources and need, the learning goals and objectives, the subject matter or content, methodology or learning process, pedagogical framework conditions and evaluations which are patent to the teaching and learning process.

Chapter five: Data presentation

5.0 Overview

In this chapter, I present the findings obtained from the study which aimed at improving student teacher's training delivery skills through developing teaching aids. These results represent the views of the participants, my reflections and other factors affecting the participant's pedagogical skills. During this study, I obtained data from the participants through focus group discussions, interviews and observations. This project was conducted in five phases which represent the activities from which the results were generated. The objectives of this study were translated into themes which are reflected in phases as well. The themes comprise of the importance of teaching aids during training delivery, challenges student teachers face when developing teaching aids, factors one must consider when developing teaching aids and the demonstration of developing teaching aids.



Figure 3: **Participants during problem identification.**

5.1.0 Phase one: Problem identification

This phase presents the process involved the identifying the problem of study with the participants. The fact that I was conducting an action research we identified the problem together with the participants. Therefore, I started this project by presenting to the participants

the summary of outcomes of the previous project. In that project, we worked together with the student to find out how to improve their training delivery skills using group work presentations. My main focus during the previous project was centered around the teacher ability to interact with the students, time management in content delivery, mastery of subject matter the student teacher's ability to develop and use teaching aids among others.

The results of that project indicated that through group work presentations the student teachers identified their weakness and worked hard to see that they improved their skills in training delivery. Consequently, they had improved in their confidence, the way they introduced the learning, their focus on the learners and communications skills.

However, they still failed to accomplish their lessons on time and many questions still arose from learners due to their level of preparations of the training session. Specifically, some of them never used teaching aids while others tried to use the teaching aids but their quality was inadequate. In this regard, we noted the gap and agreed to undertake a project on construction of teaching aids. Some of the gaps noted included lack of connection of the teaching aid to the subject matter, invisible information, unclear writing, insufficient information in the teaching aid and many others as shown in figure 2 below. As the whole group, we conceptualized the idea discussed the factors and challenges that surround the use of teaching aids. We noted that to develop teaching aids one needs to use both pedagogical and technical skills. We agreed that we were going to improve training delivery skills by developing teaching aids.

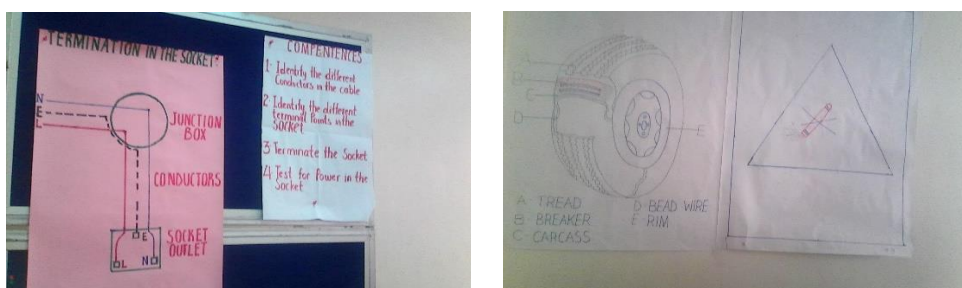


Figure 4: Some of the teaching aids used in the first project.

Picture 2 shows some of the substandard teaching aids that were prepared by the participants in the previous project. They are regarded as substandard because of the carry insufficient information, they are not clear, they were not connecting to the learning content, and besides they needed not to drawn on the charts among the many comments that highlighted by the participants.

We started by reviewing the some of the teaching aids participants used in the previous project where we observed that most of them were abstract in themselves, some participant said that these teaching aids confused the learners more, were not neatly prepared and some did not connect to the content of the lesson. After identifying the problem I started engaging the participants into the process of developing the teaching.

I guided the participants through the type of teaching aids they should produce. We agreed that the type of teaching aid produced should be in big enough to be used in a class of at least 20 students, it should be used for at least five topics from the curriculum and should be developed from locally available materials, it be able to show abstract content to concrete and promote learning achievement. Some participant wanted to make teaching aids using computers, others wanted to download videos from the internet. We later agreed that the computer facilities may not work because we may not have access to the computer lab and yet most of them did not have their own laptops. We later agreed to develop dynamic models.

After identifying the problem, they formed groups according to their areas of specialization. This aimed at helping the participants share common views and come up with teaching aids practically applicable in the classroom teaching and learning process. Some participants felt it was important to discuss what teaching aids are but we agreed as a group the since we had covered this in theory training, what was important the value attached to teaching aids in our own perspective. Then we specifically went on to discuss the importance of teaching aids.

5.1.1 Theme 1: Importance of teaching aids

Teaching aids motivate learners

During focus group discussion with the participants, in their different groups, they said teaching aids are important because they motivate the learner to learn. They said that if a teacher uses a teaching aids the students' interest in learning are high and they are encouraged to learn.

“One of the participants said that when you use an interesting teaching aid to teach some students do not even want to go for a short break while others after the lesson they want continue learning”

“Another participant added that some students come to class very early and want to sit in front where they think they will be able to see clearly as you demonstrate”

In my observations the use of teaching aids like pictures, videos and tape recorders supplement and complement the teacher training delivery and content. For example, when a teacher uses a video in class every student will always want to know what happens next, in so doing the students will be motivated to learn. In my own experience, I have had the chance to teach using videos while teaching safety in the workshop. I realized that all the students have something to tell after watching the video. This implies that when the learners are motivated to learn there is an increase in learning achievement.

Teaching aids make the teachers work easy

The study revealed that the participant recognized that using the teaching aids makes the teacher work easy in that the teacher does not need to labour so much explaining with many words.

They said that teaching aids spare the teachers energy by carrying some the content which the teacher can delivery through showing the learners.

“One participant said most especially when teaching scientific concepts to the learner when you do not have a teaching aid, you can labour a to make the students understand what you mean.”

“Another participant said sometimes when the students cannot understand they ask very many questions and you end up wasting a lot of time trying to explain something which can be easy if you had a teaching aid at the end of the day you cannot finish the lesson.”

I also observed in the previous lesson that when the teacher is teaching a concept the learners cannot get it; the teacher tends to for the students to just cram the concept. I also observed that when a teacher has no teaching aid he/ she tends to spend more time explaining a concept as a result going for extra time to accomplish the lesson.

As the Chinese saying goes that one picture represents a thousand words, having some of the information in form of pictures helps the teacher to deliver with less hassle. Teaching aids if well prepared engage learners into discussions, research and brainstorming. They help the teacher to be more of a facilitator than an authority.

They help the teacher concretize abstract information

During the discussion with the participants, they also expressed that teaching aids, help the teacher to concretize abstract concepts. They said that vocational education comprises of

concepts, systems and processes which do not exist in the learners' daily life, therefore explaining such concepts is very difficult without the use of teaching aids.

“One of the participants said that teaching aids help how some internal parts of systems work which even if you had the real object are difficult to show.”

“Participants in electrical and electronics said that some connections the way they appear in the wiring diagram is not the same way they appear in the reality when connected so using the teaching aids helps to show exactly how the connections appear in reality.”

My experience with these participants, they tried to develop teaching aids but they were still abstract in themselves. Therefore, in my view teaching aids should be in position to show the reality or the real life of what the teacher tries to explain to the learners such that the teacher and the learners have a common focus on these concepts.

Enable the learners to continue learning on their own after the lesson.

The participants revealed to me that teaching aids enable the learners to continue learning by themselves after the lesson has ended. They said that display of charts, models and pictures help the students to further learn and discover more information after the lesson.

“One of the participants of motor vehicle said that when you display teaching aids like those complicated internal systems of the vehicle, some students learn better when it's their peers explaining to them so if these teaching aids are displayed in the classroom students teach themselves. He adds that as the brighter students explain these concepts to peers they also become better in their knowledge mastery.”

“Some of the participants in civil and building focus group said that some participant when they look at the teaching aids like models of houses, designs to tiles, types of wall designs are displayed in class they develop their own ideas basing on what the teacher displayed in the classroom.”

Some students might not understand during the time of the lesson, so the display of these teaching aids enables the learners to study further during their free time. This caters for both the slow learners and the fast learners. The slow learners will further learn what they did not understand in class while the fast learner will want to read ahead of the teacher. Some learners through the teaching aids they develop their ideas that can lead them to innovations and creativity in their areas of specialization.

Make learning more permanent.

The participants expressed that the use of teaching aids puts the learners in the position of involving more than one sense in learning.

Some participants said when students participate in the demonstration using teaching aids even after some time when you evaluate them on that task they still remember just because they were able to do use more than one sense like see, touch and also hear as well.

With the use of teaching aids, the learner may be able to listen, touch, feel, see as well as taste. They gave examples of using the videos and simulations, this enables the learners to see, listen and touch. This helps to increase the learners' knowledge capacity than when they only listen.

5.1.2. Theme 2: challenges in developing teaching aids.

After discussing with the participants the importance of teaching aids, we went ahead to find the challenges they experience in developing teaching aids. At this point, I wanted to establish the reasons why they do not develop teaching aids yet they know they are important during the teaching and learning process. During our discussion, these were the challenges highlighted by the participants;

Lack of support from the supervisors.

In one of the focus groups, the participants said that their heads of department do not support them in terms of encouragement, provision and not even complements.

“One of the participants said that one day he was drawing a chart to use in class and one of his senior instructors asked me that you man are you lacking what to?”

Other participants attested that when they present requisitions for materials to be used for developing teaching aids their supervisors do not forward them to the administration. Therefore, this demoralizes them to developing teaching aids. Some participants said that their supervisors regard developing teaching aids a wastage of time and materials. In my understanding, the supervisors are meant to support their subordinates in all ways possible to ensure that all activities in the department are well accomplished. This inadequate support compromises quality most especially during training delivery of the instructors or teachers.

Big numbers of students.

Some participants said that in their courses they have very big numbers of students. One of the participants said it is difficult to develop teaching aids when you have a class of seventy students yet after every lesson you have assignments to mark. In my observations the number of students in some courses like electrical installation and motor vehicle mechanics are overwhelming but one of the ways to manage these big numbers is by developing teaching aids such that as the teacher you have the ability to engage the learners through active teaching and learning techniques like learning stations, group learning and peer learning.

Insufficient pedagogical orientation and training.

The participants revealed to me they started teaching before undergoing any teacher training or initiation into teaching. They presented their papers from their colleges and they were given the content to teach. Another participant said that before enrolling for this course he had no idea about developing teaching aids. He confessed that he had never used a teaching aid in his lesson and yet he taught applied science. In my own experience, however, much one may be skilled to be in position to teach well you need a pedagogical orientation to teach well. Therefore, regardless of any situation, it is the role of the instructor/ teacher to ensure that quality of training delivery is not compromised and the learners are providing with the sort of information and skills they require. The inability of the teacher to develop and use teaching aids may be easily noticed by learners and make the feel dissatisfied with poor quality teaching. In this case the contemporary technical and vocational teacher should select and develop appropriate teaching aids and harmonize them with the learner's developmental capacities and characteristics with the aim to develop vocational and technical capacities, skills and knowledge.

Meager payment of the teachers.

The participants in private institutions said that they are poorly paid as compared to those in government institutions. Therefore, the free time they get they look for another thing to do to supplement their low salaries. During the focus discussions, they also added that developing teaching aids was time consuming. Teachers in vocational training need to be reconsidered if quality training is to realize in the vocational institutions in Uganda. The salaries of teachers need to be increased for them to give good inputs in training.

Insufficient training materials and equipment.

During focus group discussions, the participants stressed that one of the biggest challenges that hinders them from developing teaching aids is insufficient materials and equipment in their training institutions. In my observations when I move around institutions I observed that most institutions have very few equipment and with no doubt the materials are scarce but this is the cry all over the country. In my interpretation, I know developing teaching aids requires materials, but these teachers have not taken the trouble to use even what others regard as waste. Therefore, much as developing teaching aids require materials and equipment, teachers should find ways of developing teaching aids by improvising.

Poor supervision of the curriculum implementation.

Another challenge the participants pointed out the implementation of the curriculum is not supervised.

“One of the participants said that as long as the learners receive notes after the lesson if they have not understood they read on their own.”

Another participant said their supervisors only look out for the lesson plans and the scheme of work. They never ask for the teaching aids. Therefore, it’s upon the teacher to choose whether to develop teaching aids or not. As a standard during the supervision of training delivery and curriculum coverage, teaching aids should be on the checklist such that the teacher also takes them as serious items that contribute to their training delivery.

Inadequate technical skills of the teachers.

During interviews with some of the participants, they indicated that they do not have the skills to develop teaching aids because at diploma level they are not exposed to much practical training.

“One of the participants said that some of these practical training in our fields we first interface with them here at Nakawa VTI.”

Most of the training at diploma level is theoretical. This implies that they have the theoretical knowledge but lack the skills that can enable them to develop teaching aids. The most unfortunate thing these teachers started teaching immediately after school which makes the challenge more pronounced.

Limited exposure to the world of work.

The participants also expressed that they rarely interface with the world of work to be updated with new trends in their fields. Therefore, they strictly depend on what is the curriculum. This limits their abilities to be creative and innovative in their own areas of study. In my view, teacher training programme should take these teachers for industrial training as a teacher to enable get a feel what is expected out is required of them to teach.

5.1.3 Theme 3: Factors student teacher should consider when developing teaching aids.

The first meeting I had with the participants laid a foundation on which the project was to be run. In their respective groups, they started planning how we were going to undertake the project. In this phase, the participant started coming up with ideas if the kind of projects they wanted to undertake. As part of the planning process, I asked the participant to discuss the factors they would consider in developing the teaching aids and in they listed the following:

Materials available

The participants expressed that before developing a teaching aid one must verify the materials available and the quality. They also said that you need to know the materials available, the ones to buy and what you can obtain from colleagues and the surrounding. In the production of any teaching aid, materials are very important to consider. There is also need to consider the alternatives in case a piece of metal is not available, one can choose to use wood. Therefore, in considering materials as a major factor, I think there is need to consider also alternatives in case I cannot find the one that you planned to use. Also much as it is the teacher to develop teaching aids, the teacher can involve other stakeholders like the students, colleagues and parents in the collection of materials to be used in the construction of the teaching aids.

The number of students

The participants also said it is important to consider the number of learners to use the teaching aid such that you take care of the size, display techniques and the position of the teaching aids in the classroom. They add if the number of students is big then the teacher should take care of the size of the teaching aid and may be think of the number of teaching aids to be used in the project. One of the participants said if the students are many they can be made to study in groups. In my view, these student teachers started thinking of alternative methods of how various teaching aids can be used in the class. Considering how a particular teaching aid is to

be used in class puts them in a better position to develop appropriate teaching aids to be used in the teaching and learning process which improves their ability to teach.

The age of the learners

The participants also expressed that when preparing teaching aid, it is good to consider the age of the learner. They said learners of different age have different things that attract and impress them. Like the kind of craft students, most of them are teenagers, they need teaching aids that require them to think and provoke their thinking to find out more about what they learn in class. They add that students like examples that relate to their daily life.

“One of the participants shared in the group discussion that he sent a video about what he was going to teach on the class Facebook account on a Sunday and had a class on Monday to his surprise by the time of the lesson all students had watched the video and narrating what they watched.” Therefore, it is very important to consider the age of the learner when developing teaching aids to cater for their interests and level of reasoning.”

In my observations, the youth are now obsessed with social media and they all struggle to ensure they are updated whatever happens. Therefore, consideration of their age and social life during the development of teaching aids help the teacher enhance their pedagogical skills.

Method of teaching

The participant said that one needs to consider the method of teaching and know when and how to use the teaching aid. They added that it is very important to have a variety of methods with which the teaching aid can be used. There times when you want to use a teaching aid to stimulate learning through engaging the learners into brainstorming or group work discussions, the teaching aid should take care of the method.

Learning goals and objectives

The participants expressed that it's very important to consider the learning goals and objectives because they are the drivers of the lesson. The teaching aid may be developed to address all the goals of the lesson emphasize a specific part of the lesson. When learners see their teacher with something in class they are eager to see what the teacher has for them. Therefore, when the teaching aid is not well planned it may disrupt the learner's attention instead.

The subject matter or content

The participants said that it is important to consider the content when developing the teaching aid because the content must be contained in the teaching aid. Some participants said that teaching aids are the point of reference of during content delivery. In my view, the teaching aid should be in position to help the teacher deliver relevant content to the learners so as to increase learning achievement.

5.2.0 Phase two: Project planning

5.2.1 Theme 4: Learning experiences acquired in developing teaching aids.

Group discussions

After laying a foundation of the problem statement, we started to plan how to implement the project of developing the teaching aids. In their focus group discussions, the deliberated on the type of project to come with. They came up with proposals for the projects they thought they would undertake. The proposals included the objectives, materials, the process of the project and the working drawings. They later presented their proposal to the entire class.

I interviewed them on the challenges they were facing at this stage and most of them said that to identify the right materials from which they would develop their project. Another group said they had challenges in choosing among the proposal they had. In another group, the members experience mixed minds with the others having divergent ideas. I asked them how they were able to solve their issues, they said that since this is group work we were able to discuss our suggestions until we came up with concrete solutions.

“One of the participants said off course we could not fail to come up with a solution when we are many.”

Another group agreed to combine their ideas to come up with one project said that they had challenges in choosing a project that was cheap and be developed from locally available material. My reflection on this is that they were able to put their ideas together to come up with possible areas of study in their respective fields. This would have been rather complicated if the participants were not to work in groups.

In these proposals, they suggested objectives on the project as per their learning outcomes as instructors’ curriculum and the craft curriculum. The participant under civil and building

selected the storied building, motor vehicle chose the valve mechanism, the electronics the light sensor and electricity chose the simple fun.

During the focus group discussion, I asked the participants why they chose that particular study. Motor vehicle group said they wanted to expose the operating system of an internal part of an engine through the dynamic model illustrating the valve mechanism.

Civil and building group said that their main objective was to motivate learners through showing them that after training they can be in position to construct such buildings. The electrical students wanted to show the students the effect of electromagnetism a concept commonly applied in electrical operations through a simple fun.

The electronics students showed the operation to a relay in the automatic systems. They developed work plans on how they thought they were to conduct the project. We conducted meetings to plan our next steps and to ensure that we were all on the same footing. In my observation, some of them were confused and did not know what to do when I told them that they come up with the proposal.

One of the participants said that for him he thought proposals are written for big projects, not for small projects like those done in the classroom. Actually, some of them came to me asking me for the format of the project proposal they should use. I observed that some students had a little knowledge about proposal writing and a number seemed lost about the idea. Those that had some ideas brought them out and shared with others.

During interviews with some of the participants, they confessed that they had never written a proposal or even participated in proposal writing. I observed intense discussion of ideas and sharing of knowledge. However, I felt some participants did not grasp the idea well so they would lose interest at the beginning of the project. When I reflected on this, I explained better the main essence of conducting this project and specifically indicated to them how they would benefit to ensure that they do not drop out of the projects before the project ended.

At this stage, I noted that learners benefit greatly from the interactions and exchange of ideas that result when knowledge, experiences and opinion on a particular subject are freely exchanged among the participants and the instructor. From interviews with the participants, about the proposal writing many of them confessed that was their first to write a proposal and others said that through the presentations they understood the project better.

Other participants said they had no interest but after the presentations, they felt they should participate. My observations were that it is important to consider the learner prior knowledge and when students learn in groups they reason better. When I interviewed some, of them how they found this stage they said at the beginning we thought it was very difficult but in actual sense it was not. I also observed that sometimes with the many ideas, they would go off track and find themselves in none issues. Therefore, during this period I guided them to remain focused. Therefore, much as they are mature students they need guidance to enable them keep focused. On the other hand, I would not be in position to suggest for these participants the projects, because they are the masters in their fields. Therefore, working as, a facilitator to their challenges and giving them room to solve their own challenges put them in a better position to find solutions to their own challenges.



Figure 5: Participants from Electrical and civil Engineering Department during their focus group discussion.

This figure shows the participants during group discussions, the participants had a chairperson who moderated the discussions with another person as a secretary to take care of their ideas. After the session, the secretary would read to the group the main points noted during the meeting.

5.3 Phase Three: Project development

Learning through skills demonstration

This stage involved the application of craft skills to make the products. The participants transferred the measurements from the working drawing to the real material. The practically got involved in cutting, drilling, facing, turning pieces on the lathe and many other activities. They made notes on every stage of the project. After the processes of material preparation, they assembled the pieces together and finished the products. In my observations, I saw that the participant exchanged a lot of ideas because every stage they reached they intervened to discuss how they were going to do it. At a certain stage in the group of civil and building, I saw the participants show each other the techniques of tool handling and bending some materials. In

cases where similar parts were to be prepared, they shared the tasks. In my thinking some of the participants were highly skilled while others were not. In my reflection, this somehow caused some delays at certain stages though they eventually moved to next stage. The quality of training is highly affected by the skills ability of the teacher. Therefore, I think when teachers practically participate in the skills demonstrations, they improve their abilities to teach similar skills to the learners.

My interviews on the challenges indicated that some groups' encountered challenges during material preparations it required them to use a machine equipment that was not in their area of specialization, another would all the time complained that the materials were not available. Some of the participants did not have the will to think of other alternatives if what they wanted was not available in another group they kept on changing their drawing to suit what they wanted. In my observations, this made the participants discuss intensively bringing all kinds of ideas. However, on the other side, some participants exhibited high innovation skills during the process to ensure that they accomplished the tasks before them. During the interviews with the participants about what they learned from the project, the students indicated that they learned many skills from their colleagues. They said they learned in terms of innovation and the way some of their friends handle tool and operated the equipment. Some of the participants were able to operate machines they had never operated before. They exclaimed that it was a great exercise for them. This stage changed most of their perceptions towards the development of teaching aids. In an interview still one of the participants said that in their group, they shared tasks and he was given the hardest task, he said that I fast refused but when I thought twice I decided to do it because as we did this project I thought of doing one of the same kind when I go back. This enabled them to systematically acquire skills to develop teaching aid and the skills they can also transfer to their learners. This implies that through developing teaching aids the participants acquired skills which in turn improves their training delivery skills.

I observed that the student whose background was from craft led the ones in who directly joined the diploma from the secondary school.

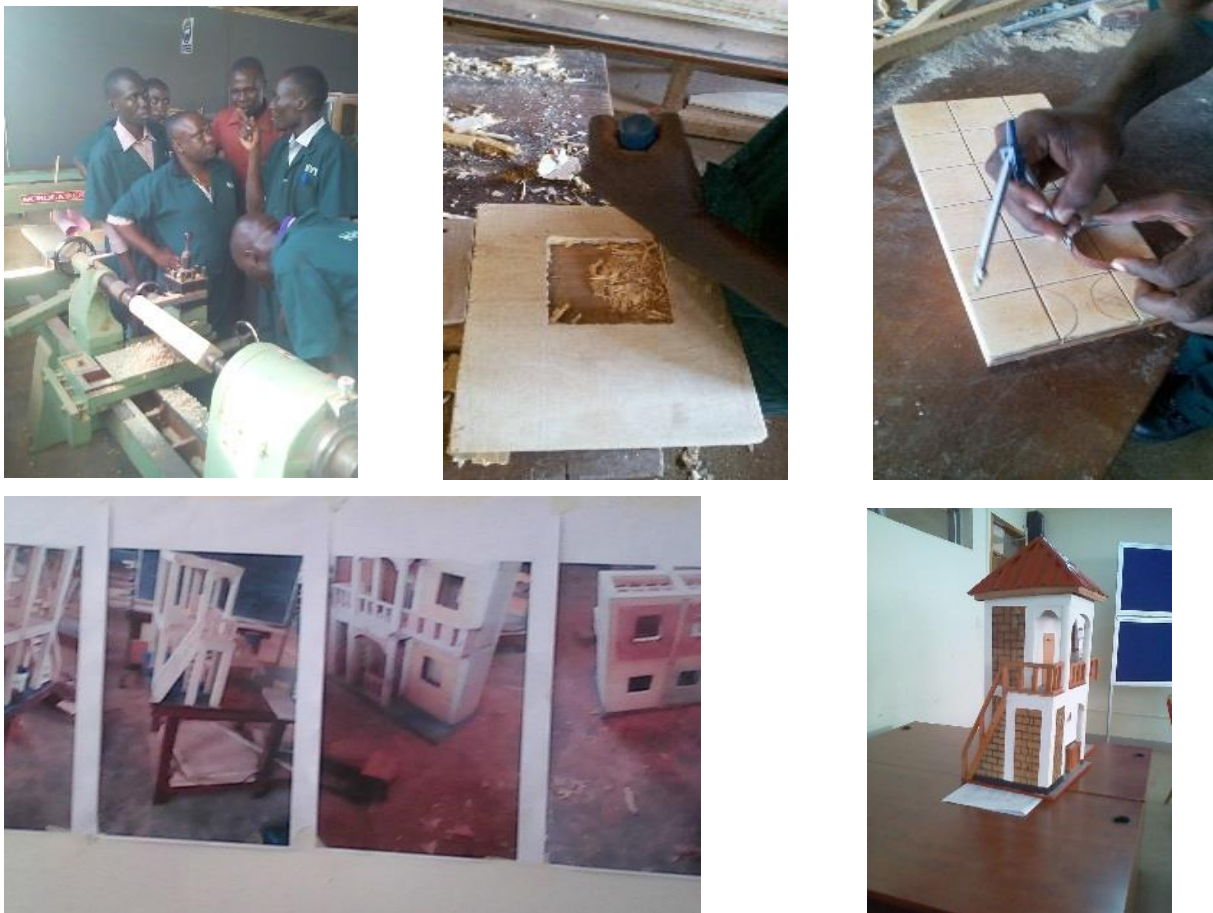


Figure 6 : The process development of one of the projects.

The Figure shows a group of photographs clustered to indicate the stages one of the projects underwent to reach the finished product. This was a project of civil and building students of a model of a storied building. This involved machining parts, cutting materials, designing wood, joining the pieces to mention but a few.

5.4 Phase Four: Project presentation

Learning through presentation

Presentation of the project started from the very beginning of the project during problem identification. This was done to check on the progress of the work and to ensure that all the participants were involved in the entire project. They presented their ideas to the entire class and in their respective groups, they discussed on which one they should undertake. They presented the proposal that contained drawings, the performance objectives and the materials and indicated the concept they had agreed on to develop. They indicated how the concept can be developed from abstract to concrete.

During the process development, they presented the process of their work indicating what they had so far done and what was remaining to accomplish the project. They indicated challenges they facing and how they expected to overcome them. They explained the objectives of their project. In terms of the instructor training programme and the craft curriculum. They showed how the teaching aid was to be used to address the objectives they had chosen.

My observation during the presentations was that the participants got more involved in the project and owned the work. I also observed that subsequent presentations the students made during their project further molded their presentation skills.

My interviews with the participants indicated that they felt that the project was educative; learning through project work is more beneficial than any other method, the project brought out the abstract to reality. I observed that the students during presentations they tried their level best to link the teaching aid to the competences that they had set from which the training content was developed.

During their presentations, the main emphasis was on the participant being able to link the teaching to the set performance objectives and content. My observation was that the participants had difficulty in writing appropriate action verbs on the performance objectives. This kept on improving as the project continued. The participants said they were very impressed with the project. After the final project was complete the participants chose specific topics the thought they could use the teaching aids prepare and demonstrated how they would use it to facilitate their training delivery process. In my view about this phase is the participant we able to acquire skills of cutting machine operation, tool handling and performance of various processes.



Figure 7: Participants exhibiting their project.

The Figure shows photographs of the participants the explaining their project and the concepts of their projects.

5.5 Evaluations of the project

Learning through exhibitions

This project was evaluated by the participants, the management, colleagues and me. This was evaluated against the set objectives of the project. This project aimed at improving the student teachers training delivery through developing teaching aids. The main objectives were to establish the challenges instructors face while in developing teaching aids, the factors they should consider when developing teaching aids, establish importance of teaching aids and the strategies that were to develop the teaching aids. The main target in doing all these is to ensure that at Nakawa VTI we pass out graduate instructors who are both technically and pedagogically skilled.

5.5.1 Set objectives

At the beginning of the project, we set objectives with the participants. During the interviews with the participants about the attainment of the objectives, we had set. Many of the said they felt we had achieved the objectives we had set. Another group said that what they made was beyond what they expected would be the output.

5.5.2 Learning processes involved

During the interviews, one of the participants commented that it was a great process but need that you have a self-drive you. He said that at times when you miss a session you may never catch up because you find when you colleagues have moved to the next step.

5.5.3 Quality of products

From comment made by the participants, the guests and fellow teachers all the products at least scored excellent. Given the innovations and creativity, the participants attached to their products.



Figure 8: Some of the products made by the participants.

The figure shows some of the products made by the participants during the project.

5.5.4 Materials used

The products were made mostly from papers, metal off cuts, pieces of wood, spare parts from scrap. These were very cheap that even instructors from very remote institutions where material are very scarce could afford making such items.



Figure 9: Participants presenting their projects to the staff and other visitors.

5.6 Summary of chapter five

In summary, this chapter informed my readers of the presentation and interpretations of the results obtained during the study that aimed at improving the student-teacher training delivery skills through developing the teaching aids. To achieve this project was broken down into five phases and these were:

Phase 1: Problem identification

This study was an action research in which we worked with the participants to establish the problem of the study. This was through analysis and discussion of the previous project. In this phase, I presented the results obtained from the three themes of the project as a foundation to create more understating od the problem under study.

We discussed theme 1 which was looking at the importance of teaching aids during training delivery, the challenges the participant face in developing teaching aids and the factors they should consider when developing teaching. These results were obtained through group discussions with the participants.

Phase 2: Planning

This phase involved the planning of the project after the participants understanding the problem the need to find the solution. They developed project proposals which included the objectives, the material and the drawings. They set guidelines and chose their group leaders. At this stage, we started looking at theme four of the study which was assessing the learning experiences the participants went through during the development of the project. Developing the proposal was not an easy task for the participants but this was possible because participants put their minds together through sharing views and managed to come up with these proposals. The student teacher learned how to develop proposals through sharing ideas and on other hand they can employ group learning during training delivery and the learners are able to share knowledge which can enhance their training delivery.

Phase 3: Product developments

The phase presents the participants' story of the shared skills in practically developing the teaching aids. It explains what the teachers can learn from this experience and include their training delivery.

Phase 4: Presentations

The participants over several occasions presented their work to their groups members to the entire class. They received feedback from colleagues and kept on refining until they finally got the best product.

Phase 5: Evaluation

The project was crowned by an exhibition where the participants received from various departments and the administrators. They received feedback. They evaluated their project in terms of the goals and objectives, quality and materials.

In the next chapter I will be discussing the results but specifically considering the themes. These themes include:

Theme 1. The importance of using teaching aids.

The results from the participants revealed that they consider that teaching aids motivate learners to learn, make teacher work easy, help teachers concretizes abstract concepts, promote learning and make learning permanent.

Theme 2. Challenges the participants experience in developing teaching aids.

Under this theme, the participants expressed that the challenges the encounter during developing teaching aid as lack of support from the supervisors, big numbers of students, insufficient materials, inadequate pedagogical orientation, meager pay, Poor supervision of the curriculum, lack of exposure of the participant to the world of work and insufficient technical skills.

Theme 3: Factors the participant should consider when developing teaching aids.

This study revealed the participants considered that the availability of materials, number of students, method of teaching, learning goals and objectives and subject matter are the main factors to be considered when developing teaching aids.

Theme 4: Learning experiences acquired from developing the teaching aids.

In this theme, the participants expressed that they learned most through group discussions, demonstrations and presentations and exhibitions.

Group learning

Through group discussions, the participants attested that they learned how to develop proposals, and also further understood the value of teaching aids during the teaching and learning process. They also learned how to use group discussion as a method of teaching and learning process. They gained the skills of how to deal with group dynamics and this strengthens their abilities as a teacher and puts them to manage the learners during the teaching and learning process.

Demonstration

During the demonstration of the production of the project they learned new skills, they can implement during training delivery. Those teachers who had less skills acquired more skills and by the end of the project, this put them in a better position than ever before. As a teacher at they also got know several ways of performing certain tasks. They also understood that students if given challenging tasks they can learn from one another.

Micro teaching/ team teaching

The participants further indicated that through the several numbers of presentations they made they were able to improve their communications skills which are important in the training delivery.

Exhibition

During the exhibitions, the participants received feedback about the projects they had developed. As a teacher, one of the ways that improve you training delivery is your ability to receive feedback which may be positive or negative. This helped them to further improve on their skills in the teaching and learning process.

Considering at this project at international perspective, borrowing a leaf from the European Centre for the development (Cedefop) study of curriculum reform in Europe (2012) the introduction of competence-based approaches to design of curriculum does not lead to the expected changes in outcomes for learners if teacher students fail to change their teaching and learning behavior, and that curriculum reform can lead to perverse consequences. The follow up study by Cedefop describes how teachers interpret and implement written curriculum and show that if teachers are effectively trained and supported this can lead to innovations in pedagogy which are associated with improved outcomes for learners(UNESCO, 2014, p. 21). Through carrying out this project, I felt that this is one of the best ways student teachers should be trained. During the group work I observed a lot of sharing of views and skills between the participants. With the guidance which I gave them, they gained skills they would not be able to gain if I followed their modular curriculum. At the end of the project, the student teachers appreciated their efforts regarding the challenges they experienced as minor compared to what they had achieved through the entire process. These teachers will be in position to implement group discussions, demonstrations, project based learning and problem based learning in their training delivery.

The data presented therefore answered four objectives which were establishing the importance of teaching aids, establishing challenges the participants encounter when developing teaching aids, determining the factors they should consider when developing teaching aids and the exploring the learning experiences acquired through developing teaching aids. The results highlighted were obtained through participatory activities which involved problem identification, planning, development, presentations and evaluation.

Therefore, in the next chapter, we shall discuss these results according to the themes as indicated in the summary.

Chapter six: Discussion

6.0 Overview

In this chapter, I present my discussion of the results I obtained from the study that aimed at improving the training delivery skills of student teachers through developing teaching aids. The problem statement was; **How can developing teaching aids improve training delivery skills of student teachers?** To answer this problem, my discussion was guided by four objectives which were translated into themes as the importance of using teaching aids in training delivery, the challenges the student teachers face in developing teaching aids, the factors they consider in developing teaching aids and the learning experiences acquired from demonstrating the development of teaching aids. The results under discussion were obtained from focus group discussions, interviews and participant observations. In this discussion and analysis, I basically bring to you my perceptions, reflections and views of other scholars in respect to the problem under study. I shall discuss my results as presented in the summary of chapter five.

6.1 Importance of teaching aids during teaching and learning process.

Under this theme, I will discuss the following points as highlighted in the summary of the findings. The results from the participants revealed that they consider that teaching aids are important because of they, motivate learners to learn, make teacher work easy, help teachers concretizes abstract concepts, promote learning and make learning permanent.

Motivate learners to learn

Results from this study reveal that participants indicated that teaching aids are important because they motivate the learner to learn. They said that if a teacher uses a teaching aids the students' interest in learning are high and they are encouraged to learn. Teaching aids raise the learners interest to learn, think, imagine and feel that their questions are answered. According to (Balim Inel & Eureka, 2008) cited in (Birisci & Metin, 2010, p. 3) in their study about developing instructional materials using the concept cartoon, they contend that visual cartoon are seen as tool that allows teachers to gain student attention, visually focus them on lesson and create an environment where students can construct or reconstruct their views on a certain topic. Reflecting on the didactical model from which we draw the conceptual framework of this study,

the teaching aids are learning resources which should take care of their needs and promote learning.

Teaching aids make the teachers work easy.

The study revealed that the participants recognized that using the teaching aids makes the teacher work easy in that the teacher does not need to labour so much explaining with many words. They said that teaching aids spare the teachers energy by carrying some the content which the teacher can deliver through showing the learners. In my view, this implied that instead of the teacher laboring to explain what is invisible he/ she can easily do so by showing it through a picture, a model, or a video. On the other hand, the use of teaching aid can also create room for a teacher to use other forms of teaching where the learners are more involved in learning than the teacher. According to (E. N. Elom, 2014) cited (Onah, 2005) learning material is any device with instructional content or function that can be used for teaching and learning process. He further illustrates that these may include magazines, charts, pictures etc. These materials supplement and complement the teachers work.

In the same perspective (Stefanc, 2012) cited in Saglam (2011) further explains that Teaching materials provide a great deal of convenience of teacher's ability to convey a message to students in an accurate, proper, clear and understandable manner in making an abstract knowledge concrete and in enabling students to comprehend complex ideas through simplification. Basing on this description of teaching aids the have the ability to carry learning content make the better achievement of the set goal and objectives.

As the Chinese saying goes that one picture represents a thousand words, having some of the information in form of pictures helps the teacher to deliver with less hassle. They help the teacher to be more of a facilitator than an authority. Teaching aids can carry learning content and hence facilitate the teaching and learning process. This implies that instructional material affects the method of teaching by facilitating learning and contribute to the better results which are the goal and objectives of learning. Therefore, through a teacher using teaching aids, it can improve his/her ability to deliver. Using the teaching aid helps the teacher improve to systematically by ensuring that the teaching aid developed matches with the factors influencing learning, and technical skills by practically getting involved. This implies that from the what the student teachers describe and the reflection of our didactical model the teaching aid has a close connection to the content as wells as the method of teaching hence the training delivery.

Help the teacher concretize abstract concepts.

In the discussion with the participants, they also expressed that teaching aids, help the teacher to concretize abstract concepts. They said that vocational education comprises of concepts, systems and processes do not exist in the learners' daily life, therefore explaining such concepts is very difficult without the use of teaching aids. Teaching aids can be used show internal systems which if explained without teaching aids makes learner understand the concept differently and have different imaginations from what the teacher explains. My experience with the student is that if they do not understand what the teacher explains they completely switch off from the lesson and others start to regard that topic as very difficult to understand.

According to Edgar Dale, 2001 cited in (Eshetu, 2015, p. 15) audiovisual materials supply a concrete basis for conceptual thinking, they give rise to meaningful concepts enriched by meaningful associations, hence they offer the best antidote for the disease of verbalism. My experience with these participants, they tried to develop teaching aids but they were still abstract in themselves. Therefore, in my view teaching aids should be in position to show the reality or the real life of what the teacher tries to explain to the learners such that the teacher and the learners have a common focus on these concepts.

Therefore, it is justifiable that teachers especially in vocational training that need to use these teaching aids. First and foremost, vocational training should result in an individual's getting into the practice of his/her training. Talking about systems and operations without showing details makes the learning the lesson sound impossible and boring at the same time. This, therefore, implies that teachers should improve their ways of teaching by developing teaching aids that promote learning of vocational knowledge and skills. In the same perspective (Nasaza, 2015, p. 12), noted that it's the role of the teacher to harness the thoughts of the learner so that they focus their attention on the training programme and get as much benefit from it as possible.

Teaching aids promote learning and make learning permanent.

The participants expressed that the use of teaching aids puts the learners in the position of involving more than one sense in learning. With the use of teaching aids, the learner may be able to listen, touch, feel, see as well as taste. They gave examples of using the video and simulations, this enables the learners to see, listen and touch. According to (Oladejo et al., 2011, p. 116), instructional materials are in classes such as audio or aural, visual, or audiovisual. They further elaborate that audio instructional materials refer to those devices that make use of the sense of hearing only such as radio, audio tapes recorders and television. Visual instructional

materials are those that appeal to the sense of sight only such as chalkboards, charts, and slide and filmstrips. Audiovisual instructional materials appeal to both hearing and seeing such as television, motion pictures and the computer. Therefore, teaching aids are any materials that teacher can use to during teaching to facilitate learning process. This was also observed by Carroll 1968 cited in (Levin & Long, 1981, p. 32) the use of teaching aids to enhance learning by making use of a variety of senses. When learners involve more than one sense in learning the learned content becomes permanent.

Enable the learners to continue learning on their own after the lesson.

The participants revealed to me that teaching aids enable the learners to continue learning by themselves after the lesson has ended. They said that the display of charts, models and pictures help the students to further learn and discover more information after the lesson. According to Lynch 1997 cited in (Kerka, 1997, p. 5) the essential role of vocational education is to facilitate construction of knowledge through experiential contextual and social methods in real world environments. Some students might not understand during the time of the lesson, so the display of these teaching aids enables the learners to study further during their free time. This caters for both the slow learners and the fast learners. The slow learners will further learn what they did not understand in class while the fast learner will want to read ahead of the teacher. Some learners through the teaching aids they develop their ideas that can lead them to innovations and creativity in their areas of specialization.

Therefore, the teaching aids as learning resources have to bear to the educational content or subject matter, the learning process or methodology, the goals and objective as well as the pedagogical framework conditions and conditions as illustrated in the didactical model.

6.2 Challenges instructors face when developing teaching aids

Lack of support from the supervisors

The participants showed that their heads of department do not support them in terms of encouragement, provision and not even complements. Some of them add that their supervisors and seniors regard developing teaching aids as wastage of time and material. Other participants attested that when they present requisitions for materials to be used for developing teaching aids their supervisors do not forward them to the administration. Therefore, this demoralizes them to develop teaching aids. In my understanding, the supervisors are meant to support their subordinates in all ways possible to ensure that all activities in the department are well

accomplished. This inadequate support compromises quality most especially during training delivery of the instructors or teachers. According to African Union (Union, 2007, p. 10), the delivery quality TVET is also linked to the building of strong, professional management and leadership capacity as well as a suitable qualifications framework and monitoring to drive the entire system.

Big numbers of students

Findings indicated that some participants are overwhelmed by the big numbers of students in who enrolls in the courses they teach. They go on to say that it is difficult to develop teaching aids when you have a class of seventy students when every lesson you have assignments to mark. In my observations the number of students in some courses like electrical installation and motor vehicle mechanics is overwhelming. In most case when constructing classroom and workshops administrators consider a certain number of students that fit in that facility. When the numbers grow they do not consider the strategies to make the learning better even with the increased numbers. Therefore, the burden is solely left to the teacher in the class to sort themselves. According to (Ramsden, 2003, p. 9), to achieve change in the teaching and learning we ought rather look at carefully at the environment in which a teacher and the system of ideas which that environment represents. Therefore, a teacher that operates such conditions finds it difficult to conformably implement training delivery.

Insufficient pedagogical orientation and training

The participants revealed to me they started teaching before undergoing any teacher training or initiation into teaching. They presented their papers from their colleges and they were given the content to teach. One of the participants added that before enrolling for this course he had no idea about developing teaching aids. Some participants revealed to me that they had never used a teaching aid in his lesson and yet they taught applied science. In my experience, it's very important for the teachers to undergo proper professional training so that they understand why certain things happen in teaching and learning and how they can deal with them. TISSA 2013 indicated that the BTVET sector also suffers from qualification issues among its teaching staff. A massive 30 percent of the estimated 5,000 instructors have minimum requirements to teach (40 per cent in public and 21percent in private institutions); this translated into 3,500 instructors in need of upgrading training especially incompetence related to occupational skills, industrial experience and instructional skills. During enrollment of these teachers, we receive

overwhelmingly many applicants from which we admit about five percent that meet the criteria. Teachers in such a state it a nightmare for them to think of developing teaching aids because they do not have the science behind the development of teaching aids.

One time we received a highly skilled technician and because of the experience he had, the head of department requested him to teach the students some skills on a part-time basis. He taught all the content of the three months in one week. In my own view, however, much one may be skilled to be in position to teach well you need a pedagogical orientation to teach well. Therefore, regardless of any situation, it is the role of the instructor/ teacher to ensure that quality of training delivery is not compromised and the learners are providing with the sort of information and skills they require. The inability of the teacher to develop and use teaching aids may be easily noticed by learners and make them feel dissatisfied with the poor quality of teaching. In this case, the contemporary technical and vocational teacher should select and develop appropriate teaching aids and harmonize them with the learner's developmental capacities and characteristics with the aim to develop vocational and technical capacities, skills and knowledge.

Meager payment of the teachers

The participants in private institutions said that they are poorly paid as compared to those in government institutions. Therefore, during their free time, they look for other income to supplements their low salaries. During the focus discussions, they also added that developing teaching aids was time consuming. Teachers in vocational training need to be reconsidered if quality training is to realize in the vocational institutions in Uganda. The salaries of teachers need to be increased for them to give good inputs in training. The (TISSA, 2013, p. 67) cited (MoES 2012) report which analyzed the challenges in vocational educations indicated that little government funding is one of the biggest challenges upon which most problems revolve.

Insufficient training materials and equipment.

Findings indicated that the participants' biggest challenges that hinder them from developing teaching aids is insufficient materials and equipment in their training institutions. In my observations when I move around institutions I observed that most institutions have very few equipment and with no doubt the materials are scarce and this is the cry all over the country. According to Nalumansi et, al 2002 cited in (Arinaitwe, 2011, p. 99), BTVET is relatively expensive in addition that even the government cannot afford to equip training institutions. In my interpretation, I know developing teaching aids requires materials, but these teachers have

not taken the trouble to use even what others regard as waste. Therefore, much as developing teaching aids require materials and equipment, teachers should find ways of developing teaching aids by improvising.

Poor supervision of the curriculum implementation

The participants pointed out the implementation of the curriculum is not supervised. One of the participants said that as long as the learners receive notes after the lesson if they have not understood they read on their own. Another participant said their supervisors only look out for the lesson plans and the schemes of work. They never ask for the teaching aids. Therefore, it's upon the teacher to choose whether to develop teaching aids or not. As a standard during the supervision of training delivery and curriculum coverage, teaching aids should be on the checklist such that the teacher also takes them as serious items that contribute to their training delivery. Actually according to my observations most teachers only use teaching aids when they are still studying during school practice.

According to (Donaldson & Peske 2010) cited in (Malunda et al., 2016, p. 122) said failure of school administrators to conduct formative evaluation and lack of competences and skills to effectively appraise and provide quality evaluation of teachers that could inform professional growth was responsible for the ineffective teaching of several teachers. Most of the heads of schools were once classroom teachers but since they take long to visit the classroom to understand the conditions under which the students learn they tend to become obsolete in issues of teaching and learning process. Another reason I think this happens is that they tend to concentrate more of national results and wait to blame those teachers when the students do not perform well.

As a result, (Okou & Officer, 2002, p. 4) noted that the education system is still dominated by examinations at all levels without provision for assessment of other objectives of the curriculum such as the promotion of moral values, practical skills and participation of in social and cultural activities. Vocational teachers have ensured that they strictly follow the curriculum to implement training. Another issue I observed about the curriculum is the emphasizes scientific concepts whose applications are not translated into the training. That is the reasons why the participants say “it is the teacher to develop the teaching aid or not.” According to (Baryamureeba & Nahamya, 2014, p. 21), The curriculum in vocational training institutions in Uganda continues to have limited hands on training. This is attributed to the fixed and structured nature of programmes and the expenses involved in offering practical training.

Inadequate technical skills of the teachers

During interviews with some of the participants, they indicated that they do not have the skills to develop teaching aids because at diploma level they are not exposed to much practical training. One of the participants said that some of these practical training in our fields we first interface with them here at Nakawa VTI. Most of the training at diploma level is theoretical. This implies that they have the theoretical knowledge but lack the skills that can enable them to develop teaching aids. The most unfortunate thing these teachers started teaching immediately after school which makes the challenge more pronounced.

Development of teaching aids does not require only pedagogical skills actually more technical skills are required. This may require operation of some machines, performance of some tasks to come up with appropriate and deserving teaching aid. This challenge, therefore, results into a teacher being less creative and innovative and this affects the quality of teaching. Gone are the days when a teacher would come to class with only notes lecture and think he/ she had delivered the lesson. The demand of learning most especially in vocational education have changed. According to (UNESCO-UNEVOC, 2006, p. 2), TVET is referred to as a range of experiences that are relevant for employability, portability of competences and qualification and acquisition of skills, decent work opportunities and lifelong learning in the related world of work. This concept embraces the importance of innovation, competitiveness, productivity and growth of the economy. Considering that, innovation creates a new approach to education and training to meet the demand of new skills. Therefore, a teacher with little technical skills will definitely not be creative, innovative and productive as well.

Limited exposure to the world of work

The participants also expressed that they rarely interface with the world of work to be updated with new trends in their fields. Therefore, they strictly depend on the curriculum. To produce teaching aids may require relating the training content with the world of work. This limits their abilities to be creative and innovative in their own areas of study. Nalumansi et al 2002 cited in (Baryamureeba & Nahamya, 2014, p. 21) in their survey they also observed that BTVET institutions lack trained teachers or instructors with up to date technologies and appropriate vocational pedagogical skills that can enable them to equip learners with the adequate knowledge required by the world of work. In my view, teacher training programmes should take these teachers for industrial training as a teacher to enable get a feel what is expected out of them to teach. According to (NICHE, 2010, p. 5), most of the educators in developing

countries Uganda inclusive, do not have direct contact with the labour market (though short term) periodic attachments which would modernize and upgrade their practical knowledge on the actual technologies being employed in their work as well as offer insight into practical needs of the labour market. When teachers enter into training institutions they are disconnected from the world of work implying that they continue doing similar things all their lives according to the curriculum content. This makes them masters in the curriculum content but at the same time locks their ability to think outside the box in their areas of specialization. In the same perspective (Grijpstra & Papier, 2014, p. 11) contend that quality of vocational teacher education determines not just the quality of the educated skilled workforce but also the productivity and capability to come up with innovative resources for the well-being of the society.

According to (ILO, 2010) innovations also require very close contact with enterprises and other stakeholders including employment services, labour markets institutions and social partners with other vocational teachers and of course with TVET students for the purpose of effective teaching/ training, career guidance and more.

6.3 Factors to consider when developing teaching aids

Below are the factors the participants considered as key when developing teaching aids.

Materials available

The participants expressed that before developing a teaching aid one must verify the materials available and the quality. They also said one needs to find out materials available, the ones to buy and the ones you can obtain from colleagues and the surroundings. In the production of any teaching aid, materials are very important to consider. There is also need to consider the alternatives in case a piece of metal is not available, one can choose to use wood. Therefore, in considering materials as a major factor, I think there is need to consider also alternatives in case someone cannot find the one that you planned to use. Also much as it is the teacher to develop teaching aids, the teacher can involve other stakeholders like the students, colleagues and parents in the collection of materials to be used in the construction of the teaching aids.

According to (Dick et al., 2001) the design to develop original material will depend on the type of learning, the availability of existing materials and development resources available. Indeed, the student teachers capitalized the issue of availability of materials and some of them saying it

is the reason why they cannot develop teaching aids. This is not the only factor the another factor was the students were exposed to only one method of teaching which is teacher centered.

The number of students

The participants also said it is important to consider the number of learners to use the teaching aid such that you take care of the size, display techniques and the position of the teaching aids in the classroom. During the used of the teaching aids, all the learners should be in position to clearly see or used the teaching aids. If the numbers are of learners is big and the teaching aid is too small during its use it may become an obstacle to learning instead to a facility of learning. According to (Otaala et al., 2013, p. 110) large class sizes, and inadequate instructional materials impact negatively on teachers and lecturer's methods of teaching. Therefore, when the number of students increases the teachers need to develop appropriate strategies during planning to take care of the number of students they have in their classes or workshops depending on the lesson.

The age of the learners

The participants also expressed that when preparing teaching aid, it is good to consider the age of the learner. They said learners of different age have different things that attract and impress them. Like the kind of craft students most of them are teenagers, they need teaching aids that require them to think and provoke them to find out more about what they learn in class. They add that students like examples that relate to their daily life. (McCrone et al., 2015) opine that effective vocational teaching and learning is most effective when teacher and trainers acknowledge that each learner is different and it's important to meet the needs of diverse range of learners in order to prepare them for the workplace. Therefore, it is very important to consider the age of the learner when developing teaching aids to cater for their interests and level of reasoning. (Ohio State Univ, 1977) explains that the design of teaching aids must consider factors such as the abilities of learners and their needs; the variation is student learning styles and the visual aspect of learners. It is the teacher that knows what he/she may want his students to learn at a given time and how this content should be delivered.

Method of teaching

The participant said that one needs to consider the method of teaching and know when and how to use the teaching aid. They added that it is very important to have a variety of methods with which the teaching aid can be used. There times when you want to use a teaching aid to stimulate

learning through engaging the learners into brainstorming or group work discussions, the teaching aid should take care of the method. (Weston & Cranton, 1986) explains that selection and use of instructional material depends on the number of factors: the instructional technique or method in which the instructional material is to be included, the rate at which the information is to be presented to the learner, size of group the instructional material and the potential of the material to create interactive learning. They further state that out of necessity, such variables as the size of the class, physical facilities, availability of resources and material general student characteristics (such as previous learning and age), and to some extent, the subject area is usually considered. This study further revealed that the teacher's attitude as a key factor that must be taken into account.

Learning goals and objectives

The participants expressed that it is very important to consider the learning goals and objectives because they are the drivers of the lesson. The teaching aid may be developed to address all the goals of the lesson or emphasize a specific part in the lesson. When learners see their teacher carrying something to class they are eager to see what the teacher has for them. Therefore, when the teaching aid is not well planned it may disrupt the learner's attention instead. (Levin & Long, 1981, p. 27) objectives guide the teacher in thinking about and planning learning experiences and help in selecting and developing methods and materials that are likely to produce intended learning. In my view, it is very important to consider learning goals and objectives because they are the key drives of the teaching and learning process. Therefore, since teaching aids are meant to facilitate learning, it is important to consider then during the development of teaching aids.

The subject matter or content

The participants said that it is important to consider the content when developing the teaching aid because the content must be contained in the teaching aid. Some participants said that teaching aids are the point of reference during content delivery. In my view, the teaching aid should be in position to help the teacher deliver relevant content to the learners so as to increase learning achievement. According to (Almeida, Behrman, & Robalino, 2012, p. 242), knowing content is crucial to being inventive worthwhile opportunities for learning that take learners experiences, interests and needs into account.

6.4 Theme 4: Learning experiences acquired through demonstrating the development of teaching aids.

This theme sought to find the learning activities and method that would improve the teachers training delivery skills through developing the teaching aid.

Group learning

Findings in this study indicated that through group discussions the participants attested that they learned how to develop proposals, and also further understood the value of teaching aids during the teaching and learning process. They also learned how to use group discussion as a method of the teaching and learning process. They gained the skills of how to deal with group dynamics and this strengthens their abilities as a teacher and puts them to manage the learners during the teaching and learning process.

Vavrus and Bartlett (2013) states that the primary role of the teacher is to engage students in inductive hands on activities, group work and reflection to promote critical thinking, self-evaluation and integration of knowledge across tradition subject area. Through deliberations, the student teachers exchanged their views and come up with a proposal which would have been hard if I had told them to do it individually. Therefore, sharing the problem simplified the task. According to Harwell (2003, p. 4), when teachers take time to interact, they study together, discuss teaching and help one another put into practice new skills and strategies, they grow and their students' behavior improve accordingly.

Demonstration

During the demonstration of the production of the project they learned new skills, they can implement during training delivery. Those teachers who had less skills acquired more skills and by the end of the project, this put them in a better position than ever before. As teachers they also got to know several ways of performing certain tasks. They also understood that students if given challenging tasks they can learn from one another. According to (Nsamenang & Tschombe, 2011, p. 16), student teachers or teachers of the 21st century are being called to shift from a product oriented teacher into a process focused facilitator, equipped to conduct classroom and other types of research as well as incite learners curiosity and zeal to discovery learning.

Taking the participants through the step by step process of demonstration of producing the teaching helped the participants to build their ideas process of developing the teaching aid.

Looking at this process the participants interfaced with a lot of learning activities which enriched their experiences as teachers. In the same perspective, (Schröder, 2013, p. 12) contends that the development of competences embedded in an action- process, enhanced by problem solving and enriched by demand oriented inputs all of which are accompanied by increasing strivings towards innovation, effectiveness, efficiency and excellence. This implies that if they were able to acknowledge that that through demonstrations the were able to share and learn from each other then it is important that they do the same when they return at their institutions. In my own view, this arrangement, the teacher who acquired new skills through this project has the potential to use the same method to enable the learners acquire skills through the same process. Active teaching and learning aims to explain the concept and give teachers the opportunities, simulations and tools to change their teaching practice and promote the role of students in active learning (Impact, 2015).

Micro teaching/ team teaching

The participants further indicated that through the several numbers of presentations they made they were able to improve their communications skills which are important in the training delivery. According to (Pia Cort et al., 2004, p. 20), today teachers need to work in teams, they have to be able to guide trainees more than just knowledge and they must be able to plan, describe and reflect on their own teaching practice. There are many skills teachers from the same field can learn from each other if they work together. During this project teacher learned from each other how to convey information, organize learning content, manage the lesson and may other things during the presentation of their projects. Good communication skills are learned through repeated practice. According to (Falchikov, 2013, p. 16), oral presentations involve the students working individually or in small groups, typically research topic and present their work to peers. According to my experience, working as a team has help in solving some problems that may seem complicated if handled by one teacher.

Exhibition

During the exhibitions, the participants received feedback about the projects they had developed. As a teacher, one of the ways that improve your training delivery is your ability to receive feedback which may be positive or negative. This helped them to further improve on their skills in the teaching and learning process. Falchikov (2013, p. 10) cited (Nevo`1998 e.g.) explains that exhibitions may be performances of artistic or technical skills or demonstrations of products of learning. According to Nevo` example students were actively involved in the

assessment process being required to provide evidence of their ability to use their ability to use knowledge. She cited (Kelnoski 1995) who adds that exhibitions include a list of methods likely to facilitate self-evaluation and self-development.

According to what I observed in this project repeated explanations made by the participants to the colleagues, the visitors and other guests we hosted on that day of the exhibition, the participants gained the ability to receive feedback, mastery of the knowledge content in the projected and gained knowledge from views given from other participants. This contributes to training delivery skills in the sense that the participants improved their communication skills, systematic follow up of content and receiving feedback and how to use that feedback to facilitate training delivery.

6.5 Summary of chapter Six

The challenges expressed by the instructors in the study indicate these instructors lack even the basic skills. They lack both the technical and pedagogical skills and besides they work in an environment which restricts their abilities to learn.

Considering Hiim Hilde didactical model that outlines that main factors to consider are the learner need and the learning resources, the goals and objectives, the subject matter or the content, the pedagogical conditions and framework, teaching methods and evaluation. Through this consideration, the participants developed teaching aids that created a meaningful impact on the teaching and the learning process which would result in increased learning achievement. Therefore, in any teaching and learning process the alignment of these key factors can lead to improved quality of training delivery.

The development of teaching aids made me observe the number of ways through which teachers learn. Sometimes the student teachers are taught like craft students. They end up acquiring skills they cannot in turn, transmit to others. According to me, every module in teacher training should target into towards molding the teacher's ability to teach. These participants they were exposed to a learning style they had never imagined yield such results. The participants learned through the exchange of views, knowledge, and skills. They learned through the demonstration, discussions and team work. On the other hand, as teachers in the making, they learned several methods of teaching that they can practice when they go back to their institutions. Besides

learning other methods of teaching they also improved their technical skills which would be able to teach their students.

This project was successfully done and the target set were eventually achieved. This project started by identifying a problem, setting objectives and working towards achieving the set problem together with the participants. This project addressed both the pedagogical and the technical skills, which is the major requirement for quality vocational teachers. (Harwell, 2003, p. 4) said that the content for professional development should center on the subject matter, pedagogical weakness within the organization, measurement of student performance and inquiry regarding professional questions that are relevant to the setting in which professional development is delivered.

From this project now I conquer with (Sequeira, 2012, p. 1) who said that it is an accepted concept that teachers are not born but they are made. He adds that good teachers nurture their knowledge and skills through constant and deliberate efforts. The development of teaching aids in groups was something that seemed simple but created a lot of impact on the abilities of the student teachers. Therefore, teachers need to continuously learn to build their competences.

Chapter Seven: Conclusion and Recommendations

7.0 Overview

This chapter presents conclusion and recommendations drawn from an action research project that was conducted to improve the quality of training delivery skills of student instructors through developing teaching aids. The main objectives of this project were to establish the challenges the student teachers encounter when developing teaching aids, to determine the factors they should consider when developing teaching aids, to describe the importance of teaching aids and to explore the learning experiences teacher acquire through the development of teaching aids that can be used to facilitate teaching and learning process. In this chapter, I will present my views including support from views of other scholars as presented in my chapter three.

I based my study based on the concept drawn from the didactical model that explains the relationship between educational factors of students learning resources and needs, pedagogical framework conditions and scope, educational aims and goals, subject matter / content, teaching and learning methods and evaluations. I used the concept in this didactical model to improve the training delivery skills through developing teachings aids.

In this project, the teachers deliberated on the importance the teachers attach to teaching aid to ensure that they appreciate the relevancy of teaching aids. The later they also identified the challenges which hinder them from developing teaching aids. This was meant to help them identify their weakness and work on them to Improve their skills. The process of developing the teaching aids helped the instructor acquire various skills, through interactions, sharing experiences, practices, role-play and demonstrations. On the other hand, the teaching aids developed considered meeting the requirements of learning resources. As a result, this project improved the quality of teachers passed out at Nakawa VTI.

My view is supported by Marphatia et al. (2010, p. 18) cited Darling- Hammond (2002) defines teacher quality as skills used by teachers to create open and interactive learning which help children flourish, excel academically and become well- rounded and grounded individuals. She adds that these skills are usually gained through further academic study, training, qualification/certification status as well as being based on academic such as knowledge of subject matter and teaching knowledge.

Therefore, in this study, I concluded that though vocational teachers expressed concern about the challenges they face in developing teaching aids these are very important in accelerating learning achievement. It is also evident that teachers of the same field if they work together they can be in position to solve their professional challenges. In addition, by using locally available material very good teaching aids can be developed. In my study, I considered that teaching aids as the learning resources and used them as a center of focus for improving the participants training delivery skills.

7.1.0 Conclusion

7.1.1 Challenges participants encounter when developing teaching aids.

TVET is faced with a number of challenges, which requires acute and holistic attention depending on the country's economic needs. The challenges in the system are not only found in vocational teacher training colleges but in the entire teacher professional development as highlighted in the conclusion of the TISSA report.

The (TISSA, 2013, p. 67) cited (MoES 2012) report which analyzed the challenges in the NTCs and concluded that NTCs, ITC and PTC suffer from various challenges ranging from understaffing, inadequate and dilapidated infrastructure, insufficient teaching and learning materials, lack of institutionalized continuous professional development programmes and little government funding. These challenges are no different from those presented by the participants during the study. These challenges affect the entire education system because the teachers and the learners undergo the same training.

According to (Kagoda & Ezati, 2013, pp. 40-41), in their study of the primary teacher training curriculum showed that the primary teachers in Uganda are trained as general teachers and are expected to teach all subjects, all classes from primary one to seven. They further added that the PTC curriculum does not integrate pedagogical content and competences to enhance the academic and professional proficiency of the student teachers. Besides many PTC do not provide teacher trainees opportunities to practice teaching as such they enter class for the first time during school practice. Another challenge highlighted in this study is in adequate teaching learning materials. This attribute this to latest release from government grants. As a result, colleges are not in position to expose teacher trainees to practical subjects, field studies and co-curricular subjects. These teachers neither master subject matter nor the pedagogy. It therefore follows that their work is inadequate when they enter in the field.

As a result, teachers in such a system find it very difficult to cause improvement the teacher training has almost no impact on the needs of the world of work. (Okello, 2011, p. 189) explains that the nature of Uganda's education system is that it is generally theoretical. He adds that even courses that are practical they are taught theoretically. They end up resorting to teacher centered kind of teaching where the teacher is the source of information. And across most parts of the Sub-Saharan this has occurred. This puts the teaching profession at stake, Like (Griffin, 2012, p. 13) observed that Professionalism in the sub Saharan is characterized by authoritarian. This is because teacher education tends to be authoritarian education rather the solution. This is because teacher education tends to perpetuate traditional, unreflective and teacher centered pedagogy rather than challenge it, often resulting from the fact that teacher education provide itself authoritarian and reproductive preparation for teaching in schools.

Considering vocational teachers training, instructor to qualify to teach in vocational education and training today it requires them to be highly skilled with both technical and pedagogical skills. Technology is changing so fast and requires that teachers to matched their roles with the demands of the world of work. Inadequate instructor training, obsolete training equipment and lack of instructional materials are some of the factors that combine to reduce the effectiveness of training in meeting the required knowledge and skills objectives(Rafui et al., 2013, p. 75).The major challenges highlighted in teacher training are the inadequacies of resources and methodology of teaching.

7.1.2 Factors to consider when developing teaching aids.

The major factors that all the participants focused on for consideration before and during the development of the teaching aid were the availability of materials alongside other factors like the aims and objectives, the subject matter, the number of students, the age of learners and many others. In my view it is important that teachers consider such factors to develop teaching aids to help them relate the teaching aids to learners needs so as to increase learning achievement. (Osam, 2013, p. 77) said that effective teaching cannot be accomplished in the absence of certain ingredients that create a conducive environment for teaching and learning.

Other factors like the skills and the knowledge level of the teacher also combine to be a major factor. Looking at the projects that were developed, by the participants during the project even with minimum resources they would be in position to develop some of these teaching aids at

their institution where they claim that that the materials are very minimal. The quality of teacher education in the sub-Saharan Africa focuses specifically on education for sustainable development which is part of a global discourse. Learners are encouraged to develop green” lifestyle and to mainstream sustainability issues (Griffin, 2012, p. 14). Through making use of these so called waste materials we can promote good environmental conditions. The ability and attitudes of the teachers are very important. Osam (2013) adds that these materials include the right quality and quantity of teachers, well prepared workshop and laboratories with up to date and adequate tools and other materials.

7.1.3 Importance of teaching aids

Teaching aids are very important in any teaching and learning process for many reasons. The participants in their views say that they are important because they make it easy for the teacher to facilitate teaching and learning, they motivate the learners and make abstract concept concrete. Also (Hilde Ng'etich Tuimur & Chewei, 2015) cited (Romiszowski 1988, Walkin 1982 and Hills 1982) who agrees on the fact that instructional materials if properly selected and used the following occurs:

- Learning would be interesting and meaningful
- Knowledge acquired would be retained for longer time
- Different skills would be acquired by learners
- Students would be very actively involved during the lesson

(Broderick, 1956) quotes that the encyclopedia of educational research states that in harmony with findings of the American council on education study, good utilization of instructional materials means that the teacher is acquainted with the materials before he attempts to use them, that the class group is prepared to use the materials and that there is follow up activity after the materials have been used. They state that Dale, Finn and Hoban concludes that audiovisual materials properly used can serve the following purposes;

- Supply a concrete basis for conceptual thinking and hence reduce meaningless word responses of the students.
- Provide a high degree of interest for the students
- Supply the necessary basis for the developmental learning and hence make learning permanent.
- Offer reality of experience which stimulated a self-activity of the part of pupils.

Considering the observations, I made in the previous lesson, I feel the vocational teachers should always find something to come within class to illustrate those systems and processes they explain verbally. Therefore, my conclusion in this project is that the teachers should endeavor to develop teaching aids to facilitate their teaching because this is very important and with no doubt plays an important role in increasing the learning achievement of the learners.

7.1.4 Learning experiences in developing the teaching aid.

As indicated in my background, I realized that the subjects I teach have a connection and during this study, I tried to link them. I teach educational technology and general methods. Educational technology is about the instructors developing instructional materials, while general methods is about the methods of teaching. Teaching these two subject separately does not prepare the teacher to teach. TISSA (2013, p. 69) also highlighted challenges in PTCs as the inability by the PTC graduates to apply a number of essential methods of teaching and the curriculum mainly focused on what to teach (content) rather than how to teach (pedagogy) in there is low emphasis in specialization in terms of teaching. This implies that it's very important to integrate knowledge so as to create meaning in the learning of teachers.

The American Management consultancy firm McKinsey and company investigated the factors that explain the most successful education programme in Asia, Europe, North America and the Middle East. The report concludes that certain education systems achieve substantially better because they have produced a system that is more effectively by do getting more talented people to become teachers, developing these teachers to become better instructors and ensuring that these instructors deliver consistently for every child in the system(UNESCO, 2014). The teacher's ability to develop and use teaching aids is one of the factors which can determine his/her quality in training delivery. In the struggle to achieve this, I considered teacher training from such a wide perspective.

The African Union underlines the importance of TVET a support mechanism for economic growth and as a means for empowering individuals to lead sustainable livelihood. The strategic framework identified instructor quality as one of the eleven key priorities and therefore highlighted that the delivery of quality TVET is dependent on the competence of the teacher; competence measured in terms of theoretical knowledge, technical and pedagogical skill as well as being a breast with new technologies in the workplace (Commission, 2013, p. 35). The

Strategy further suggests that teacher training colleges focus on recruitment of students who already have the requisite level of subject mastery and some enterprise experience so that teacher training can carefully focus on the pedagogical aspects. During this project, the participants applied the technical and pedagogical skills to develop the teaching aids the process that improved their skills to better vocational teachers. The productivity of graduates starts with the instructors when students are able to learn through teaching aids produced by their own instructors.

Instructors are increasingly coming up with excuses on why they do not use teaching aid during training delivery. Yet this study indicates that much as there are those who are genuine majority are not. Indeed, the biggest problem was perception and skills upgrade that need to be addressed. The participants indicated that the factors one must consider when selecting a teaching were the availability of materials, the objectives to be addressed, the content to be delivered and the attitudes of the learners. In my perception also the time you prepare the teaching aid is a big factor and the time that the entire process will take you is a great factor that needs to be considered. I would suggest that instructor develop teaching aids during the holiday when they have sufficient time to critically analyze their application. Through this study we have observed that teaching aids as teaching resources have a great bearing to the set objectives, the content, the method of instruction, the other available resources and evaluation of the learning achievement. The impact of one of the factors in the training cycles affects the entire programme.

In my reflections about this study I conclude that if a teacher has the teaching aid the lessons become easier to conduct. Taking an example in this study my main task was to ensure that the participant understood what to do and my main task was monitoring the progress of the entire process. The rest of the work was done by the participants and at the end of the anticipated period, we had products to present. From this perspective, I conclude that teachers should endeavor to develop teaching aids, align the to the learning content, the objectives, engage learners in the learning process. If the methodology of teaching changes, then we shall catch up with the new trends of the 21st century. According to (Barron & Darling-Hammond, 2008, p. 3), the so called 21st skills have changed and now demands that institutions gives every child an education that prepares them for productive life. They add that it is no longer enough to simply transmit information that students memorize and store for the future. This implies that instructors should help students learn how to learn so they can manage demands of changing information, jobs and social condition. Therefore, the teachers of this generation should be

equipped with pedagogical and technical skills that can address these emerging demands. Hence teachers of the 21st century require the ability to jump between fields of technical specialization and capture key issues quickly(IICBA, 2011, p. 5).

Technology advancement does not segregate between the levels of economic development of any nation. Therefore, vocational teacher trainers must focus on new trends in technology and diversify the training techniques to cope up with the changes in the world. Just as the reform of European VET systems is leading to major changes in the way in which VET teaching is organized. This has led to diversifying and expanding teachers roles, forcing them to adopt new teaching practices and placing new requirements on their professional skills (Pia Cort et al., 2004, p. 34). Therefore, with support from the government, the vocational teachers should work hard to develop their skills if they are to remain relevant in the field of vocational education and training.

7.2 Recommendations

Considering that there is need to match the new technological developments in the world of work with the instructors training content. I recommend that before instructors enroll for the teaching profession they should start their career from the world of work. For those without work experience should be attached to the industry before completion of the course. This is the way to go if vocational teachers are to relate the curriculum to the needs of the world of work.

In the same perspective, the African Union underlines the importance of TVET a support mechanism for economic growth and as a means for empowering individuals to lead sustainable livelihood. The strategic framework identified instructor quality as one of the eleven key priorities and therefore highlighted that the delivery of quality TVET is dependent on the competence of the teacher; competence measured in terms of theoretical knowledge, technical and pedagogical skill as well as being abreast with new technologies in the workplace (Commission, 2013, p. 35). The Strategy further suggests that teacher training colleges focus on recruitment of students who already have the requisite level of subject mastery and some enterprise experience so that teacher training can carefully focus on the pedagogical aspects.

The curriculum content should act as the guide to the development of vocational teacher professional development. The training curriculum for teachers needs to be strengthened with the teachers' experiences from the world of work. Teacher trainers need to interact to share the new developments in the field of vocational education so as to harmonize and share experiences

in training to bring out vocational teachers capable of meeting the demands of the world of work. Innovations also require very close contact with enterprises and other stakeholders including employment services, labour markets institutions and social partners with other vocational teachers and of course with TVET students for the purpose of effective teaching/training, career guidance and more(ILO, 2010).

Borrowing an example from England and Scotland these two countries recognized the trends and need of the world of work and addressed the problem(Avis et al., 2012, p. 16) in their paper that analyzed the comparative analysis of Vocational teacher education in England and Scotland they showed that initially, these two countries did not have a streamlined system for vocational teacher education. In England before 1999, there was no requirement for VET teachers to have a teaching qualification. They thought through experience one can acquire teaching skills. With the new demands from the workforce, this has radically changed, part of the new labor strategy focuses on the VET teachers and as we stand today most of the VET teachers in England have been equipped with teaching skills. In the same study, they indicated that in Scotland, teacher qualification was generic skills based on pedagogic curriculum rather than a subject basis or specialized based pedagogy. In response to the new work demands, the Scottish government has recommended that their initial teacher education, staff should undertake at least six days per year of continuous professional development.

According to (Maclean & Wilson, 2009, p. xcvi) teachers must be transformed from those who impart knowledge to those who facilitate learning. From that analysis, I would recommend that teacher trainers should borrow a leaf from developed countries the good pedagogical practices and customize them to suit the needs of teacher trainees who enroll for professional development. In addition to that teacher training should be as practical as possible to give the student teachers maximum orientation in the field of teaching.

Uganda's vision is to move from a peasant society to a modern and prosperous country by 2040. One of the key aspects that have been highlighted in this movement is the improvement of education. It is noted in the TISSA report 2013 that the quality of teachers determine the quality of education meaning that good teacher training is a condition for the development of quality education(TISSA, 2013, p. 22). Therefore, teacher trainers need to conduct needs survey to establish the relationship between the training and the various institutional setting which affect the student teacher's abilities to learn while under training.

The government of Uganda is committed to utilize TVET as an instrument of empowerment of its people through the acquisition of appropriate portable skills at all levels of training (Lugujjo, 2003). The new reforms as stated in the BTVET strategic plan need to be understood by the stakeholders such as the policy makers, the trainers and the trainees. Just as the strategic plan envisages the bold involvement in the development and upgrading of BTVET instructors to develop and urgently needed corps of additional instructors and to make existing instructors fit the new competence requirement in the course of UVQF implementation (BTVET, (2011 - 2020), p. 13). Based on the results obtained from the study, the vocational teachers need to be educated of what is required of them to meet the standards of the UVQF. Then the individuals identify their areas of weakness for proper professional development. Thereafter the government should prepare short refresher courses to help the teacher meet the required standards.

In Uganda, teacher training is conducted under two departments; the Teacher Instructor Education and Training (TIET) department in the ministry of Education and Sports and Kyambogo University. TIET has three divisions, namely; health tutors and instructor, the preprimary and primary teachers' education PTE division which is responsible for training Early Childhood development and secondary education (TISSA, 2013, p. 43). The mission of the TIET department is to provide support, guide, coordinate, regulate and promote quality teacher, tutor and instructor education for the production of adequate competent and ethical teachers, tutors and instructors. As the department in charge of teacher training, there is a need to harmonize training and streamline the similar problems that occur in training. The issue of the methodology of teaching cuts across from lower level to higher institution of learning. There is a need to advocate for changing from teacher centered methods of teaching to learner centered as a way to improve the entire education system in the whole country. Therefore, my recommendation is that after teacher training the teachers should be followed to help them further put in practice what they have learned given the reality in the field of teaching. Taking an example of this project the teachers were trained how to develop teaching aids they need a support on how to effectively implement their use and how to further develop the acquired skills with the minimum skills at the institutions.

Instructor training is currently offered by four instructor training institutions: Kyambogo University, Abilino Instructors' college, Nakawa VTI and Jinja VTI. TISSA 2013 indicated that the BTVET sector also suffers from qualification issues among its teaching staff. A massive 30 percent of the estimated 5,000 instructors have minimum requirements to teach (40 per cent

in public and 21percent in private institutions); this translated into 3,500 instructors in need of upgrading training especially incompetence related to occupational skills, industrial experience and instructional skills. Comparing the two reports of Nakawa VTI and TISSA 2013, it implies that what has so far been done is just a drop of water in an ocean. Offering various seminars for their further professional training and incorporation into various projects for strengthening professional competencies would provide a push to creating more innovative and more interesting classes in institutions.

Teacher trainers also need to undergo continuous professional development to acquire new skills that they can enrich within the training curriculum. Through the department of TIET that is in charge of teacher training in the country.

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Appendix A: **Interview guide**

In the classroom, to make educational atmosphere the teacher need to use many teaching aids.

Session one (Focus group discussion)

1. So what is a teaching aids?
2. Why are teaching aids important in your field or area of specialization
3. What are the features of a good teaching aids?
4. How are teaching aids useful in teaching and learning process? Give your views.
5. Identify teaching aids you know or you have used before
6. What factors do you consider when designing teaching aids for a particular subject?

Points to note

- Participants level of knowledge about teaching aids
- Their perception/ views about teaching aids
- Interest in the study
- Needs for teaching aids in a given class (perception)

Observations to make

- Participants involvement
- Contributions
- Attendance
- Exchange of ideas

Discuss the attributes that support effective use of teaching aids in teaching and learning process.

Session two

Focus group discussion

What are the materials you have used in this project? Are the materials that you used that cannot be easily find in your institution?

Why do you think your own teaching aids could be better than using ready-made ones?

What would you recommend the about the process developing teaching aids.

How can teaching aids be used to teach using the various methods of teaching aids

Demonstration

Role play

Group work discussion

Peer teaching

Micro teaching

Learning contracts

Activity one

What are the advantages of making your own teaching aid?

In your groups list down the teaching aids you commonly use in your classroom setting

Identify the resources you need to come up with these teaching aids

What factors would you consider when designing teaching aids?

What challenges did your group experience during the development of the teaching aids?

Interview questions

1. What does your teaching aid address?
2. What part in your lesson did you want this teaching aid to emphasize?
3. What challenges did experience during the designing and development?
4. Do you think that teaching aids are relevant every teaching and learning process?
5. Apart from the topic you selected do you think this particular teaching aid can be used to teach another lesson
6. What do you have to say about the development and use of teaching aids
7. What impressed you as a teacher in this project
8. What skills have you learnt in this project
9. What lessons have you learnt in this project

Appendix B: Permission letter



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Ref: 2005/16

10/04/2016

Ms. Nasaza Jalia

Re: Permission to conduct an Action Research Project.

The board of governors and Management received your request to undertake an Action Research project with the DITTE students. The project sounds interesting and we hope that this will cause impact to the participants. This is therefore to inform you that you have been granted permission and we look forward to its outcomes.

Yours sincerely

Niwamanya Gilbert

Head of Research and Innovation

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