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MAXIMIZING ON TEACHING PRACTICUM FOR TECHNICAL TEACHERS TRAINING

[1] Paul Machocho Wanyeki
[1]Dedan Kimathi University of Technology
Email: paul.wanyeki@dkut.ac.ke

ABSTRACT

Teaching Practicum serves a critical purpose in technical teacher education programme. The aim of this study is to investigate how to maximize the student teacher learning experiences during twelve weeks practicum. Using mixed method, case study design, the paper studied one technical teacher education programme in a University of Technology. Practicum was found to be fairly effective however its impact was not maximized. This was mainly due to a weak Institution-University linkage and almost nonexistence communication between institution and university particularly on practicum matters. This was augmented by lack of formal engagement between university, institutions and cooperating teachers during practicum.

Key words: Teaching practicum, Technical Teacher Training, cooperating teachers, teacher education.

INTRODUCTION

Technical and Vocational Teacher Education (TVTE) in Kenya is undertaken after the student has graduated from high school.

The current education system in Kenya is the 8-4-4 system, though progressively being change to Competence Based Education. The students take eight years in primary education, four years in secondary education and four years of university education. The TVTE is done at two levels, which is at diploma level and at Bachelorôs degree level. At diploma level, the training is done at Technical Training College. The bachelorôs level is trained in several universities in the country. All the Universities adopt the integrated approach to TVTE. This is an approach where teaching subject units are being offered concomitantly with the pedagogy units within four years.

Teaching Practicum constitutes an important part of teacher education (Wilson & IôAnson, 2006) and is highly valued by ST(Beck & Kosnik, 2002). The implementation of TP is important to bridge the gap between what student teachers have learnt in the program and the reality of teaching in actual schools (Darling-Hammond, 2006). He further states that Teaching Practicum requires practical and theoretical prerequisites knowledge for one to be successful.

Over and above the area of specialty, a teacher trainee requires knowledge of educational psychology, curriculum studies, education management and educational foundations courses. That is, learning to teach is a multifaceted process (Darling-Hammond et al., 2005). Particularly, TVTE programs are designed to develop student teachersô knowledge, skills, and attitude in order to prepare them to train other students professionally at Technical Training Institutions (TTIs) (Mukminin et al., 2017). Simply, the preparation of technical teachers involves three primary dimensions, namely, knowing, Doing, and Valuing(De Miranda, 2009). In addition, a TVTE curriculum has components that cause students to think in-depth about what is meant by technology (De Miranda, 2009).

Workplace experience or learning, referred to in this paper as teaching practicum, is one of the approaches used in TVTE to narrow the gap between theory and practice(Allen & Wright, 2014). This intent of teaching practicum is also alluded to by Darling-Hammond (2006) who postulate that TP is important to bridge the gap between what ST have learnt in the program and the reality of teaching in TTIs. A study conducted by Risky (2013)in an Indonesian context investigating how English as a Foreign Language(EFL) student teachers managed teaching difficulties during their teaching practicum, concluded that teacher educators and supervising teachers needed to pay more attention to improving the quality of their supervision.

A study done in Malaysia by Goh and Matthews (2011) recommended that teacher educators should endeavor to recognize the issues that ST experienced during their TP. Goh and Matthews (2011) concluded that, in order to integrate the theoretical aspects learnt at university with the practical reality of the classroom, specific strategies were needed to help student ST gain more benefits from the practicum experience. One strategy is to establish effective partnerships between TTIs and universities Graham and Thornley (2000) where the theoretical and practical aspects of teaching are taught and implemented. The quality of the teaching practicum will be enhanced if schools and universities work together to prepare for the practicum (Loughran, 2007). Carefully on-campus preparation of student teachers for practicum experiences and planned implementation of practicum has been highlighted by Darling-Hammond (2006) as one of the most powerful and effective ways of supporting and maximizing student teacher learning during practicum. As Goh and Matthews (2011) pointed out that teacher preparation courses had to be more aligned with actual school settings and environments.

In addition, there should be a systematic way for teacher educators to periodically review course content to ensure that problem and new trend areas are included in the curriculum.

Conversely, Mtika (2011) conducted a study on the implementation of TP in Malawi. The data from the interviews with four ST and one supervisor revealed that, there was no support from cooperating teachers due to a new policy at the college, and this created problems for the ST when they encountered difficult teaching situations, such as managing large classes, because they had little support and guidance from the cooperating teachers. This was happening despite social learning theories supporting role modeling as a key teaching and learning tool during teaching practicum (Trevethan, 2017). Role modeling is evident from Mtika (2011) study as it established that student teachers developed pedagogical understandings and practices by imitating their mentors. Also from constructivist learning theory Vygotsky (1978) establishes that cooperating teachers are supposed to help students navigate the Zone of Proximal Development. This zone depicts the difference between what a ST can do without help and what they can achieve with modeling, guidance and encouragement from a cooperating teacher (Vygotsky, 1978).

In the study conducted by Mtika (2011) the cooperating teachers failed to provide scaffolds for the student teachers to navigate through the challenges of teaching large class sizes in an environment that lack most of the required teaching and learning resources. This lack of social support may make the student on teaching practicum frustrated and thus gained less work experience from the practicum as they try to construct their own meaning and experiences of teaching practicum.

Cooperating teachers during practicum will have fur reaching effects if there is an established framework or guidelines which they operate on (Clarke et al., 2014a). The engagement of cooperating teachers can further be enhanced by having strong university-technical and vocational institutions linkages (Allen, 2011). In Australia Allen and Peach (2007) note that there is typically very limited ongoing communication between stakeholders and this can increase the disjuncture that student teachers face between the in-field and on-campus components of their course. Such limited communication channels have been shown to result in poorly defined stakeholder roles and responsibilities, such that practicum supervising staff members in schools and universities are often unsure of the ways in which they should both support student teachers (Allen, 2011).

This misunderstanding has led to teaching practicum not living to its expectation of students maximally gaining practical skills thus bridging the gap between theory and practicalôs (Allen & Wright, 2014; Darling-Hammond et al., 2005).

The study reported in this paper contributes specifically to an understanding of how studentsô teachers can gain maximally from the teaching practicum and some of the issues that student teachers and assessors view as impeding and supporting usage of practicum as a teaching and learning tool.

THEORETICAL FRAMEWORK.

The study is underpinned by social learning theory and constructivism learning theory reductionism. Bandura (1977) describes social learning as a continually reciprocal interaction between a person and the environment. This is a position this paper believes in as learning occurs when a ST learns by observing cooperating teachers who act as role models (Trevethan, 2017). Role modeling allows ST to learn new teaching behaviors without doing trial and error with their students (Bandura, 1977). Further, the study believes that the social learning of ST through role modeling is much enabled by constructivism learning theory which asserts that ST actively construct or create their own subjective representations of objective reality (Teaching) by linking new acquired information to prior learnt knowledge(Vygotsky, 1978). Dewey (1933) also stressed the value of outdoor education and hands-on, experiential learning, while (Vygotsky (1978) emphasized the social role of learning, with the help of ómore knowledgeable othersô in this case Cooperating teachers in the Zone of Proximal Development. The zone of proximal development refers to the difference between what a ST can do without help and what they can achieve with modeling from a cooperating teacher(Vygotsky, 1978). The cooperating teacher is expected to employ scaffolding concept to support the student teacher as they led through the Zone of Proximal Development (Wood et al., 1976).

The study data will be interpreted from a symbolic interactionism perspective because it provides the study with a mechanism to uncover the meanings of the social reality of a group of student teachers and assessors based upon understanding the lived experience of the participants. Symbolic interactionism approach was used by Allen & Wright (2014)in the study which investigated integrating theory and practice in the pre-service teacher education practicum with great success. Key to the symbolic interactionism perspective is the tenet of creation of meaning subjectively from a social perspective(Blumer, 1969).

This marries perfectly with social learning theory and constructivist learning theory as they all put emphasis on ST actively constructing or creating their own subjective representations of objective reality and meanings. Therefore, the study sought to explore the social factors and mechanics that influenced student teachers learning during practicum. The individual experiences of participant were central to this research.

METHODOLOGY

The mixed method case study inquiry(Creswell & Tashakkori, 2007) that this study reports on, was conducted in June 2020. The study was done among third year students of Bachelorôs of Education Degree in Technology (Mechanical, Civil and Electrical Engineering options) in the Faculty of Engineering at a Kenyan University of Technology, and was framed by the central research question: *In your own perspective what should be done to maximize the impact of teaching practicum experience on the student teachers learning*? Once the research received ethical clearance George from the university, a sampling frame of seventy one(71) student teachers was prepared and a representative sample of thirty six (36) ST who had practiced in nineteen (19) technical and vocational institutions randomly(Emerson, 2015) made to the study.

The Bachelor of Education in Technology is a four years undergraduate teacher education degree programme that is used to prepare teachers in mechanical, electrical and civil engineering. (Yin, 2011) argue that a case study is appropriate for studying an understudied topic regarding a person, a program, and an institution. For this reason a case study design was selected as the appropriate research strategy to gather information about the understudied technical teacher education teaching practicum exercise with an aim of maximizing the student teachers experience during practicum. Data was collected by use of interviews, open ended questionnaires and a focus group discussion for the assessors (Sekaran & Bougie, 2016). Desk review was done by analyzing practicum assessment reports from internal and external assessors for triangulation purposes (Noble & Heale, 2019).

At first, an assessorôs Focus Group Discussion was conducted. This was after a desk review of all the assessment reports from both internal and external assessment. The desk review was done first so as to build a bank of questions that was used as discussion points during the FGD and also in the formulation of the student teachers questionnaire (Kingry et al., 1990; Patton, 2015).

The FDG was held in the University premises and comprised of 8 discussants who all took part in the assessment of the practicum exercise(McLafferty, 2004). The FGD adopted a semi structured group session to make members to freely participate in the discussions(Carey, 1994). When discussant freely participate in and FGD it the participant end up validating their contributions(Carey, 1994). The discussion notes included both verbatim to lay emphasis on individual voices (Yin, 2011) and paraphrased recordings of their responses. The FGD and desk review notes were considered in the development of the student questionnaire.

Secondly, a research assistance was recruited and trained on administration of the self-administered questionnaire (Noble & Heale, 2019). The questionnaire comprised of sets of closed ended questions and open ended questions which is appropriate for social studies (Creswell & Tashakkori, 2007). The closed questions were designed to measure student teachersô views and perceptions of how they were prepared for practicum and how practicum aided them to be teachers. The open questions were less specific and aimed to get individual student voices in on areas that they felt were good and also in areas they felt needed improvement.

Their views on the nature of improvement to be done were also sought as they depend understanding of the student experience (Allen & Wright, 2014).The questionnaire were delivered to the sampled student teachers by a research assistant, clarification made and they were requested to fill up the questionnaire within three days. During issuing of questionnaire it was established that four (4) of the sampled student teachers had proceeded for academic leave and thus could not take part in the study. They were not replaced since their absence would have not affected the reliability of the case study data as the data depended on individual voice rather than frequencies(Yin, 2011). Reminder calls was made on the second day to remind the participant to fill up the questionnaire and on the third day the filled questionnaire were collected. Of the 32 questionnaires issued out 28 were duly field and returned representing 87.5% response rate. This rate is higher than the typical expected response rate of 60% (Fincham, 2008). For survey research intended to represent all schools and colleges, a response rate of Ó80% is expected (Fincham, 2008).

Lastly, all the 71 student teachers were invited to participate in a follow-up group interview. On the interview date, 53 student teachers turned-up for the group interview representing a 74.6% response rate.

Reasons provided for not turning up for the group interview included school and personal commitments. The interviews were semi-structured to facilitate the free expression of the participantsô thoughts (Cohen et al., 2011) and were conducted by the researcher. The trained research assistant took the notes during the interviews and participants were not identified as this was to get a deeper understating Yin (2011) of the Student Teachers filling on what should be done to maximize the impact of practicum in training of teachers. The notes included both verbatim and paraphrased recordings of their responses. Any information from FGD and questionnaire that was not clear, clarification was sought for during the group interview.

Analysis of the data occurred in three phases. First, desk review data was analyzed in order to help inform the creation of the questionnaire, the interview and discussion schedules(Patton, 2015). Themes were generated and data analyzed based on the generated themes. Secondly, the quantitative questionnaire data was analyzed with the aid of SPSS version 21 while the opened ended question were manually analyzed thematically and in some instances quatitization was done(Patton, 2015).

Lastly, interview data was analyzed thematically and the analysis was further done to identify similarities between the themes generated from the three sets of qualitative data for triangulation and then again scanned through the entire data-set to ensure that everything was captured accurately(Coffey & Atkinson, 1996).

RESULTS AND DISCUSSION

This paper discusses and presents results by citing some of the questions asked to the respondent. Questionnaire data is presented and discussed simultaneously with the assessorsô Focus Group Discussion (FGD) data and student teachers group interview. The results are more of qualitative from thematic analysis and thus the focus will be on voicing the concern of each participant rather than on finding the mode and frequencies.

Quantitative data was used to augment qualitative data. While a number of themes emerged, our focus in these sections was those themes that directly informed the central research question, namely: *In the view of the participants, what is it that should be done to maximize the impact of teaching practicum experience on the student teachers learning?* Framed within the social learning theory and constructivist learning theory, the research question was created to elicit responses from a group of student teachers and assessors about ways in which they created meaning around their

lived experiences during the twelve weeks practicum. The results and findings therefore reflect participantsô reported views of how they constructed, perceived and interpreted the social reality of practicum as a teaching and learning strategy. The results were discussed from symbolic interactionism perspective which has the advantage of listening to all concerns rather than responding to the loudest voice. Results, finding and discussions are presented from subheading i to v.

In constructivist theory as advanced by Vygotsky (1978), environment influence the learning process. Placement in an appropriate institution significantly influences student teachers learning attitude towards acquire and retain new knowledge that promotes learning (Odundo et al., 2018). From the research data, a majority of the studentsô teachers selected their preferred practicing institutions based on financial implications. That is, the institutions were selected ether because they were convenient and affordable in terms of accessibility or availability of cheap accommodation from relatives and friends. This finding agrees with Odundo et al. (2018) on a research done in University of Nairobi. Despite the student teachers making this choice, they still expressed concern about struggling financially to maintain themselves in the practicing institutions as they donôt receive financial support Odundo et al. (2018)for practicum from the government. Also most of the ST was selecting the institutions in groups so that they could share accommodation facilities and cost. Some of the respondents also mentioned availability of quality educational infrastructure, geographical exposure and the biasness in training specialization in some institution as the main motivation behind their choices of practicing institutions. The fact that students preferred to be placed as a social groups was a plus for the study as it reinforces learning when interpreted from social learning theory since social interaction will continue among themselves and the new environment(Bandura & McClelland, 1977). Odundo et al. (2018) recommended that the University should post trainee teachers to schools with supportive and condusive environment that sustain effective professional growth.

i) Rationale of Teaching Practicum

Valuing is among the first steps of learning process (Gable & Wolf, 2012). Respondents were asked to express their views on the usefulness and purpose of practicum. All the respondents cited that TP exercise was very important and should be maintained in the curriculum. They found it very useful as it assisted them to gain classroom confidence, experience firsthand the behavior and attitudes of typical students, gained skills on

how to organize a lesson and problem solving skills:

> Practicum is very important, I have really learnt allot. Sincerely speaking, I enjoyed practicum as it allowed me to practice what I had learnt theoretically in class and practically during microteaching but new in a real classroom.

On the purpose of practicum, the most outstanding view was that TP provided a platform to practice practically what they had been taught theoretically in lectures. Also mentioned was the fact that TP exposed one to practicing pedagogy, acquire necessary soft skills and experience in teaching like leadership skills, socialization skills, organization skills, problem solving skills and teaching skills. In addition, some felt that tenable familiarization with the real teaching environment after experiencing the simulated teaching environment during micro-teaching. This studentôs comments epitomize those of others:

> I feel that the purpose of practicum was to accord me an opportunity to practice what I have learnt in class while at the same time appreciating the reality in the field. I learnt a lot but I wish the practicum could be pushed to the end of the course so that it other purpose will be to aid in job placement as I will not be going back for studies.

The findings were in line with course purpose as stated in the curriculum that ñthe purpose of TP is to provide the ST with an opportunity to gain knowledge, develop and refine skills and understandings of the training-learning process related to technical subjects.ò **(**Curriculum for bachelor of technology in education in mechanical engineering, 2018, pg 106) This is indicative that TP exercise lived to the expectations of the curriculum and also the findings agrees with Allen & Wright (2014) and Odundo et al. (2018) findings.

ii) Administrative Preparation before Practicum

During the preparation stage of TP, studentsô teachers were posted in selected institutions within prescribed regions. Both the assessors and the ST expressed confidence with the way the exercise was conducted and concluded within stipulated timelines. However, the assessors Focus Group Discussion (FGD) recommended that for future, placement officers should avoid having a single student being posted in a TTI for logistical reasons. This was because assessors experienced logistical challenges while trying to optimize their output as they had to meet a target of 25 assessments per week. In recognition of the various factors that determine student choices of practicing institutions, members of the FGD agreed that the needs of the students should be taken into consideration during the placement exercise. Also, in line with Allen & Peach (2007) observation, it was established during the FGD that technical institutions had very bureaucratic decision making channels and weak university-institution linkage when it came to practicum.

This made it difficult to secure students practicum placement opportunities within the stipulated calendar timelines.

Before the STs were released to their respective practicing institutions, a meeting was convened and all the STs were briefed on the expectations of the TP. The STs were issued with practicum materials that included practicum manual. The responded appraised the exercise and cited that it was of greater importance to them. This gave them an idea of what the field looked like and therefore they were able to prepare well in terms of teaching requirements, psychological requirements and personal requirements:

> The induction meeting was helpful as it highlighted on what was expected of as it is always easy to work when you know what is expected of youé .even as my colleagues have said it was very usefulé ..but in future consider also sharing information on the conduct of technical institution students and resident teachers as I did not find them cooperative as I expected.

Further, it was established that all assessor were trained on how to assess STs on Teaching Practicum and corresponding expectations. This is because the Assessors were to offer six assessments to each student within the 12 weeks practicum duration. The assessors were trained on how to use already prepared instruments to measure the competence level of the STs. These instruments intend to support assessors reach a clear, transparent and standardized decision regarding the level of competence a ST has attained so that the assessor can make decision on further mentorship and interventions (Rusznyak & Bertram, 2015). The assessors were issued with the relevant Evaluation Tools and taken through the tools for uniformity of assessment. This was done through a one day workshop. The FDG discussants reported that the exercise was very informative as it reminded them of the things that they were taught long time ago during their studies. They recommended a more rigorous workshop that last two days so as to cover more content. The recommendation is necessary as this response from the student teacher epitomizes the view of others is to go by:

> Teacher, different assessors were holding different opinions over the same issue or concern during feedback sessions. This left my colleagues and I very confused as we did not know what the right practice was. Some took position that conflicted with the theories that we were taught.

iii) Theoretical and practical classroom preparation of ST before practicum

Student preparation before TP also involved classroom preparation on the prerequisites (Allen & Peach, 2007; Allen & Wright, 2014). This involved preparation on both core and educational units (Allen & Wright, 2014).

The respondents were asked to respond to the question: *What is your take on the level*

of preparation you were taken through before the teaching practicum attachment? From table 1 below a majority of the students 46.4% reported that they were adequately prepared to teach core subjects. From social and constructivism learning theory, this means that they did not experience allot of problem in handling the subject content(Bandura & McClelland, 1977; Vygotsky, 1978). However of concern is that only 28.6% felt that they were excellently prepared. These should be worrying because most of the assessors reported that most students had problems with mastery of subject content. This demand allot of attention considering that they have already done three years of their study and only one year is remaining. This finding align with most employers concern of half backed graduates who fail to deliver as expected(FKE, 2018).

Table 1: Level of student preparation before teaching practicum.

Areas of preparation	Excellent	Adequate	Average	Poor	V.poor
Core subjects preparation	28.6%	46.4%	17.9%	7.1%	0%
Lesson plan preparation	82.1%	17.9%	0%	0%	0%
Schemes of work preparation	82.1%	14.3%	3.6%	0%	0%
Visual aid preparation	39.3%	39.3%	21.4%	0%	0%
3-D model preparation	35.7%	50%	10.7%	0%	3.6%
Student centered method preparation	46.4%	28.6%	14.3%	3.6%	7.1%
Practical & experiment manipulation	25%	21.4%	17.9%	28.6 %	7.1%

Source: *Field data 2019* ***Key:***

The bracket value represents the percentage.

n=28

On lesson plan preparation, 82.1% felt that they were excellently prepared on how to prepare the lesson plan. It is also interesting to note that the remaining 17.9% indicated that they were adequately prepared in lesson plan preparation. This area can further be improved by taking the recommendations of the responded:

> I am well-grounded in lesson plan preparation but this could be enhanced by capturing preparation of practical lesson plan and examination lessons during micro-teaching.

Further, the results of the FGD established some gap in the competence level of lesson plan preparation by the student teachers and this was clearly captured by the FGD deliberations. One of the discussants observations that was affirmed by the others were:

> ..As for the lesson plan, what the students had were not really lesson plans. All had only three sections
>
> 5 min ï Introduction
>
> 50 min - Lesson development.
>
> 5 min - Conclusion
>
> Surely, the 50 minutes need to be broken down to shorter periods for specific student and teacher activities. Also, the activities were generally limited, most of the times being asking questions and providing answers only. This area needs a lot of attention in future.

A 2008 national survey conducted by the Higher Education Research Institute revealed that 43.5% of students said they were frequently bored during lessons (Nemko, 2008). This is important because according to educationists student attention in a lesson has a timespan (Namco, 2008; Reeves, 2015). To maximize on the impact of lesson development session one has to divide the development session into smaller time interval activities each with an introduction and conclusion (Reeves, 2015).

A significant number of 82.1% indicated that they were excellently prepared on how to prepare schemes of work for teaching.

The remaining 14.3% and 3.6% felt that they were adequately and averagely prepared to develop schemes of work for teaching respectively. However, during the FGD it emerged that most of the students were using schemes of work that were prepared by resident teachers. Scrutiny of the schemes of work used revealed that most of the objectives were poorly constructed and were not done to specification by (Anderson & Bloom, 2001) of the revised Blooms taxonomy. During the students closure meeting it was established that some institutions required the student teachers to use the already prepared schemes of work. This was so because of weak linkage between university and institution which arises to minimal or no communication on practicum requirements among them (Allen & Peach, 2007).

iv) Preparation on use of teaching aids and teaching strategies in lessons

Still from table 1 above 39.3% of the ST responses indicated that they were excellently prepared on the use of visual teaching aids, while 35.7% of the student teachers responses indicated that they were excellently prepared in the development of 3-D teaching aids models. A higher number of 50% felt that they were adequately prepared on development of 3-D teaching models.

Interestingly, it was reported during FGD that students hardly carried teaching resources even when they were readily available and necessary. This was an interesting case to study since the students knew how to prepare and use teaching aids but they were not using aids during lessons. The research endeavored to find out the reasons behind student teachers not using teaching and learning aid during lessons. This was done by posing the question: *From the practicum assessments it was established that majority of the student teachers did not embrace the use of teaching and learning aids to teach. What do you think could be the reason for not using teaching aids to teach?* From the questionnaire responses, a few indicated that they used educational resources to teach. This ranged from charts, pictures, regalia, 3-D models and power point projectors. However it must be noted that a majority of the student teachers respondents indicated that they did not use teaching and learning aids because the institutions lacked educational resources that could be used to prepare teaching and learning aids a finding that was also reported by(Kiplimo et al., 2020).Since educational resources were scarce, the respondents indicated that priority allocation of teaching resources was given to resident lecturers in the institutions.

Also frequently mentioned was lack of supportive ICT infrastructure in the training institutions. It was common to find responses indicating that the intuition lacked: *power sockets, enough projectors, interment, computers* and other infrastructure that support integration of ICT in learning. This is confirmed by a study by (Kiplimo et al., 2020). Also some of the respondents indicated that most of the lessons that they were teaching were theoretical in nature and thus they had challenges preparing appropriate teaching and learning aids. This can be explained by the fact that the student teachers are still novice teachers and had minimal experience and creativity in developing suitable teaching and learning aids especially for theory lessons literature only and no sketches and practicalôs. Also lack of *creativity, negative attitude towards use of teaching aids, lack of understanding of importance of teaching aids, lack of reinforcement for of use teaching aids* and *laziness* are some of the things that were mentioned as to have contributed to lack of use of teaching aids during lessons. Here are some of the responses:

> ..I was not using the teaching aid because I did not see its relevance.
>
> é I was teaching subjects that we purely theoretical and I wondered how teaching aids could be used
>
> For me it was just laziness and lack of motivation to prepare the teaching aids. I donôt have any other reason as the preparation materials were available in the institutions.

During the group interview, the STs were asked why they did not use teaching and learning aids even when they were readily available. The respondents indicated that in most instances they lacked familiarity on how most of the machines and equipment were operated. Thus lack of psychomotor competencies to operate the machines made the STsshy off from using the available resources as teaching aids. The most an expected response which received overwhelming support from the discussants during the closure meeting interviews was:

> Sir, almost all resident teachers were not using teaching aids to deliver their lessons. So we behaved liked them.

In fact another respondent went further to extensively elaborate:

> The resident teachers were bulling and discouraging us from using teaching and learning aids. Also the students used to laugh and make fun of us when we enter into classroom with teaching aids. Teaching and learning aids was reserved and made an identity of Student Teachers. The moment you walked in class with the teaching and learning aids the trainees made a conclusion that you are a teacher on practice and most likely you are expecting your assessors ... This worked as a negative reinforcement as it lowered our self-esteem é .we ended up avoiding to use teaching and learning aids so as to belong.

As documented by (Cruess et al., 2008) role modeling is a powerful teaching tool for passing on the knowledge, skills, and values of a profession. Both consciously and unconsciously, we model our character from those who have been practicing in the profession for long (Cruess et al., 2008; Skeff & Mutha, 1998). Although role modeling is at the heart of character and attitude formation, the STs observed that majority of the practicing teachers were poor role models in terms of adherence to good pedagogical practices. Clearly, this is a situation that should concern all the stakeholders in Technical Teachers Training institutions. Modeling is one of the major aspects of teacher education programs, often a collaborative effort between university supervisors, teacher educators, school administrators, supervising teachers, and student teachers Trevethan (2017) to prepare better teachers for the increasingly challenging classroom environment. These views agree with Skinner that behaviorism is a worldview that assumes a learner is essentially passive, responding to environmental stimuli. The learner starts off as a clean slate (i.e. tabula rasa) and behavior is shaped through positive reinforcement or negative reinforcement. Both positive reinforcement and negative reinforcement increase the probability that the antecedent behavior will happen again (Stangor & Walinga, 2014). In this case the student teachers were negatively reinforced from discouraging resident teachers who were to be role models.

Student teachers felt that adoption of teaching aids could be enhancing by making the media and education technology sessions pay greater emphasis on preparation and use of teaching aids. This is by making it compulsory for the students to use teaching aids during micro teaching and also during role play. This will make the students practice and appreciate more on the use of teaching aids to deliver a lesson. The student teachers also recommended that university lecturers should be encourage to use teaching aids during their lectures so that they can act as role models to the students (Jayasuriya-Illesinghe et al., 2016).

From Figure 1 below it is clear that the students were well prepared on the use of student centered method of teaching with 54.2% feeling they were excellently prepared.

However, during assessments it was established that it was not the preferred teaching strategy by student teachers.

Asked why, the respondents indicated that it was the norm and the culture of the resident teachers to use teacher centered technique which they adopted (Trevethan, 2017). More so teacher centered teaching strategy was like an institutional culture where new members were quick to adopt. This is more challenging for student teachers for they are supposed to learn from the resident teachers. Some of student teachers favored teacher centered technique as was easy to implement and did not consume much time during the preparation and presentation stage(Kaur, 2011).

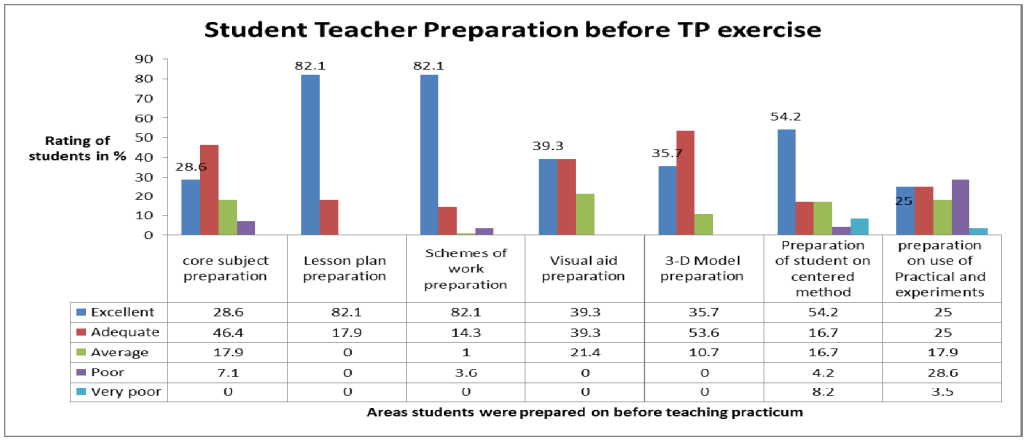

Figure 1: Level of preparation students were taken through before the teaching practicum

Also the teacher is able to cover allot of content Kaur (2011) in one lesson since the objective is to ñclear the syllabusò and not the student to positively change behavior. Equally, some of respondents indicated that teacher centered method was the most appropriate method for them as most of their classes had more than one hundred trainees and it was difficult or impossible using learner centered technique in large classes(Kaur, 2011).

In addition, some of the respondents indicated that the student were not willing to take part in lesson development. The Students were conditioned Gormezano and Moore (1966) to being passive learners and the requirement that they be active during lesson development was a foreign idea to them. In fact some of the respondents indicated that the students demanded lesson notes so that they can go and read on their own instead of sitting in the classroom for the lessons. This is so because the behavior of being passive was reinforced Gormezano and Moore (1966) by having short lesion sessions. This was because most of the resident lecturers used the teacher centered strategy and thus trainees were used to shorter lessons, the teacher being the sole centre of the lesson while the student takes a passive role. Because of this conditioning the learners were unwilling to respond to questions in class and preferred to take a passive role during lesson development.

On the level of practical and experiment manipulation, figure 1 above indicates that the opinions were almost equally divided. A total of 25% of the respondents felt they were excellently prepared, 25% felt they were adequately prepared while 17.9%felt they were averagely prepared to handle practical and experiments lesson. Noticeable was that 28.6% felt that they were poorly prepared to handle practical and experiments. This finding explains why the FGD established that resident teachers felt student teachers on teaching practicum were unwilling to take-up courses that were heavy on practicalôs and experiments. This is not a good finding as technical training institutions are shifting to Competent Based Curriculum (CBC) where hands on skills are highly emphasized (Moe, 2018)

Overall, students felt that they were well prepared to handle the teaching task. Summing up those who felt were excellently and adequately prepared, 75% felt were excellently and adequately prepared in knowledge on core teaching subjects, 100% of the students were excellently and adequately prepared on lesson plan preparation while 96.4% were excellently and adequately prepared on schemes of work development. See figure 1 above. On use and development of teaching and learning aid, 78.6% and 89.3% felt were excellently and adequately prepared on development and use of Visual and 3-D models respectively.

V) ***Areas of improvement during teaching practicum preparation***

The questionnaire requested the respondents to give suggestions *on what could be done to improve the preparation stage in order to maximize the teaching practicum experience*. A few respondents were satisfied with the preparation process and urged the institution to maintain the status quo. The other respondent recommendations are as bulleted below themes.

- Recording of microteaching proceedings for review and polishing of skills after the lesson
- Emphasis should be given on preparation and implementation of a practical lesson plan
- Increase the number and time allocated for practical and experiment lessons in the curriculum.
- Provide more educational resources and presentation time during lesson micro-teaching
- Increase the number of engineering content areas to match field requirements.

a. Common teaching practicum challenges

The responded were asked to *state the common challenges that they faced while on teaching practicum*. The challenges mentioned were classified in to various themes as discussed. One of the challenges mentioned was that the STs were allocated to teach some subjects that they were yet to learn at the university. The respondents indicated that some of the allocated subjects were to be taught to them in subsequent year while they proceeded to teaching practicum after their third year. This occurrence made the STs challenged in developing rationale of the lessonVygotsky (1978) and teaching the practical lessons of the same as they were not with the Zone of Proximal Development. The main reason for lack of field experience was because they were yet to proceed to industrial attachment which comes at the end of fourth year.

During the assessors FGD, discussant agreed that the student teachers had difficulties developing lesson rationale and by extension linking the lesson with previous learner experiences.

The study asked the views of the student teachers on the same and they felt that it was very tough to find real life examples, experiences and applications because they had not gone for industrial attachments. Also some studentsô teachers felt that they were teaching how they saw their lecturers teach(Trevethan, 2017). Captured is a respondent view during group interview:

> é during our studies at the university the lecturersô seldom developed the rationale for their lesson and thus I am teaching the way I was taught.

Commonly, student teachers sighted that some concept were too complex and theoretical that they lacked direct rationale in the real life.

The STs cited that they had challenges developing and using teaching models as the technical institutions lacked educational materials and at some instances the STs lacked the expertise and creativity to develop teaching models. Even in instances where the models were prepared the STs experienced challenges using the models in class as the trainees were ridiculing and bulling them for using the models. This could be attributed to the fact that students were conditioned Gormezano and Moore (1966) to not seeing models during lessons as the resident teachers rarely used teaching and learning aids to teach.

Teaching and managing large classes and at the same time using a learner centered approach to teach was a major challenge and the finding is in agreement with Mulryan-Kyne (2010) findings. It was extremely difficult to take care of individual difference or respond to concerns of all trainees in a class of more than one hundred trainees a view supported by (Mulryan-Kyne, 2010). Worse was class management as most of the students were much older than the STs. These challenges were compounded by inadequate rooms and room space to accommodate all the students during lesson and even at instances where there was enough room space more often than not furniture were limited. Thus, much time was wasted searching for rooms to use as they were limited. This interfered with the lesson planning and delivery as the students took allot of time to settle for the lessons. This is not to mention that most of students arrived very late for the lessons especially the morning lessons.

Organizing for makeup classes for the purpose of assessment was a big challenge. This was because most of the makeup lessons were interfering with the institution academic timetables and normal programmes of the resident lecturers. Also a challenge worth noting was lack of laboratories and workshops to conduct experiments and practical lessons.

This made most of the student teachers teach practical lessons theoretically.

Overloading of the STs was reported in some institution as a challenge especially in institutions where they had shortage of resident lecturers. However, in some instances overloading was as a result of typical cases of bulling as the resident teachers forcefully delegated all their work to the STs. Also, cases of resident lecturers bulling student teachers to take personal duties like marking and invigilation of examinations were reported.

In some cases student teachers reported being forced to invigilate four examinations in a day which translated to eight hours of standing and maintaining alertness. The student trainees were bullied and scared to submission as they were threatened to corporation failure to which they were to receive a ñbadò recommendation letter from the cooperating teachers.

Clearing the allocated termly workload was also mentioned as a common challenge. This mostly occasioned by the department doing late workload allocation and more content to be covered since resident teachers had covered less content in the previous terms. In rear occasions studentsô strikes interfered with the institutionsô education calendar.

Lastly the student teachers found it challenging to adjust the pedagogy to accommodate artisan classes.

This is because this is the lowest level and most students are academically challenged requiring special pedagogy to teach them as highlighted by (Reddy, 1997). This specialized skills are mostly acquired via experience rather that classroom teaching(Reddy, 1997).

b. Improving value of Teaching practicum assessment to student teachers

The respondents felt that student proceeding to teaching practicum should be sensitized on the importance of assessments. They should be sensitized to view assessment as a process of getting feedback for improvement and not as a system of accumulating scores. This way they will appreciate more the feedback instead of concentrating on the scores(Nicol et al., 2014). This will make the student teachers to be reflective teachers. As clearly observed by Dewey (1933),we do not learn from experience we learn from reflecting on experience. That way the ST will always try to reflect through how the entire lesson was conducted while answering the questions, what went right during the lesson? What went wrong during the lesson? And what is it that needs improvement or to be done differently? Comprehension occurs only when knowledge acquisition is accompanied by constant reflection upon the meaning of what is studied(Dewey, 1933)

Also the respondents felt that assessment should be limited to four assessments so that the STs gets time to implement the proposed strategies or interventions. At the time of the study, every ST had to receive six assessments in a span of 12 weeks. This did not allow time for the STs to work on the proposed areas that need improvement. This made the ST to view assessments as examinations thus concentrating on the scores rather than improving quality of teaching. Also the assessors were strained and did not have enough time to share the feedback with the students. They did it in a hurry to leave for assessment in another

station. Reducing the number assessment will create enough time for feedback and sharing of experiences.

Also the ST felt that for proper preparations and organization, assessment should adhere to the School timetable. This gives time to the student teachers to prepare promptly for the lesson. Also assessment of practical lesson should be done at least once out of the three or four assessment so that the student teachers can be advised on how best to conduct practical lesson.

Equally, the ST felt that the assessors had contradicting views on how teaching should be conducted. To improve on the quality of assessment, the assessorsô views should be harmonized through adopting a common teaching philosophy to avoid contradictions that may leave the student teacher confused(Ali & Al-Adawi, 2013).

During the practicum, the student teachers are attached to cooperating teachers who are supposed to guide the student while in the field. Noticeable, was that the students felt that cooperating teachers should be involved more in providing professional guidance to the students. However, in reality, the majority of the students felt that cooperating teachers were not effectively involved in providing professional guidance. From figure 2 below 56% of the respondents felt that the cooperating teachers were poorly involved while 33% felt they were fairly involved. Only 7% felt that involvement of cooperating teachers was good while 4% felt the involvement of cooperating teachers was very good. This is a great shortcoming as (Clarke et al., 2014b) pointed out that cooperating teachers play a big role in development of teachers on TP as they are together most of the times. The poor involvement of the cooperating teacher can be explained by the fact that no guidelines or framework has been put in place stipulating how cooperating teachers will be involved in student teacher mentorship during TP. Also during the assessors FGD, it was established that the cooperating teachers cited lack of incentives or reinforcement as a reason why they donôt actively involve themselves in student teacher mentorship during TP. Not to mention that neither the institutions nor the university had formalized the engagement of cooperating teachers during practicum.

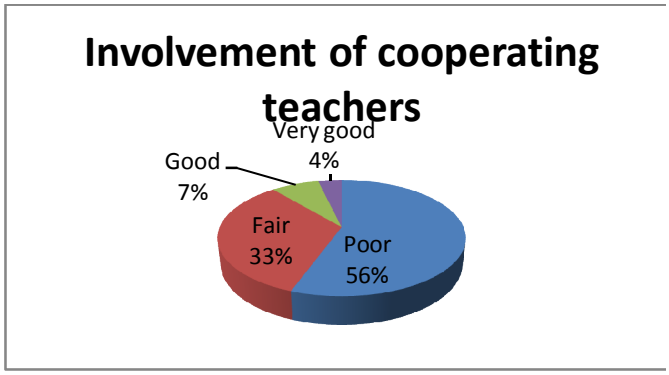

Figure 2: Involvement of cooperating teachers in mentoring teachers on TP

CONCLUSION AND RECOMMENDATIONS

The study, from the findings, concludes that the practicum exercise was fairly effective however its impact was not maximized.

This was mainly due to a weak Institution-University linkage and almost nonexistence communication between institution and university particularly on practicum matters. This was augmented by lack of formal engagement between university, institutions and cooperating teachers during practicum and even magnified by lack of formal engagement structures, framework and guidelines. For maximization and optimization of the impact of practicum, the following recommendations are made:

- Strengthened Technical Training Institutions-Universities linkages and collaboration especially on Technical Teacher Education practicum.
- This will increase the participation of institutions and universities in training of technical teachers through capacity building, financing, user feedback and sharing of resources.
- Universities in collaboration with technical institutions to develop structures, guidelines, and framework on involvement of cooperating teachers during TP exercise. This guidelines should capture the competence required, scope and reinforcement strategies that will be used to motivate the cooperating teachers.
- The Ministry of Education through relevant agencies to develop policies on students financing especially when they are on teaching practicum. This should be considered essential as learning environment influence rate of learning and retention.
- The universities to conduct assessment as scheduled in the TTIs timetables. This will minimize interruption of the technical institutions academic activities and also provide enough time for students to prepare for the lessons.
- The university to reduce the number of required assessments per student from 6 to between 3 to 4 assessments per term and subsequently to reduce the assessorsô workload from 25 assessments per week to 15 assessments per week. This is to allow assessment to be done as per the technical institution timetable and also to increase the time at the disposal of assessors to provide feedback to the student and share experiences.
- The Universities in collaboration with Ministry of Education to develop national guidelines and policies that govern training of technical teachers. The policy should consider rising the minimum duration for technical teacher education

programs in Universities from the current 4 years to 5 years. This will allow the students to take more core teaching subjects and practicals that will ground them better to handle Competence Based Education and Training (CBET) curriculum and also to maximize learning during practicum.

- The university to undertake TP exercise at the very end of the TTT programme when the ST have cleared the syllabus and have undergone industrial attachment. This will allow the student to be strongly grounded in theory and practice so as to be able to build lessons rationale and provide relevant examples during lessons development. This will also have a practical advantage of having some of them retained for job placement.

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