Original Paper

Role of Pedagogical Training on Teaching Competencies in Higher Education: A Case Study of Egerton University

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Abstract

University education is a critical pillar of economic development worldwide. Its role in economic development points at the norms, attitudes, ethics and knowledge that Universities inculcate in students. For Universities to achieve their mandate they require effective teaching. Effective teaching and quality graduates require university academic staff to possess a combination of content and pedagogical knowledge. However, University lecturers' teaching competencies are unsatisfactory. In many countries, securing a teaching job in a university does not require an applicant to present any proof of teaching capability. A PhD or its equivalent is the key criterion or pre-requisite to prove scholarly competence. On the other hand nothing is required to prove pedagogical competence, a competence in the precise skills an individual is anticipated to use in the practice. Therefore, Egerton University launched a pedagogical training course for lecturers to enhance their pedagogical competencies. The purpose of this study was to investigate the role of the pedagogical training in equipping science lecturers with requisite pedagogical skills for effective instruction. The research design was Causal comparative research. The accessible population was all lecturers from four faculties that offered science-oriented courses. Proportionate random sampling was used to select a sample of 120 respondents. Classroom Practices Questionnaire (CPQ) and Science Teaching Observation Schedule (STOS) were used to collect data. Data was analyzed using descriptive statistics, t-test and chi-square. The findings indicate that the pedagogical training improved the overall lecturers' competences in planning for instruction and selection of instructional methods. However, lecture method was still preferred due to large class-sizes and workload. They frequently used whiteboard and PowerPoint with occasional use of videos and real objects due to suitability, availability of the media, class size and easy to use. Following these findings, it is recommended that there is need for compulsory and continuous pedagogical training of the university teaching staff to enhance their overall teaching competencies. Lecturers should be sensitized on the need for enhanced teaching competencies, which are not only influenced by their areas of specialization but by pedagogical training. Pedagogical training should be a requirement for the recruitment of lecturers at the universities in addition to academic qualifications in their areas of specialization.

Keywords: Planning, Instructional Methods, Teaching Competencies and Pedagogical Training

1. Introduction

Education is universally and globally viewed as an indispensable tool for personal and social developments (Eisner, 2017). It is also regarded as a key factor in the context of economic growth of a country by fostering the development of the necessary human capital (Peterson, 2017). Accordingly, university education provides not only the skills necessary for labour markets, but also training necessary for many professionals (Becker, Cummins, Davis, Freeman, Hall, & Ananthanarayanan, 2017).Consequently, expertise and research skills in one's own study area have customarily been emphasized over pedagogical proficiency and teaching skills in higher education. Accolades are often awarded to university lecturers based on breakthroughs from research findings and more often than not, it is the quantity of research and the list of publications obtained from research endeavors, which are considered the key indicators of their academic excellence (Matthews, Cook-Sather, & Healey, 2018).

Studies have shown that pedagogical training courses organized for teachers in universities enhance the implementation of better teaching approaches (Vilppu, Södervik, Postareff & Murtonen 2019). Pedagogical training courses are intended to enhance the lecturers' instructional practices and skills. Studies have shown that pedagogical training has effects in planning for instruction as well as selection of instructional methods among others. However, few studies are available in Africa concerning the pedagogical competence of lecturers. These studies indicate that most universities in Africa conduct pedagogy induction courses; nevertheless, few lecturers attend and benefit from such training since they are not compulsorydue to the fact that neither formal teaching qualification nor pedagogical competence was a requirement for recruitment in universities (Olatunji, 2013 & Karami, 2014). This is confirmed by Karimi (2014), who argues that teaching staff in higher education in Kenyan universities, are trained for many years in their research and subject area. However, in most cases, not at all in teaching, yet teaching occupies most of their professional career. In Egerton University, lecturers are trained annually since 2006.This informed the selection of the location of this study. The study focused on the lecturers that were trained between 2006 and 2011. The number of lecturers trained in the University since inception of the programme is summarized in Table 1.

Table 1. Distribution of Lecturers Attending the Pedagogy Course from 2006-2011 in Egerton University

Faculty	2006	2007	2008	2010	2011	Total
Science	8	7	19	8	9	51
Agriculture	4	-	31	7	4	46
Engineering	2	-	20	11	1	34
FERD	4	5	10	-	2	21
FASS	8	11	7	11	3	40
Health/Sciences	2	-	6	1	4	13
FEDCOS	10	5	-	4	1	20
Total	**38**	**28**	**93**	**42**	**24**	**225**

Source: Dean Faculty of Education and Community Studies, 2011

As shown in Table 1 the number of lecturers attending the pedagogy course seems to be fluctuating. In Egerton University the pedagogical training course for university lecturers was introduced in the year 2006 to enhance lecturers' teaching competencies and instructional practices. This is an annual program, where newly recruited lecturers from various faculties are expected to undertake a 3-day pedagogy training. The training is organized by the Faculty of Education and Community Studies. The aim of the training is to equip lecturers with basic skills to plan for instruction and learning process. Additionally, to support them become aware of and capable of using student-centered approaches in instruction. Egerton University offers several topics during the pedagogy course namely, planning for instruction and selection instructional methods among others. In 2008 the number of lecturers' attending the pedagogy increased because more lecturers were employed following massive expansion of university education. In particular, Egerton University opened new campuses (Commission for University Education, 2014). Studies by (Novianti, & Nurlaelawati, 2019; Karimi (2014) and Nyaigotti-Chacha (2004) points out that majority of lecturers have not been trained in pedagogical competencies. In addition, they reported that some of the new lecturers lack broad understanding of the strategies, methods and techniques of quality planning for instruction and evaluation. However, lack of research in pedagogical training of university lecturers is noticeable, leading to absence of adequate evidence on the effects of pedagogical training in equipping lecturers with requisite competencies in pedagogical skills. This study sought to establish the role of the pedagogical training with specific focus on science oriented faculties of Egerton University.

1.1 Statement of the Problem

Traditionally, the expertise in one's own discipline is the most appreciated feature of a university lecturer. However, despite this expertise their teaching competencies are unsatisfactory and quite a number of lecturers lack teaching competencies. As a result, training of university lecturers has lately become a widespread tendency in several countries. Consequently, pedagogical training for university lecturers was introduced in Egerton University in 2006. The purpose of the training is to enhance lecturers' teaching competencies. However, the effects of pedagogical training on lecturers' teaching competencies has not been investigated and documented. Therefore, the study sought to investigate the effectiveness of the pedagogical training among lecturers with specific focus on science-oriented faculties in Egerton University.

1.2 Conceptual Framework

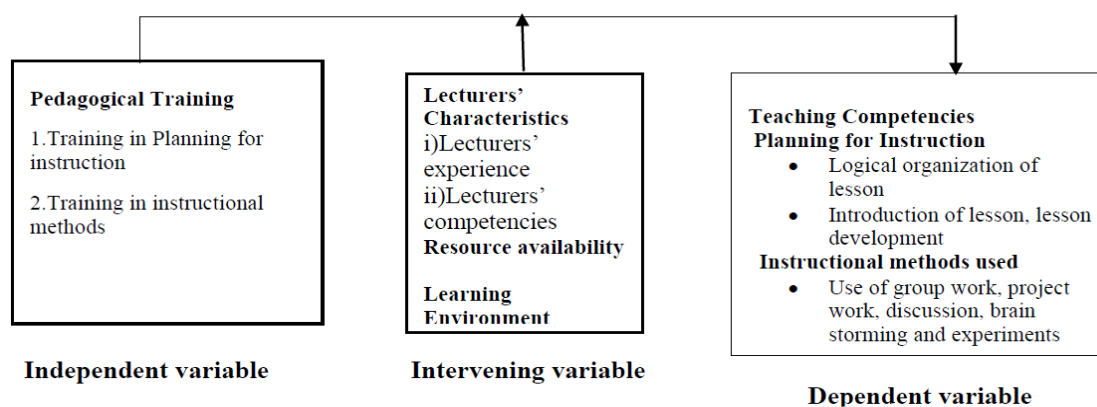Schematically, the interactions of the variables in the study are illustrated as shown in Figure 1.

Figure 1. Conceptual Framework

This framework shows that the pedagogical training influenced the instructional practices adopted by the science lecturers. Learning was affected by various factors ranging from lecturer factors, resources availability and learning environment. Lecturers teaching experience and competencies may determine the teaching approaches a lecturer uses. Teaching may also be influenced by resource availability. Lecturers teaching experience was controlled by having lecturers with 3years and above (Commission for university Education in Kenya (2014) through sampling. Lecturers' competencies was controlled by having only those lecturers who had undergone pedagogy training. Resource availability was controlled by the study being done in one university hence homogeneity of resources. Learning environment was controlled by carrying out the study in one institution hence homogeneity of learning environment.

1.3 Objectives of the Study

The specific objectives of this study were:

    i.   To determine the role of the pedagogical training on the lecturers' competencies in planning for instruction.

    ii.   To establish the role of the pedagogical training on the lecturers' competencies in selecting instructional methods.

1.4 Hypotheses

The following null hypotheses were tested:

    i.   There is no statistically significant role of university pedagogical training on lecturers' competencies in planning for instruction.

ii.   There is no statistically significant role of university pedagogical training on lecturers' competencies in selecting instructional methods.

2. Research Methodology

The study adopted Causal comparative research design. This design is used when the independent variable is not manipulated (Fraenkel, Wallen, & Hyun, 2011). The design sought to determine the relationship between independent variable and dependent variable after the event had already happened. The study was to determine whether the dependent variable was affected by the independent variable by comparing two groups of individuals. The design was appropriate because the focus was to investigate the role of the independent variable on the dependent variable given that the independent variable had already occurred hence was not manipulated by the researcher. The researcher employed qualitative and quantitative methods. The subjects were also observed in an absolutely natural environment. Two instruments were used to collect data Classroom Practices Questionnaire (CPQ) and Science Teaching Observation Schedule (STOS). Questionnaires were used in the study since a large sample of the population can be contacted at a fairly low cost, additionally, they are easy to administer and finally, most respondents are acquainted with the format (Mugenda & Mugenda 2003). The classroom practice questionnaire was adapted from Vazalwar and Dey (2011) "Teacher competence in Education". The CPQ contained likert type items with a scale of 1 (strongly disagree) to 5 (strongly agree). The CPQ was divided into two sections; before and after pedagogical training course. The first section dealt with what the respondent was currently doing with regard to pedagogical training during instruction. The second section was to reveal what the lecturer used to do without having undergone the pedagogy training. The second instrument used was Science Teaching Observation Schedule (STOS). Observation is vital source of primary data (Kothari, 2011). STOS was used in order to capture exhaustive information on instructional practices as well as to record accurate behavior of lecturers in class when teaching. The STOS had a rating scale of 1 to 5. A score of five showed the lecturer was outstanding, therefore; the pedagogical training would have improved their efficiency and effectiveness in delivering their services while a score of 1 indicated unsatisfactory practice. The researcher was a non-participant observer to minimize interaction with the subjects and attempted to obtain as complete a record as possible of behavior relevant to the observers' interests (Gall, Gall, & Borg, 2003). The researcher observed and rated competencies of the lecturers in planning for instruction and instructional methods.

2.1 Sample Size and Sampling Procedures

The sample size in this study was 120 lecturers who teach science-oriented courses from the Faculties of Science, Agriculture, Environment and Resource Development, Engineering and Technology in Egerton University. Kothari (2011) has argued that it is not likely to collect data from a population. This necessitated the use of a representative sample. A list of four science-oriented faculties were purposively picked for the study. At the faculty a list of all departments was used as sampling frame and proportionate random sampling technique was used to pick the departments to be involved in the study hence increasing the representativeness of each Faculty where science-oriented courses are taught (Kothari, 2011). At the departments simple random sampling was used to select the participating lecturers. Lecturers were therefore randomly and proportionately selected from each Faculty as shown in Table 2.

Table 2. Summary of the Sample of the Lecturers as per Faculty

Faculty	Sample Size
Science	40
Agriculture	36
Engineering	27
FERD	17
Total	**120**

Source: primary data

3. Data Collection Procedures

The researcher obtained an introductory letter from the Graduate school and applied for a research permit from the National Council for Science Technology and Innovation (NACOSTI). Once the permit was granted the respondents were formally contacted through the county commissioner, Nakuru County director of Education and, and Egerton University administration. The purpose of the study was explained to participants and their consent to take part in the study sought. The dates and venues for administering the questionnaires and making observations were set in close consultation with respondents. On the appointed date the researcher self-administered the questionnaires and collected them personally to ensure high return rates. The researcher also observed the lecturers' instructional activities during instruction.

3.1 Data Analysis

The data obtained from closed ended items in CPQ was coded and analyzed with the aid of Statistical Package for Social Sciences (SPSS). The responses of lecturers to the closed ended items were scored, and means were computed for planning for instruction and instructional methods indices. The role of the pedagogy training on teaching competencies was established using the t-test and chi-square test for independence. The data generated by open ended items were transcribed and organized into themes pertinent into the objectives of the study and summarized using frequencies and percentages. Observation of the actual teaching was done to clarify the information collected from the instruments. A scale of 1 to 5 was used where 1 = unsatisfactory: 2 = below average: 3 = average: 4 = above average and 5 = outstanding.

4. Results

4.1 The Effects of the Pedagogical Training On Lecturers' Competencies in Planning for Instruction

The first objective of the study examined the effects of the pedagogical training on lecturers' competencies in planning for instruction. The classroom practices questionnaire (CPQ) was used to collect data on lecturers' competencies in planning for instruction. The lecturers' responses to the set of items used to measure the construct before the course were summed up and an overall mean computed. The results are presented in Table 3.

Table 3. Lecturers' Competencies on Planning for Instruction before and after the Pedagogical Training

Statements (n = 120)	Mean	SD	Mean	SD
Identify learning goals reflecting conceptual understanding of the content	3.92	1.03	4.27	0.91
Organizing science content in a logical sequence	4.03	0.89	4.33	0.88
Organizing students into groups for discussion	3.19	1.21	3.44	0.90
Working with colleagues in the preparation for course content	3.27	1.18	3.48	1.10
Planning for course instructional methods	3.62	0.75	3.73	0.66
Outlining preliminary course description	3.23	0.67	3.75	0.97
Preparing course objectives	3.85	0.97	3.92	0.70
Planning learning activities	3.57	0.43	3.62	1.02
Preparing instructional media	3.63	0.67	4.02	0.65
Planning for reference material and reading list	3.72	0.59	4.03	0.69
Overall mean score	**3.60**	**0.29**	**3.86**	**0.31**

As shown in Table 3, item mean score after training was generally high in regard to pedagogical training helping lecturers in organizing science content in a logical sequence, identify learning goals

that reflected the conceptual understanding of the content they taught, preparing course objectives, planning for reference material and reading list, preparing instructional media, planning for course instructional methods and planning learning activities. The overall mean index before the pedagogy course was 3.60, which improved after the training.

The effect of the pedagogical training was determined by comparing their competencies in planning for instruction before and after the course. The *t*-test was used to establish if there was a significant mean difference in the overall competencies in planning for instruction before and after the course. The results of the *t*-test are presented in Table 4.

Table 4. Paired Two Sample t-test for Mean Difference in Competencies in Planning for Instruction before and after Pedagogy Course

The t-test

Epoch	N	Mean	SD	Df	t-value	ρ-value
Before	120	3.60	0.29	119	5.4054	0 .0004
After	120	3.86	0.31			

The Paired two sample t-test results in Table 4 reveal that the instructional planning mean ($M = 3.86$, SD 0.31) after the pedagogy course was higher than ($M = 3.60$, $SD = 0.29$) before the course. The difference between the two means was statistically significant at 0.05 level, $t = 5.4058$, $P < 0.05$. On the basis of these results the first hypothesis of the study was rejected. The results of the study indicate that the pedagogy training significantly affects planning for instruction. The study depicted that the pedagogical training the lecturers undertook enhanced their competencies in planning for instruction.

The study also sought to ascertain whether lecturers planned for instruction this was done by observing the actual teaching. There were 30 lecturers that were observed during actual teaching. This involved observing and rating their teaching using a five point scale (OS, AA, A, BA, US). The results are presented in Table 5.

Table 5. Lecturers Planning for Instruction as Observed by the Researcher

Statements (n = 30)	OS	AA	A	BA	US
Introduction of a concept is interesting and inspiring	0.0	33.3	43.3	20.0	3.3
Provides comprehensible and clear instructional objectives	0.0	28.6	64.3	7.1	-
Logical presentation of course with course objectives, content, learning activities, instructional methods, instructional media and assessment procedures and asking questions for prior knowledge	0.0	34.5	58.6	6.9	-
Content is broken into small bits in order to enable students learn step by step	0.0	53.3	40.0	6.7	-
Creates learning experiences that make the aspects of subject matter meaningful for all students such as the use of teaching aid, varying the stimulus	0.0	50.0	40.0	10.0	-

As shown in Table 5, majority (76.6%) of the respondents were above average and average in introducing concepts in an interesting and inspiring manner compared to only twenty three point three (23.3%) who were below average and unsatisfactory. In addition, ninety two point nine (92.9%) were above average and average in terms of providing comprehensible and clear instructional objectives compared to seven point one (7.1%) were below average. The results also show that ninety three point

one (93.1%) of those observed were above average and average with regard to presenting the course logically in agreement with the course objectives while six point nine (6.9%) were below average. The results also show that ninety three point three (93.3%) of the respondents were above average and average with respect to breaking the content into small bits that enabled students to learn step by step compared six point seven (6.7%) who were below average. Moreover, ninety point zero (90.0%) were above average and average in creating learning experiences that made the aspects of subject matter meaningful for all students while ten point zero (10.0%) were below average. From these results it is evident that majority of the respondents were observed to be average and above average with regard to planning for instruction. This could possibly be due to the pedagogy-training course they had undertaken.

4.2 Effects of the Pedagogical Training on Lecturers' Competencies in Selecting Instructional Methods

The second objective of the study sought to determine the effects of the pedagogical training on the lecturers' competencies in selecting instructional methods. The lecturers' competencies were categorized into competencies before and after the pedagogy training. The competencies were rated using their overall mean scores. Table 6 shows the mean and standard deviations of the lecturers' competencies before and after the pedagogy training.

Table 6. Lecturers' Competencies in Selecting Instructional Methods before and after the Pedagogy Training

Statements(n = 120)	Before		After	
	Mean	SD	Mean	SD
Selecting appropriate instructional method that actively engage the students	3.68	1.01	3.71	1.06
Using inquiry method to enhance active learning	3.83	0.99	4.10	0.90
Using hands on activities as learning experiences	3.24	1.01	3.28	1.05
Engaging learners in brainstorming tasks	3.46	1.02	3.72	0.96
Involving learners in group discussion	3.62	1.03	3.73	0.89
Using demonstration as an instructional method	4.24	0.32	4.44	1.02
Encouraging learners to assimilate and apply information learnt	3.74	0.83	3.75	0.84
Asking and answering questions appropriately	3.44	1.07	3.78	0.53
Using different methods depending on the time allocated, class size and the content to be covered	3.58	0.53	3.62	0.67
Using discovery learning to enhance active learning	2.96	0.74	3.75	0.79
Overall mean score	**3.58**	**0.34**	**3.75**	**0.30**

The effect of the pedagogical training is expected to have an influence on individuals' level of competencies in teaching and learning. The results indicate that there was an improvement after training regarding selecting appropriate instructional methods, use of inquiry method, group discussion, demonstration, question, and answer method and use of discovery learning method. This suggests that there was an improvement in the lecturers' competencies in selecting instructional methods after exposer to the pedagogical training.

The effects of the pedagogical training was determined by comparing their competencies in selecting instructional methods before and after the training. Paired two sample *t*-test was used to conduct the comparison between the overall mean competencies before and after the training. The results are presented in Table 7.

Table 7. Paired Two Sample *t*-test on Comparison between the Overall Mean Competencies before and after the Training

Epoch	N	Mean	SD	Df	t-value	ρ-value
Before	120	3.58	0.34	119	2.55	0.03
After	120	3.75	0.30			

The results in Table 6 demonstrate that the mean competencies in selection of instructional methods after the pedagogy course was higher ($M = 3.75$, $SD = 0.30$) than before the course ($M = 3.58$, $SD = 0.34$). The difference between the two means was statistically significant at $\alpha = 0.05$ ($t = 2.55$, $P < 0.05$). Based on these results the second hypothesis, which stated that pedagogical training, does not significantly affect lecturers' competencies on selecting instructional methods was rejected. The results in Table 7 indicate that the pedagogy training significantly influenced the lecturers' competencies in selection of instructional methods.

The study investigated the instructional methods used by the respondents before and after the pedagogical training. This was to ascertain whether the respondents actually selected the most appropriate instructional methods after the pedagogy training, or they continued using the same instructional methods even after the training. The data generated from lecturers' responses was analyzed using percentages. The results of percent responses before and after the pedagogy course are presented in Table 8.

Table 8. Instructional Methods used before and after the Pedagogical Training

Method (n = 120)	Before		After	
	Freq	Percent	Freq	Percent
Lecture method	62	51.7	36	30.0
Small group teaching	20	16.7	22	18.3
Brainstorming	21	17.5	26	21.7
Project work	11	9.2	20	16.7
Demonstration	6	5.0	16	13.3
Total	120	100	120	100

The results indicate that the usage of lecture method which was used before training reduced after the training. Conversely, small group, brainstorming, project work as well as demonstration methods gained consideration among the lecturers after training. The study evaluated differences in the use of instruction methods before and after the pedagogy course using chi-square test. The results of chi-square analysis of the difference in the use of the instructional methods before and after the pedagogical training is presented in Table 8.

The study evaluated differences in the use of instruction methods before and after the pedagogy course using chi-square test. The results of chi-square analysis of the difference in the use of the instructional methods before and after the pedagogical training is presented in Table 9.

Table 9. Chi-square Analysis of the Differences in the Use of Instructional Methods before and after the Pedagogical Training

	Value	Df	P value
Pearson Chi-Square	14.683[a]	4	0.005
Likelihood Ratio	14.977	4	0.005
Linear-by-Linear Association	14.052	1	0.000
N of Valid Cases	240		

From the result in table 8, it can be observed that there was a significant change in the number of lecturers using different instructional methods after the pedagogy course (χ^2 = 14.683, $P < 0.05$). Selection of appropriate instructional method that actively engage the students, require that the lecturers have pedagogical skills. Therefore, the change in the number of lecturers using a variety of instructional methods could be attributed to the pedagogical training which enhanced their pedagogical competencies in using different methods in content delivery.

The researchers also observed the actual teaching to ascertain whether lecturers selected appropriate instructional methods during instruction. This involved observing 30 lecturers and rating the instructional methods used using a five point scale (OS, AA, A, BA, US). A scale of 1 = unsatisfactory (US): 2 = below average (BA): 3 = average (A): 4 = above average (AA) and 5 = outstanding (OS). The results in percentages are summarized in Table 10.

Table 10. Observed Lecturers' Competencies in Selection of Instructional Methods

Statements (N = 30)	OS	AA	A	BA	US
Lecturer uses student centered activities to reinforce students' mastery of essential learning outcome such as discussion in small groups, assignments	3.3	36.7	23.3	33.3	3.4
Build students' knowledge, creativity, critical thinking and problem solving skills through project	3.3	16.7	50.0	16.7	13.3
Engages students in explaining, demonstrating the relevance of topics and activities	10.0	36.7	43.3	6.7	3.3
Helps students to develop a range of skills such as observation, analysis, synthesis and reasoning through practical activities	3.3	36.7	40.0	10.0	10.0
Encouraging learners to assimilate and apply information learnt	13.3	26.5	30.2	13.0	17.0

Table 10, illustrates, majority is that sixty three point three (63.3%) of the respondents were outstanding, above average and average, in the use of student centered activities to reinforce students' mastery of essential learning outcome such as discussion in small groups, assignments, workshop based activities, projects and field excursions compared to thirty six point seven (36.7%) who were below average and unsatisfactory. It is also evident that majority (70.0 %) of the participants observed were able to build students' knowledge, creativity, critical thinking and problem solving skills through project. Only thirty (30%) of the respondents below average and unsatisfactory. With regards to engaging students in explaining and demonstrating the relevance of topics and activities: ninety (90%) of the respondents were average, above average and outstanding, while ten (10%) were below average and unsatisfactory. Majority (80.0%) of the participants observed assist students to develop a range of skills such as observation, analysis, synthesis and reasoning. Finally, majority (70.0%) of the participants observed encourage learners to assimilate and apply information learnt. Therefore, only thirty (30%) were below average and unsatisfactory.

5. Discussion

5.1 The Effects of the Pedagogical Training on Lecturers' Competencies in Planning for Instruction

The results of the study indicate that the pedagogy training significantly affects planning for instruction. Therefore, their competencies in planning for instruction were enhanced. The findings are in line with those of Hood and Houston (2016). The study was on whether lecturers exhibit learning transfer beyond the pedagogical training in Australia. They established that participation in pedagogical training impacts teachers' knowledge, attitudes as well as ability to teach well beyond the duration of the pedagogical training with resultant benefits to student learning. Their findings revealed that majority of teaching staff taught differently and that they had a more positive attitude to teaching practice after participating in university teacher preparation program. The results are also in consitent with those of Ödalen et al. (2019) who conducted a study on whether pedagogical training courses had desirable effects among 183 university teaching staff from Sweden's six largest universities. They revealed that the participants' confidence in their role as teachers as well as their pedagogical skills including planning for instruction increased after participating in the pedagogical training. Similarly, Biku et al. (2018) found that majority of the lecturers practiced individual methods of teaching, without lesson plans and lack of clear learning objectives due to lack of pedagogy training. Their study investigated on the effect of teaching without pedagogical training, in St. Paul's Hospital Millennium Medical College (SPHMMC) in Ethiopia. Out of the 16 lecturers who participated in the study only one had undergone pedagogical training for a whole year. Twelve teaching staff had undergone a training of between 2 days to 2 weeks while the rest of the lecturers used individual teaching method without lesson planning. They revealed that this unplanned course effected the students' participation in the learning process. To address this hitch, they advocate for appropriate pedagogical training for all instructors for enhancement of their skills in planning for instruction among other teaching skills.

Ningtiyas and Jailani (2018) studied the influence of pedagogical training on pedagogical competence among 20 mathematics teachers that were randomly selected. They revealed that the quality of education is affected by teachers' pedagogical competencies. Results from their questionnaire revealed that the pedagogical training enhanced their pedagogical skills espacially in planning in instruction among others. The Researchers assert that mathematics teachers required continuous pedagogical training. Accordingly, a lecturer is a specialist in a domain of knowledge. However, in order to develop positive student-teacher relationships he/she must then have skills. This includes; having the capability to facilitate knowledge acquisition, to arouse learner originality and to inspire critical thinking all of which are possible through planning for instruction (Etelvia, 2009). Berthiaume (2009) and Nakpodia (2011) also found that pedagogical training would immensely improve lecturers' competence in planning for instruction. Therefore, there is need for compulsory and continuous pedagogical training of the university teaching staff for enhancement of their skills in planning for instruction. Furthermore, Biggs (2011) argues that teaching is interactive therefore, the students' existing knowledge must be considered. A student-centred teacher considers learners' divergent prerequisites as a starting point when planning a course. In order to uphold high quality teaching as well as learning in institutions of higher learning, it is essential to encourage the more desirable student-centred approaches of teaching rather than the less desired teacher-centred approaches. This therefore, calls for compulsory and continuous pedagogical training of the university teaching staff on planning for instruction as it enhances their overall teaching competencies. Teaching profession requires specialized knowledge given that it influences students' learning. Accordingly, such knowledge are attained through both training and experience (Long et al., 2014; Thapa, 2012; & European Commission, 2008). Learning activities should be well thought out and planned in advance (Wambui, Ngari, & Waititu, 2016, Keraro, 2011). In a previous study by Wambui et al. (2016) on whether part-time lecturers in Kenyan Universities design lesson plans and whether they use them during instruction found that majority 67.3% of part time lecturers planned their lessons. Planning of a lesson allows an instructor to envisage each stage of the instruction beforehand in addition this visualization ultimately increases instructors' achievement during instruction (Keraro, 2011). An instructor ought to be capable of planning in addition to providing a set of learning opportunities that offer access to essential ideas as well as skills for all students. The present study therefore, reveals that there is significant change in the number of lecturers planning for instruction after the pedagogical training. Majority of the lecturers were

cognizant of the importance of planning after the 3 day pedagogical training. Such as for effective teaching, course coverage and content delivery as well as for logical flow of instruction. Secondly,they were cognizant of the key considerations when planning for instruction. Such as need to consider the class size, time and contact hours, availability of instructional resources and learning objectives and learner characteristics such as whether the students are diploma, undergraduate, graduate, regular or school based as well as mode of assessment or evaluation. Therefore, the study found that 3 day pedagogical training affects lecturers' competencies in planning for instruction.

5.2 Effects of the Pedagogical Training on Lecturers' Competencies in Selecting Instructional Methods

The results of this study have shown that the pedagogy training significantly influenced the lecturers' competencies in selection of instructional methods. Therefore, pedagogical training enhanced the lecturers' competencies in selection of appropriate instructional methods for effective teaching. The results are in agreement with a study by Vilppu et al. (2019) on pedagogical training on approaches to teaching among 200 lecturers which found that majority of the lecturers who had participated in the pedagogical training were more cognizant of the approaches to teaching and teaching methodologies. In addition, Biku et al. (2018) in their study on the impact of teaching without training in pedagogy found that most of the lecturers used individual teaching methods. **The study established that** the gap in pedagogical training, adversely affected the selection and use of instructional methods. Similarly, Postareff et al. (2007) found that pedagogical training enhanced the lecturers' knowledge on the efficiency in using different methods in content delivery. Furthermore, Bulger et al. (2002) asserts that an individual without training and pedagogical knowledge is likely to teach using only one teaching technique and methodology in all situations. It is a teacher's duty to ensure that learning as inviting as possible (Yulastri & Hidayat, 2017). Active learning strategies that engage learners, require intelligent effort, inspire higher-order thinking and provide the learner with a means to integrate, apply and retain the learnt information (Yuretich, 2003; Bonwell & Eison, 2009; & Postareff et al., 2007). During teaching, inquiry-based methods are assumed more advantageous for learning than fact-centred teaching (van Merriënboer & Kirschner, 2017; Ramsden, 2003). They argue that a teacher is accredited in the use of a wide range of instructional methods effectively and efficiently so as to work with large classes, small classes as well as individual students. There are several instructional methods that are applicable in University instruction. These are lecture, small group teaching, brainstorming, practical skills and projects (Merkt, 2017; & Badu & Torto, 2014). A lecturer would use diverse approaches subject to the time available, the number of learners per lesson, the content to be taught as well as the level of the students (Nteere, Namusonge, & Mukulu, 2012). Selection of appropriate instructional method that actively engage the students, require that the lecturers have pedagogical skills (Ödalen et al., 2019). According to International Consortium for Educational Development (ICED, 2014) in USA the experience an individual teaching staff has within a subject area is assessed to ascertain ability to teach it, and then the individual undertakes training on teaching as well as professional growth within the university. We therefore, advocate for appropriate pedagogical training for all instructors to enhance their skills in selection of instructional methods.

The results from table 9 suggest that lectures who had undertaken pedagogical training were competent in selection of instructional methods. The results are constitent with the findings of Wambui et al. (2016). They found that majority 87.1% of part-time lecturers in Kenya actively engage their students in class by using various instructional methods including project work among others. Further, Ningtiyas and Jailani (2018) in their study found that pedagogical trainings had a positive effect on the pedagogical skills of the teachers in relation to instructional methods. The Researchers affirm that teachers required continuous pedagogical training to enhance skills in selection of appropriate instructional methods for effective teaching. The results are also in line with a previous a study conducted in ten African countries by Olatunji (2013) which found that the teaching-learning process was not stimulating, as a result of various conditions such as: the lecturers' teaching approach was not student centered, some lecturers avoided students' questions throughout the lectures, in addition to class presentations were boring. Students also revealed that some of lecturers had difficulty in conducting classes, for that reason, they basically read their notes or displayed slides during lectures. This Olatunji explains could have been due to a lack of pedagogical training. We therefore, advocate for continuous pedagogical training of the university teaching staff to enhance their competencies in selection of

instructional methods to embrace small group teaching, brainstorming, project work and demonstrations among others. The above instructional methods would limit the extensive use of lecture method which reduces learners passive recipients. The role of a teacher has shifted to giving support to the learner during the learning process as well as encouraging deep learning approaches by creating an appropriate learning environment (Cao, Postareff, Lindblom-ylanne, &Toom, 2019). The study established that there is a significant change in the number of lecturers using different instructional methods after the pedagogical training course. There was increase in utilization of the other instructional methods such as small group teaching. However, some lecturers still preferred the lecture method. This could be due to the large class sizes, lack of time due workload. This result conform to a study by and in The University of Nottingham (2006) which indicated that the most frequently used teaching methods were lectures and case studies and the common influences on the choice of teaching methods to use were class-size and lack of time due to workload. Badu-Nyarko and Torto (2014) stressed that the lecturers have to deal with large classes as well as wide syllabuses for which the lecture method is economical.

6. Conclusions

Based on the summary of the key findings, the following conclusions were made:

i.   Lecturers who have undergone pedagogy training plan their lesson better than those who had not trained. They were able to organize the content in a logical sequence, prepare course objective and learning activities.

ii.   Lecturers who have undergone pedagogy training select appropriate instructional methods than those who had not trained. The teaching methods changed to embrace small group teaching, brainstorming, project work and demonstrations after pedagogy training. However, lecture method was still the preferred instructional method of instruction after pedagogical training this is due class-size and lack of time due to workload.

7. Recommendations

Based on the findings and conclusions, the study recommends the following:

i.   There is need for compulsory and continuous pedagogical training of the university teaching staff on planning for instruction as it enhances their overall teaching competencies.

ii.   There is need for compulsory and continuous pedagogical training of the university teaching staff on instructional methods as it essentially improves their teaching competencies.

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