

Competency-Based Teaching Approaches and Student-Teachers' Academic Performance in Public Grade a Teachers' Colleges in Lake-Zone, Tanzania.

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Abstract: *The aim of this research was to assess the use of Competency-Based Teaching Approaches and Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania. The objectives of the study were; (i) To establish the level of compliance to competency-based teaching approaches. (ii) To examine the level of student-teachers' academic performance. (iii) To establish the relationship between the level of compliance to competency-based teaching approaches and student-teachers' academic performance. (iv) To establish the Influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. A mixed methods approach with a survey design was used in data presentation and analysis. The study used a self-administered questionnaire in collecting quantitative data; an interview guide and documentary review in collecting qualitative data. The study applied purposive sampling and simple random sampling techniques to get participants. The study was guided by social cognitive theory developed by Bandura (1986). The study found out that in public grade A Teachers' Colleges in Lake-zone of Tanzania, all four competency-based teaching approaches (cooperative learning, inquiry-based learning, peer teaching and project-based learning) were positively perceived by the respondents with grand mean of 4.309 and standard deviation of 0.956. This indicates that competency-based teaching approaches were being used in Teachers' Colleges and have very high contribution to student-teachers' academic performance. Also, results indicate a statistically significant relationship ($r=0.636$ ** $p\text{-value}=0.000 < \text{sig } 0.05$) between competency-based teaching approaches and student-teachers' academic performance in public Grade A Teachers' Colleges in Lake-zone, Tanzania. The finding indicates that cooperative learning and inquiry-based learning have moderate positive effect on student-teachers' academic performance with $p\text{-value}$ of 0.000 ** at $\alpha= 0.05$ levels (2-tailed) whereby peer teaching has the $p\text{-value}$ (sig) of 0.013 * and project-based learning has $p\text{-value}$ of 0.123 . This implies that peer teaching and project-based learning have a small positive effect on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. Therefore, this effect is not statistically significant on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. It is concluded that cooperative learning and inquiry-based learning approaches have a positive impact on student-teachers' academic performance.*

INTRODUCTION

Competency-based teaching is one of the approaches which have become prominent in the assessment of learning worldwide. The use of these approaches started in the early 1960's through the 1970's in USA (Nodine, 2016). Economic processes and development of science and technology due to globalization stimulated competition in education sector because skills, expertise and competent people were needed to enhance productivity (Butova, 2015). The approaches focus much on developing life skills among students.

In competency-based teaching, students demonstrate their gained knowledge and skills in order to achieve predetermined competencies (Holmes et. al, 2021; O'sullivan & Burce, 2014 and Lytras et. al 2010). In different countries, competency-based teaching is being implemented to enable students to have behavioral change hence helping them to solve different problems. For instance in Malaysia, assessment is done by following criteria of performance whereby a competent student should be able to demonstrate good performance through effective use of knowledge and skills (Lian et. al, 2014). This is because competence-based assessment requires one-to-one correspondence with outcome-based standards (Buntat, et. al, 2013). On the other hand, when a student has not mastered to demonstrate competency, teachers must prepare a development plan in order to help him or her (Buntat et. al, 2013).

Other countries that are implementing competency-based teaching approaches are Finland, China, Canada and Brazil to mention but few (Akinrinola et. al, 2020). To enhance the effectiveness of competency-based teaching, various countries use different actions such as piloting, seminars and conferences to implement it (Lovanen, 2020). The most common competency-based teaching approaches used worldwide are collaboration, networking, problem solving, group teaching and experience based approach (Lovanen, 2020) as cited by Kalik et. al (2020).

Although competency-based teaching is being implemented world-wide, there is still poor performance among student-teachers, declining learning outcomes, inability to promote twenty-first century competences and failure to prepare students for the future

(Mulenga & Luangala, 2015). It is important to assess how tutors' facilitate competency-based teaching approaches that allow student teachers' to develop important skills needed in day-to-day life (Akinrinola, et. al, 2020).

In Africa, competency-based teaching approach was first implemented in South Africa in 1998 (Komba & Mwandangi, 2015). As time went on, other countries such as Rwanda, Zambia, Kenya, Nigeria, Zimbabwe, Mozambique and Tanzania among others also adopted the approach (Mulenga & Kabobwe, 2019; Ruth & Ramadas, 2019; Muneja, 2015). The aim of introducing competency-based teaching approaches was to produce skilled graduates who could meet the 21st Century challenges (Akinrinola et. al, 2020).

In East Africa, Countries such as Kenya, Uganda and Tanzania are among those that adopted competency-based teaching approaches into their teaching and learning process (Tarmo & Kimaro, 2021). In competency-based teaching, researchers have used different interpretations to guide their studies. For instance, Priest et.al (2022) states that majority of learners will achieve a competence in the specified content area as long as they are given the opportunity and freedom to progress at their own pace and their learning experiences are structured according to their interests and needs.

According to Klein-Collins (2013), competencies mean more than learning outcome. They can be measured and verified by evidence of student achievement and applied in different situations (Kennedy & Powell, 2013). Competency-based teaching approach is used interchangeably with the terms of mastery-based education, proficiency-based education and performance-based education.

The Tanzanian government has made various efforts to ensure that competency-based teaching is well implemented (Mohamed & Karuku, 2017). Some of these efforts include seminars, on job training and involving donors such as Equip T, 21st Century, Aga Khan, PCI, TESP programmes as well as the introduction of teacher education framework (MOEST, 2019). Despite the fact that the Government of Tanzania has done a lot to promote competency-based teaching in Teachers' Colleges, there are some challenges facing its implementation. For instance, there seem to be mismatch between policy and practices, lack of instruction materials, negative attitude by some tutors towards change whereby some are still using content-based teaching approaches and encourage rote learning in assessment, and lack of competent tutors in using competency-based teaching approaches (Tarmo & Kimaro, 2021).

The challenges faced in the implementation of competency-based teaching approaches in Public Grade A Teachers' Colleges in Tanzania have serious implications on the academic performance of student-teachers'. Evidence from National Examination Council of Tanzania shows that academic performance of student-teachers in Tanzania Teachers' Colleges has declined over the years (NECTA, 2021). This study therefore aimed at assessing the use of CBTAs in Teachers' Colleges in Tanzania specifically in Lake-zone, to ascertain its relationship and effect on student-teachers' academic performance.

Purpose of the Study

The purpose of this study was to assess the use of competency-based teaching approaches and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.

Objectives of the Study

1. To establish the level of compliance to competency-based teaching approaches in public grade A Teachers' Colleges in Lake-zone, Tanzania.
2. To examine the level of student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.
3. To establish the relationship between the level of compliance to competency-based teaching approaches and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.
4. To establish the influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.

Hypotheses of the Study

1. There is no significant relationship between the level of compliance to competency-based teaching approaches and student-teachers' academic performance in public Grade A Teachers' Colleges in Tanzania.
2. There is no significant influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.

Theoretical Framework

The theoretical framework for this research based on the Social Cognitive theory which suggests that learning occurs through the interaction between personal factors, environmental factors and behavioral factors. In the context of this research, personal factors refer to the student-teachers' competence and skills; Environmental factors refer to the learning environment which may include the approaches used in teaching; and behavioral factors refer to academic performance (Bandura, 1986). The Social Cognitive theory proposes that learning is dynamic and interactive process that involves the following key elements:

- (i) *Personal factors* which include Competencies and skills of student-teachers. Competency-based teaching approaches aim to develop and enhance these competencies and skills which in turn enhance student academic performance (Wagner, 1997).
- (ii) *Environmental factors* influence students' academic performance by affecting students Motivation and engagement (Weimer, 2013). The social cognitive theory emphasizes that behavior is influenced by personal and environmental factors.
- (iii) In the context of this research, *behavior* refers to students' personal characteristics that influence their academic performance (Biggs, 2007).

Methodology

Research design: The research used survey design in data collection and analysis. A survey design was used because it is a good way of gathering data from a large sample in a short time. It follows systematic procedures while collecting information and can provide reliable and valid data (Cohen et. al, 2017). A mixed methods approach was used during data collection and analysis as advocated by Creswell and Clark (2018). This approach employs quantitative and qualitative methods (Creswell and Clark, 2018).

Study population: The study population comprised of six (06) Public Teachers' Colleges of which five (05) of them offer Grade A (Certificate in Primary Teacher Education) and one (01) College offers Diploma in Secondary Education. By the time of the study the total population was 3,922 (Student-teachers, teaching and non-teaching staff).

Target population: The target population of this research was 2,000 people, including student-teachers, and key informants (Principals, quality assurance officers and tutors) from five (05) public grade A Teachers' Colleges in Lake-zone, Tanzania.

Sample size: To get the sample size, Krejcie and Morgan table was used. According to Krejcie and Morgan (1970), the population of 2,000, translates into a sample size of 322 respondents of which 5 were Principals of Teachers' Colleges, 5 Quality assurance officers, 5 tutors and 307 Student-teachers. Due to the closure of Colleges for holidays, data was collected from 246 student- teachers, 4 Principals of Teachers' Colleges, 4 quality assurance officers and four 4 tutors from four 4 Public Grade A Teachers' Colleges. Student-teachers were chosen by using simple random sampling method. Student-teachers were selected because they form the unit of analysis in this study. On the other hand, Principles were selected because they are administrators, Quality assurance officers are responsible for regulating quality standards and Tutors are the major implementers of competency-based teaching approaches. The total sample size used to provide data was 258.

Table 2: Sample Size of the Study

Teacher College	Participant In Numbers			Students-Teachers	
	Principals	Q/ Assurance	College Tutors	Female	Male
Tarime TC	01	01	01	32	31
Bunda TC	01	01	01	31	29
Murutunguru TC	01	01	01	31	30
KatokeTC	01	01	01	31	31
Total	04	04	04	125	121

Source: Primary Data (2023)

Research Instruments: A self-administered questionnaire was used to collect quantitative data from student- teachers. The questionnaire had two sections basing on objectives of the study. Section A consisted of personal information of the respondents and section B comprised of the major variables of the study which included competency-based teaching approaches like cooperative learning, inquiry-based learning, peer teaching and project-based learning. The questionnaire also had the sub-section showing student-teachers' academic performance. It was formulated with a 5-Likert scale whereby participants responded to the questionnaire by choosing one of the options in each item: Strongly Agree, Agree, Not Sure, Disagree and Strongly Disagree.

Key informant interview guide was administered to principals, quality assurance officers and tutors in four (4) Public Grade A Teachers' Colleges in Lake-zone, Tanzania. In the interview, the informants responded to the questions asked as per the interview guide. Document review was used to get data about competency-based teaching approaches and student-teachers' academic

performance in Public Grade A Teachers' Colleges in Lake-zone, Tanzania as reflected in objective 1 and 2. Records of three years (2020-2022) were examined and compared with the data collected through questionnaire and interview guide.

Validity of the Research Instruments: The research made use of Content Validity Index (CVI) to determine the validity of the research instruments. Research instruments namely self-administered questionnaires, interview guide and documentary review guide were critically analysed by research experts to ensure that they covered the content area. This ensured the accuracy of research instruments, which were constructed within the scope of research objectives and the conceptual framework. The content validity index of the instrument was 0.9, which is above 0.7 as shown below.

$$C.V.I = \frac{\text{number of relevant items}}{\text{total number of items in the questionnaire}}$$

$$CVI = \frac{27}{30} = 0.9$$

Reliability of the Research Instruments: To ensure the consistency of data collection instruments a pre-test was done using 30 questionnaires in Kinampanda Teacher College which had similar characteristics with that of Teachers' Colleges in Lake-zone, Tanzania. The choice of 30 respondents for the pre-test is supported by Sudman (1982) who states that 20-50 respondents could be used to get the reliability of the instrument. The 30 questionnaires were coded and thereafter entered into the computer using SPSS version 21.0 to test for the reliability. The researcher sought to find reliability which was in line with the accepted coefficient. The tool was considered reliable since it had a Cronbach's alpha coefficient of 0.76 which is above 0.7 as recommended by Nor'ain, et. al (2017).

Table 3: Reliability Statistics

Variables	Cronbach's Alpha	N of Items
Competence-based teaching Approaches	0.756	18
Student-teacher Performance	0.764	8

Sources: Primary Data

Data Analysis

Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS 21.0) software. The researcher used descriptive statistics to analyze data in objective 1 and 2 to determine the mean and standard deviation. Objective 3 and 4 were analyzed based on inferential statistics in which Pearson's correlation and multiple regression analysis were used. Pearson's Correlation was applied to generate the relationship of variables in the hypothesis and multiple regressions were also used to measure how competency-based teaching approaches (IV) influence student-teachers' academic performance (DV). The study revealed that there is statistically significant relationship ($r=0.636^{**}$ $p\text{-value}=0.000 < \text{sig } 0.05$) between competency-based teaching approaches and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. Thematic and content analysis were used to analyze qualitative data. This was done after generating themes from the data collected during interviews. Documentary review was used to analyze the content of data collected from different documents including National Examination Council of Tanzania results (NECTA 2020-2022), Continuous Assessment and policy documents related to competency-based teaching approaches in Teachers' Colleges in Lake-zone, Tanzania.

Findings

In this section, data was analysed, interpreted and discussed in line with the research objectives. The purpose of this study was to assess the use of CBTA and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. The specific objectives of this study were; (i) To establish the level of compliance to competency-based teaching approaches in public grade A Teachers' Colleges in Lake-zone, Tanzania. (ii) To examine the level of student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. (iii) To establish the relationship between the level of compliance to competency-based teaching approaches and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania and (iv) To establish the influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. The study hypothesis tested was; there is no significant influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.

Level of Compliance to Competency-Based Teaching Approaches in Public Grade A Teachers' Colleges in Lake-zone, Tanzania

Objective 1 of this research was to establish the level of compliance to competency-based teaching approaches in public grade A Teachers' Colleges in Lake-zone, Tanzania. The collected data was analyzed using descriptive statistics employing five (5) Likert scale mean range: 1.00-1.79 = very low, 1.80-2.59 = low, 2.60-3.39 = moderate, 3.40-4.19 = high, 4.20-5.00 = very high. The mean scores and standard deviations were calculated based on this scale to establish the level of compliance to CBTAs in public grade A Teachers' Colleges in Lake Zone, Tanzania. The findings of the study are summarized as in Table 5.

Table 5: Level of Compliance to Competency-based Teaching Approaches in Public Grade A Teachers' Colleges in Lake-zone, Tanzania

Competency-based Approaches	Agg. Mean	Std.	Interpretation
Cooperative Learning Approach	4.236	0.872	Very high
Inquiry-based Learning Approach	4.282	0.783	Very high
Peer Teaching Approach	4.315	1.491	Very high
Project-based Learning Approach	4.417	0.765	Very high
Grand mean and Std.	4.309	0.956	Very high

Legend: 1.00-1.79 = very low, 1.80-2.59 = low, 2.60-3.39 = moderate, 3.40-4.19 = high, 4.20-5.00 = very high

Source: Primary data (2023)

Cooperative Learning Approach

Study results in Table 5 based on the (agg, mean = 4.236, std = 0.8724) indicates that there was very high level of student-teachers mastery of competencies while working in groups regarding cooperative learning approach. The results suggest that tutors in public grade A Teachers' Colleges in Lake-zone of Tanzania had a very high mastery of assessing student-teachers using competency-based teaching approaches.

These findings are in line with what the key informants said during the interviews as one of them stated;

"Most tutors are effectively using competency-based teaching approaches because they don't lecture student-teachers' instead they use interactive approaches and cooperate with the student-teachers in developing new knowledge and skills through group discussions". (Source: KI 1)

This development is important because it helps student teachers to acquire and master the 21st century skills which have been found to be important in the teaching and learning process.

In the related interview, another key informant made following report;

"Tutors use interactive methods such as group discussion, think-ink-pair and share, jig-saw, question and answer in helping learners to develop new competencies during teaching and learning processes". (Source: KI 2)

Interactive methods are important because students actively get involved in learning and in the process they acquire practical skills.

Another key informant also mentioned other cooperative learning approaches he used as follows;

"In my teaching I prefer using interactive teaching methods which help learners to participate fully in classroom. These interactive teaching methods are; group discussion, role play, gallery work, think-ink-pair and share, question and answers, and demonstration". (Source: KI 3)

When qualitative and quantitative data was triangulated, it was found out that the level of compliance to CBTAs is very high and the most common teaching approaches used by tutors in public grade A Teachers' Colleges in Lake-zone, Tanzania were; group discussions, project-based teaching, jig-saw, think-write-pair and share and role play.

These study results are supported by Mendo-Lazaro et. al (2022) who argues that cooperative learning is an effective tool for encouraging students to develop academic goals that motivate them to fully engage in tasks given in order to acquire practical knowledge and skills.

Inquiry-Based Teaching Approach

Study results in Table 5 based on the (agg. mean = 4.281, std = 0.783) indicate that there was a very high level of student-teachers mastery in applying knowledge and skills when handling challenging tasks. The results suggest that tutors in public grade A Teachers' Colleges in Lake-zone of Tanzania have a very high level of compliance to inquiry-based teaching approach which implied that student-teachers were actively participating in asking questions, focusing on deep understanding, demonstration through the application of knowledge and skills, conducting experiments and having the ability to solve meaningful problems. Therefore, the findings suggest that tutors in public grade A teachers' colleges in lake-zone of Tanzania have a very high level of compliance to competency-based teaching regarding inquiry-based teaching approach.

In another interview, one key informant said;

“Competency-based approaches are implemented by tutors during the teaching and learning processes whereby tutors provide tasks or activities which enable learners to think critically and solve personal problems”. (Source: **KI 4**)

Critical thinking and problem solving skills are key in ensuring that students meet the demands of the job market in order to live independently.

During another interview, one key informant also noted;

“In competency-based teaching in our college, tutors provide questions to the student and move between groups of learners, facilitating discussion, helping student explore their ideas”. (Source: **KI 5**)

In line with the above assertion, group discussions encourage students to be active in class and to think critically and solve problems that affect their everyday life.

In a similar interview, another informant had this to say;

“Competency-based teaching is an approach which allows student-teachers to advance in their ability to master skills or competencies at their own pace regardless of the environment”. (Source: **KI 6**)

As already noted, when students learn at their own pace, they develop the confidence that helps them to make informed decisions and meaningful mastery of knowledge and skills.

Another key informant noted;

“Am using competency-based teaching approaches in my day to day teaching by engaging students in group discussion and presentations, project-based learning, demonstration and answering questions”. (Source: **KI 7**)

When the above approaches are used consistently, students accumulate practical skills, which helps them to become useful people in their communities.

When triangulated qualitative data and quantitative data, it was found out that majority of tutors in public grade A Teachers' Colleges in Lake-zone, Tanzania being used competency based approaches in developing new competencies and skills among student-teachers. These results align with the findings of a previous study conducted by Ramnarain (2014), which revealed that if teachers have a positive perception of Inquiry-based learning it can improve students' academic performance.

Peer Teaching Approach

According to study findings in Table 6 based on the (agg mean = 4.315, std. = 1.491) also indicate that there was a very high level of compliance to peer teaching. The results suggest that student-teachers in public grade A Teachers' Colleges in Lake-zone of Tanzania have a high mastery of peer teaching due to their ability to pair with peers of different abilities, share similar discourse which allows greater understanding, split into equal groups to work on assigned tasks and enhance reciprocal teaching through questioning, predicting and clarifying as a way of promoting peer work. This could be due to high level of compliance to competency-based teaching approaches in public grade A Teachers' Colleges in Lake-zone of Tanzania.

These study results are supported by a previous study by Briggs (2013) who revealed that peer learning activities generate team-building spirit and more supportive relationship, greater psychological wellbeing, social competence, communication skills and self-esteem, higher achievement and greater productivity in terms of enhanced learning outcomes.

Project-based Learning Approach

Study results in Table 6 based on the (agg. mean = 4.417, std = 0.765) indicate that there was a very high level of compliance to project-based learning approach. The results suggest that tutors in public grade A Teachers' Colleges in Lake-zone of Tanzania have a very high mastery of project-based teaching approach which encourages student-teachers to learn by applying knowledge and skills through an engaging experience, learning through using real-world problems, engaging in projects that promote inquiry, solution building and product construction, working independently with teachers providing support only when needed.

The findings suggest that tutors in public grade A Teachers' Colleges in Lake-zone of Tanzania have a very high level of compliance to competency-based teaching regarding project-based teaching approach. These results align with the findings of a previous study conducted by Iwamoto et. al, (2016) which reveal that project-based learning helps to increase the student classroom engagement and academic performance.

Overall, based on the (grand. mean = 4.309 std. = 0.956) the results indicate that the CBTAs being used in the grade A Teachers' Colleges in Lake-zone, Tanzania are well perceived and have the potential to contribute positively to student-teachers' academic performance. These results are supported by earlier findings by Evans et.al (2020) who revealed that when factors are positive it means students' academic performance will be good.

Through document review, it was established that when tutors prepare schemes of work they state clearly the various competencies which are supposed to be developed during teaching and learning process. The review of lesson plans for the period 2020-2022 also showed that majority of tutors made a good attempt to cater for competency-based teaching approaches although, few had difficulties in preparing an ideal competency-based lesson plan. These results are supported by the study done by Jammeh & Karegeya (2022) who noted that effective lesson plans and teaching could improve students' academic performance based in core competencies developed.

Student-Teachers Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania

Objective 2 of the study was to examine the level of student-teachers' academic performance in public grade A Teachers' Colleges in the Lake-zone, Tanzania. The collected data was analyzed using descriptive statistics employing five (5) Likert scale mean range: 1.00-1.79 = very low, 1.80-2.59 = low, 2.60-3.39 = moderate, 3.40-4.19 = high, 4.20-5.00 = very high. The mean scores and standard deviations were calculated based on this scale to assess each item related to various aspects of academic performance. The findings of the study are summarized in Table 6.

Table 6: Student-Teachers Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania

Items	Mean	Std.	Interpretation
I have the ability to solve problem using the 21st century skills	4.448	.701	Very high
I have the ability to actively participate in problem solving through the knowledge acquired in class	4.387	.783	Very high
I can actively apply the knowledge acquired to suggest new solutions	4.308	.847	Very high
I can actively use the knowledge and skills acquired to help others improve their academic performance	4.356	.843	Very high
My level of engagement in group and classroom activities is excellent	4.444	.798	Very high
After class, I spend time with my fellow student-teachers to demonstrate what I have learnt	4.454	.738	Very high
I have full mastery of what the tutors teach in classroom	4.344	.747	Very high
I can apply the competencies I have acquired to solve my daily personal problems	4.495	.721	Very high
Grand mean and Std.	4.405	0.772	Very high

Source: Primary data (2023)

Legend: 1.00-1.79 = very low, 1.80-2.59= low, 2.60-3.39= moderate, 3.40-4.19= high, 4.20-5.00= very high

According to the study findings in Table 6 based on the grand (mean = 4.405, Std = 0.772) the student-teachers' academic performance is very high. The grand mean falls within the "very high" category based on the provided legend, indicating that the student-teachers' overall assessment of their academic performance is very positive. The findings indicate that student-teachers in Public Grade A Teachers' Colleges in Lake-zone of Tanzania have a very positive perception of their academic performance. These positive perceptions of academic performance are encouraging and suggest that the competency-based teaching approaches and learning experiences provided in Teachers' Colleges in Lake-zone, Tanzania are effective in enhancing student-teachers' skills and knowledge in problem-solving, active participation in various learning activities and application of acquired competencies in ideal situations. However, it is important to note that this assessment is based on self-report measures and additional objective measures or external evaluations could provide further validation of the findings. The relatively low to moderate standard deviations for most items indicate that there is a consensus among the student-teachers regarding their academic performance.

One informant had this to say;

"In general, competency-based teaching approaches have made the student-teachers to think out of what they see and read, though currently I don't have data to compare performance before and after competency-based teaching approaches. But the student-teachers' are now able to answer questions which are not direct from notes, they can think and put their own ideas in given questions". (Source; KI 8)

The above view implies that when competency-based teaching approaches are emphasized, students' lives change and they become more practical in solving problems in their every lives.

In related interview, another key informant noted:

"Competency-based teaching approaches have improved student-teachers' academic performance in my college as no one has failed the NECTA exams for five years now". (Source; KI 9)

When students learn through competency-based approaches, they master the taught knowledge practically and they end up performing well in final examinations.

In another interview, another key informant said;

"The student-teachers' academic performance in continuous assessment and NECTA examinations are moderate". (Source; KI 10)

The above statement implies that tutors should be encourage to use competency-based approaches in order to improve student-teachers' performance in final examinations.

Another key informant said;

"Student-teachers' are more likely to perform well academically when they feel tutors are supportive and care about them in learning process". (Source; KI 11)

The statement above implies that if students are provided with a supportive environment, their performance also improves significantly.

The triangulation of qualitative data and quantitative data indicates that competency-based teaching approaches have a positive impact on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. It imply that student-teachers are able to demonstrate the competencies developed during teaching and learning process.

Through the review of NECTA results of 2020-2022, it was noted that the performance of student-teachers in public grade A Teachers' Colleges in Lake-zone, Tanzania is moderate because most of the student-teachers' got credits, passes and few supplementary but no student failed. However, results of continuous assessment of 2020-2022 show that student-teachers' academic performance is far better than that of the NECTA because there were student-teachers who got distinctions, credits, passes and supplementary (NECTA, 2021-2022).

Relationship between the Level of Compliance to Competency-Based Teaching Approaches and Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania

Objective 3 of the study was to establish the relationship between the level of compliance to competency-based teaching approaches and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. Data was analyzed using Pearson correlation analysis. Table 8 presents the findings in the form of Pearson correlation coefficients and associated significance levels (Sig. or p-values) for each indicator of the Independent Variable of the study.

Table 7: Relationship of Competency-Based Teaching Approaches and Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania

Cooperative Teaching Approaches	Student-Teacher Academic Performance	
Cooperative learning approach	Pearson Correlation	.559**
	Sig. (2-tailed)	.000
	N	232
Inquiry-based learning approach	Pearson Correlation	.541**
	Sig. (2-tailed)	.000
	N	232
Peer Teaching approach	Pearson Correlation	.312**
	Sig. (2-tailed)	.000
	N	232
Project-based learning approach	Pearson Correlation	.445**
	Sig. (2-tailed)	.000
	N	232

** Correlation is significant at the 0.01 level (2-tailed).

Cooperative Learning Approach

Results in Table 8 based on study correlation coefficients of ($r = 0.559$, $p = 0.000$) indicate a moderately strong positive linear relationship between the cooperative learning approach and student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. The findings suggest that student-teachers who experience this teaching method tend to achieve better academic outcomes in Public Grade A Teacher Colleges in Lake-zone, Tanzania. The Cooperative-based approach emphasizes collaboration, teamwork, and active student involvement, which may contribute to a more engaging learning environment and better knowledge retention.

This study findings are align with the study results provided by Gull & Shumaila (2015) who revealed that cooperative learning approaches had a positive effect on students' educational attainment in the subject of education.

Inquiry-Based Learning Approach

Results in Table 8 based on the study correlation coefficients of ($r = 0.541$, $p = 0.000$) indicate a moderately strong positive linear relationship between the inquiry-based learning approach and student-teachers' academic performance in public grade A Teachers' College in Lake-zone, Tanzania. The study indicates that student-teachers who are exposed to an Inquiry-based approach tend to have higher academic achievements in the studied teacher colleges. Inquiry-based teaching encourages critical thinking, problem-solving, and self-directed learning, which can foster a deeper understanding of the subject matter and promote academic success. However, this study construct with those of previous study conducted by Teig et. al (2018) argues that inquiry teaching was positively correlated with student's achievement, but high frequency of inquiry activities was negatively related to achievement.

Peer Teaching Approach

Results in Table 8 based on the study correlation coefficients of ($r = 0.312$, $p = 0.000$) indicate a moderate positive linear relationship between the peer teaching and student-teachers' academic performance in public grade A Teachers' College in Lake-zone, Tanzania. The findings suggest that student-teachers who engage in peer-based learning experiences may perform better academically. Peer-based teaching involves collaborative learning with classmates, which can enhance comprehension, knowledge application, and peer support in the learning process. The study findings are supported by Briggs (2013) who revealed that some research indicate that peer learning activities generate team-building spirit and more supportive relationship, greater psychological well-being, social competence, communication skills and self-esteem, higher achievement and greater productivity in terms of enhanced learning outcome

Project-Based Learning Approach

Results in Table 8 based on the study correlation coefficient of ($r = 0.445$, $p = 0.000$). Indicate a moderately strong positive linear relationship between the project-based learning and student-teachers' academic performance in public grade A Teachers' College in Lake-zone, Tanzania. The study findings imply that student-teachers who participate in Project-based learning activities may achieve better academic results. Project-based teaching emphasizes hands-on learning, problem-solving, and real-world applications, which can foster a deeper understanding of concepts and skills development. The study results are in line with a study by Condliffe et. al (2017) who reported that some studies show the positive effects on students' engagement, motivation and beliefs in their own efficacy.

Overall, the study's findings indicate that all four competency-based teaching approaches (Cooperative-based, Inquiry-based, Peer-based, and Project-based) have a positive impact on student-teachers' academic performance in Public Grade A Teacher Colleges in

Lake-zone, Tanzania. These study results are supported by Cardoso (2015) who argues that competency-based teaching approaches affect the student-teachers' academic performance significantly and positively.

Influence of Competency-Based Teaching Approaches on Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania.

Objective 4 was to establish the influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. Data was analyzed using regression analysis that examined the influence of Competency-Based Teaching Approaches on Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania. The results are presented in Table 8 below;

Table 8: Influence of Competency-Based Teaching Approaches on Student-Teachers' Academic Performance in Public Grade A Teachers' Colleges in Lake-Zone, Tanzania

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
1 (Constant)	1.411	.255		5.543	.000
Cooperative learning approach	.247	.057	.294	4.306	0.000**
Inquiry-based learning approach	.292	.072	.281	4.052	0.000**
Peer Teaching approach	.067	.027	.138	2.505	0.013*
Project-based learning approach	.093	.060	.100	1.550	0.123
<i>R</i> = 0.636					
<i>R</i> ² = 0.404					
<i>Adjusted R</i> ² = 0.394					
<i>F</i> = 38.479					

Source: Primary Data 2023

The results in Table 8 present a constant of 1.411. It indicates the predicted value of student-teachers' academic performance when all the independent variables (competency-based teaching approaches) are combined to zero.

Cooperative Learning Approach

The coefficient of 0.247 suggests that for each unit increase in the use of the cooperative learning approach, student-teachers' academic performance increases by 0.247 units. The standardized coefficient (Beta) of 0.294 indicates that this competency-based teaching approach has a moderate positive effect on academic performance. The p-value (Sig.) of 0.000** indicates that this effect is highly significant. The study result is consistent with findings from Kaymak et. al (2021) revealed that the cooperative learning has an impact on learner educational attainment.

Inquiry-Based Learning Approach

The coefficient of 0.292 suggests that for each unit increase in the use of the inquiry-based teaching approach, student-teachers' academic performance increases by 0.292 units. The standardized coefficient (Beta) of 0.281 indicates this competency-based teaching approach also has a moderate positive effect on academic performance. The p-value (Sig.) of 0.000** indicates that this effect is highly significant. This finding agreed with a study conducted by Aktamis et. al (2016) argued that the students have a more positive academic performance when learning using the inquiry-based approach.

Peer Teaching Approach

The coefficient of 0.067 suggests that for each unit increase in the use of the peer teaching approach, student-teachers' academic performance increases by 0.067 units. The standardized coefficient (Beta) of 0.138 indicates that this competency-based teaching approach has a small positive effect on academic performance. The p-value (Sig.) of 0.013* indicates that this effect is statistically significant. These findings are mismatch with Oloo et. al (2016) who said Peer teaching is highly effective in raising the standard of understanding of concepts; students' academic performance significantly better.

Project-Based Learning

The coefficient of 0.093 suggests that for each unit increase in the use of the project-based learning approach, student-teachers' academic performance increases by 0.093 units. The standardized coefficient (Beta) of 0.100 indicates that this competency-based teaching approach has a small positive effect on academic performance. However, the p-value (Sig.) of 0.123 indicates that this effect is not statistically significant at the usual significance level of 0.05. According to Chen & Yang (2019), indicating that Project-based learning has a medium to large positive effect on students' academic achievement supported this study result.

Hypothesis Testing

Hypothesis of the study was; there is no significant influence of competency-based teaching approaches on student-teachers' academic performance in public Grade A Teachers' Colleges in Lake-zone, Tanzania. Hypothesis testing was calculated as per the null hypothesis of the study and findings are summarized in Table 9.

Table 9: Summary of hypothesis Testing

Hypothesis	Test/Result	Comment/ conclusion
H ₀ 1: There is no significant influence of competency-based teaching approaches on student-teachers' academic performance in public Grade A Teacher Colleges in Lake-zone, Tanzania, in regard to;		
Cooperative learning	$t = 4.306$; $p\text{-value } 0.000^{**} < \alpha = 0.05$, Significant	Reject H ₀
Inquiry-based learning	$t = 4.052$; $p\text{-value } 0.000^{**} < \alpha = 0.05$, Significant	Reject H ₀
Peer teaching	$t = 2.505$; $p\text{-value} = 0.013^{*} > \alpha = 0.05$, Insignificant	Accept H ₀
Project-based learning	$t = 1.550$; $p\text{-value} = 0.123 > \alpha = 0.05$ Insignificant	Accept H ₀

Table 9 illustrate that the null hypothesis one (H₁) which states that "there is no significant influence of competency-based teaching approaches on student-teachers' academic performance in public grade A Teacher Colleges in Lake-zone, Tanzania". The results indicate statistically significant relationship ($r=0.636^{**}$ $p\text{-value}=0.000 < \text{sig } 0.05$) between competency-based teaching approaches and student- teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania.

These results align with the findings of a previous study conducted by Everaert et al (2017) which revealed that competency-based teaching approaches has a significant effect on student-teachers' academic performance therefore, tutors' skills and student-teachers' achievements are related to each other.

Table 9 shows that cooperative learning, inquiry learning, peer teaching and project-based learning have effect on student-teachers' academic performance explained 39.4% of the variation in student-teachers' academic performance (adjusted $R^2 = 0.394$). This means that 60.6% of variation was accounted for by other factors not considered under this model. However, cooperative learning ($\beta=0.247$, $p=0.000^{**} < 0.05$) and inquiry-based learning ($\beta=0.292$, $p=0.000^{**} < 0.005$) have a moderate positive and significant effect on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. On the other hand, peer teaching ($\beta=0.067$, $p=0.013^{*} > 0.05$) and project-based learning ($\beta=0.093$, $p=0.123 > 0.05$) have a small positive and insignificant effect on student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania. This means cooperative learning and inquiry-based learning were supported the hypothesis of the study but peer teaching and project-based learning were not supported.

Conclusions

In conclusion, the study shows a very high level of compliance to competency-based teaching approaches in public grade A Teachers' Colleges in Lake-zone, Tanzania. Tutors are very popular in using cooperative learning, inquiry-based learning, peer teaching and project-based learning in helping student-teachers' mastery competencies and skills. On the other hand, student-teachers' academic performance in public grade A Teachers' Colleges in Lake-zone, Tanzania was found to be very high. It may be concluded that student-teachers' were highly motivated with competency-based teaching approaches used in assessing their academic performance. This conclusion was supported by Evans et. al (2020) who argued that when factors are positive it means students' academic performance will be good.

Furthermore, the findings suggest that the cooperative learning and inquiry-based learning have a more substantial and statistically significant positive effect on student-teachers' academic performance as compared to the peer teaching and project-based learning approaches. It is important to note that the p-value for the project-based learning approach is not statistically significant, indicating

that it may not have a significant impact on student-teachers' academic performance in this particular study. However, further research and larger sample sizes may be needed to confirm these findings and explore other factors that may affect student-teachers' academic performance.

Recommendations

To Principals and tutors in Teachers' Colleges.

1. Based on the finding in objectives 1 and 2, it is recommended that the principals should also put in mind that competency-based teaching approaches used by tutors in teaching and learning process improves student-teachers' academic performance.

2. Since cooperative learning, inquiry-based learning, Peer teaching and project based learning approaches have very high level of compliance to competency-based teaching approaches objective 1, Principals should conduct indoor trainings, regular workshops, and seminars for tutors to foster continuous improvement.

To the Ministry of Education, Science and Technology (MOEST)

3. As per objective 4, it is recommended that MOEST should there should promote peer teaching and project-based teaching approaches. Furthermore, the MOEST should provide professional development opportunities for tutors to go back for further studies to upgrade their qualifications to be able to perform better and become competitive.

Area of Further Research

1. It is essential to continue researching and evaluating the long-term impact of competency-based teaching approaches on student-teachers' academic performance. Longitudinal studies and rigorous evaluations can provide more comprehensive insight into the effectiveness of these approaches.

2. Researchers should also examine the other factors which may influence student-teachers' academic performance. Since the study, findings revealed that cooperative learning, inquiry-based learning, peer teaching and project-based learning approaches have influence on student-teachers' academic performance explained by 39.4% of variation and 60.6% was accounted for by other factors that influence student-teachers' academic performance in Public grade A Teachers' Colleges in Lake-zone, Tanzania.

3. A research on competency-based teaching approaches and student-teachers' academic performance should be carried on a larger sample sizes; for example including all public and private Teachers' Colleges in Lake-zone, Tanzania.

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