Reforming teacher education in Ghana: Evaluating the impact of T-TEL on professional competence

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ABSTRACT

This study examined the impact of the Transforming Teacher Education and Learning (T-TEL) programme on the professional competence of student teachers in Ghana, with specific reference to Akatsi College of Education. Despite several reforms in Ghana's teacher education sector, concerns remain regarding the preparedness of newly trained teachers for classroom practice. Existing evaluations of T-TEL have primarily focused on tutors and curriculum alignment, leaving limited evidence on the professional competence of student teachers. Guided by Systems Theory, this study addressed that gap by comparing the professional performance of trainees before and after the introduction of T-TEL reforms. Using a cross-sectional survey design, data were collected from 450 participants comprising 150 student teachers from the 2014 cohort (pre-T-TEL), 150 student teachers from the 2018 cohort (post-T-TEL), and 150 mentors. A structured questionnaire was used, and reliability was established through Cronbach's alpha values ranging from .78 to .89. Descriptive statistics summarized participants' views, while an independent samples t-test compared cohort performance. Findings revealed that student teachers trained under T-TEL significantly outperformed their counterparts from the previous system, t (298) = -12.56, p < .001, Cohen's d = 1.47. Mentors overwhelmingly endorsed the relevance of the reforms, while mentees valued the twelve-week professional competency plan and the active involvement of mentors in assessment. The results suggest that T-TEL has contributed meaningfully to strengthening trainee competence and enhancing collaboration between stakeholders. The study recommends institutionalising the twelve-week plan, formally recognising mentors in assessment frameworks, and providing psychosocial and workload support to sustain the gains of reform.

Keywords: T-TEL, professional competence, teacher education reforms, systems theory, mentor involvement.

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INTRODUCTION

Background to the study

Teaching is a versatile profession that must constantly respond to changing social, cultural, and economic demands. The quality of a nation's teachers determines the quality of its labour force and, by extension, the quality of its education system. A knowledgeable and productive society depends on the presence of well-prepared teachers, which explains why teacher education reform has become a global priority. Effective teachers must possess strong subject knowledge, pedagogical skills, and the flexibility to adapt to rapid change to meet the diverse needs of learners (Singh and Kumar, 2016). One of the significant aims of teacher education reform is therefore to improve student learning outcomes, and this is often pursued through strengthening teacher preparation at colleges of education.

Teachers are frontline gatekeepers of educational reform. Regardless of how well-funded or popular a reform initiative may be, its ultimate success depends on teachers

who must implement new approaches in their classrooms. However, teachers' voices are often neglected in reform design (Education Week Research Centre, 2017). Understanding how teacher trainees and mentors experience reforms is thus crucial for judging their value and sustainability.

In Ghana, teacher education has undergone multiple waves of reform over the past two decades. The Education Act of 2008 (Act 778) created the National Teaching Council to professionalise teaching through licensing. The Colleges of Education Act of 2012 (Act 847) upgraded the colleges into tertiary institutions. The Pre-Tertiary Teacher Professional Development and Management (PTPDM) Policy of 2012 sought to design a career progression path for teachers. These reforms reflect international calls to strengthen professional development as "activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher" (OECD, 2009, p. 3). Practical teaching experience, particularly supported and assessed practicum, has been identified as central to teacher preparation (Opoku-Prempeh, 2018).

It was against this background that the Transforming Teacher Education and Learning (T-TEL) programme was introduced in 2014 with funding from UK aid (now FCDO). T-TEL aimed to enhance the quality of teaching and learning in all 40 Colleges of Education by equipping teacher trainees with core and technical skills from the outset of their careers. A distinctive feature of T-TEL was the structured twelve-week professional competency plan, coupled with a stronger role for mentors in guiding and assessing student teachers. According to Ameyibor (2018), this innovation created a policy platform for strengthening teacher education practice in Ghana.

Statement of the problem

In Ghana, multiple reforms in teacher education—such as the shift from the Diploma in Basic Education to the four-year Bachelor of Education, the establishment of the National Teaching Council, and various professional development initiatives—have sought to improve teacher quality and student learning outcomes. However, persistent concerns remain. Newly trained teachers often struggle to translate theory into effective classroom practice, and systemic weaknesses in practicum experiences and professional support continue to undermine initial preparedness (Amevor, 2025).

The T-TEL programme, introduced in 2014, sought to address these gaps through structured mentoring, a twelve-week professional competency plan, and a system of co-assessment involving mentors and tutors. Although initial reports suggest positive effects (Ameyibor, 2018), there remains limited empirical evidence on whether these specific interventions translate into measurable gains in teacher trainee performance. Existing evaluations often focus on tutors' competencies or curriculum alignment (Yidana, 2025; Kirby et al., 2006) but rarely examine the competence of student teachers themselves.

This gap is striking because teacher quality remains a critical determinant of pupil outcomes across contexts (OECD, 2009; Postholm, 2012). Without empirical comparisons of pre-T-TEL and post-T-TEL cohorts, claims about the effectiveness of the programme are largely presumptive. As highlighted by recent analyses of teacher education reforms in sub-Saharan Africa, research on stakeholder collaboration and trainee competence is especially lacking in Ghana (Yidana, 2025).

Accordingly, this study fills the gap by empirically comparing the professional competence of student teachers trained under the old system (2014 cohort) with those trained under the T-TEL framework (2018 cohort) at Akatsi College of Education. By analysing the perspectives of both trainees and mentors, the study offers much-needed evidence on whether T-TEL reforms have strengthened classroom readiness and professional identity.

Purpose of the study

The purpose of the study is to examine the impact of T-TEL on the professional development of student teachers in Ghana, drawing on the views of both trainees and their mentors.

Research hypothesis

There will be a statistically significant difference in the professional performance of student teachers trained under the T-TEL programme compared with their counterparts trained under the previous system.

Research questions

1. What are mentors' views on the relevance of T-TEL innovations for teacher training?
2. What are mentees' views on the weekly professional competence development sessions?
3. What are mentees' views on the involvement of mentors in assessing their professional work?

Significance of the study

Understanding the impact of T-TEL reforms is important for policy, practice, and research. Evidence of positive or negative outcomes can inform decisions on consolidating, scaling, or adjusting reform initiatives. Findings will be of particular relevance to the Ministry of Education, Colleges of Education, and development partners seeking to strengthen teacher preparation in Ghana.

Theoretical framework

This study is grounded in the understanding that human behaviour is shaped by a complex system of interactions, where individual needs, expectations, and social attributes converge to produce outcomes. The framework illustrates this dynamic interplay (Figure 1).

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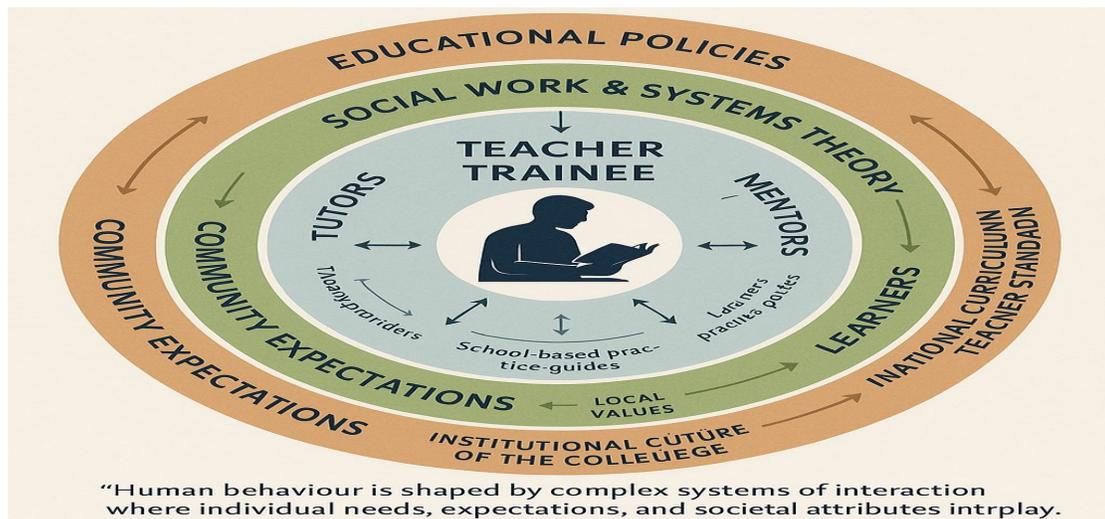
This conceptual framework shows how teacher trainees' behaviour and growth are shaped by multiple layers of influences, not in isolation. At the centre is the trainee, surrounded by immediate supports such as tutors, mentors, and learners, whose interactions are influenced by practice policies, curriculum requirements, and daily guidance. These immediate supports are part of larger structures like institutional culture, community values, and local expectations, which are also shaped by national policies and professional standards. Overall, the framework presents a systems perspective: human behaviour results from the dynamic interaction of personal needs, social relationships, and institutional norms.

Systems theory

This study is anchored in Systems Theory, which views human behaviour and institutional processes as interdependent parts of a wider system (Rooney and Rooney, 2010). Within teacher education, this means recognising the interconnections between tutors, mentors, student teachers, schools, and the broader community. Teacher trainees are social actors who acquire professional competences not in isolation but through structured interactions with mentors, tutors, and learners in the practicum setting. The introduction of T-TEL interventions—especially mentoring, co-assessment, and the competency plan can therefore be examined as systemic levers shaping the professional identity and competence of trainees.

The role of mentors in initial teacher training

Mentors play a crucial role in the professional development of student teachers. As experienced practitioners, they guide novices through modelling, observation, feedback, and assessment (Rice, 2006). Competence-based approaches to teacher training, such as those promoted by T-TEL, emphasise the systematic assessment of trainees' abilities against professional standards. Acheampong (2003) argued that Ghanaian teacher education should create opportunities for student teachers to develop a personal understanding of teaching through interactive methods, such as small-group work and reflective discussions. The inclusion of mentors as co-assessors under T-TEL represents a significant step towards embedding these practices in teacher training.

Developing professional competences in student teachers

Becoming an effective teacher requires not only subject knowledge but also professional skills such as lesson planning, varied instructional strategies, learner assessment, effective communication, and commitment to professional growth (OECD, 2008; Zeiger, 2018). Before T-TEL, many student teachers faced practicum

experiences that left them under-prepared for classroom realities (Acheampong, 2003). The twelve-week competency plan introduced by T-TEL sought to address this gap by requiring student teachers to practise, reflect on, and demonstrate key professional competences under close mentor supervision.

METHODOLOGY

Research design

The study employed a cross-sectional survey design, which was suitable for comparing two groups of student teachers: those trained prior to the introduction of T-TEL and those trained under the T-TEL framework. A cross-sectional design enables the collection of data at a single point in time from multiple cohorts. It is widely used in programme evaluation because of its efficiency and ability to highlight contrasts across groups (Cherry, 2019). In this study, the design enabled the researcher to determine whether differences in professional competence could be attributed to the reform.

Population

The population consisted of all Level 300 student teachers from Akatsi College of Education in the 2014 and 2018 academic years, along with their mentors. The 2014 cohort represented student teachers trained under the old system, while the 2018 cohort represented those trained under the T-TEL reforms. Mentors were included because they directly observed, guided, and assessed the student teachers during their practicum placements.

Sample and sampling technique

A multi-stage sampling strategy was employed to ensure representativeness. First, five administrative clusters were randomly selected from the seven districts where Akatsi College places student teachers. Within each cluster, ten schools were randomly chosen. From each school, three student teachers and their respective mentors were selected. This process yielded 150 student teachers from the 2014 cohort, 150 student teachers from the 2018 cohort, and 150 mentors, giving a total sample size of N = 450 participants. This figure reconciles earlier inconsistencies in the manuscript and ensures that the sample reflects both cohorts and the voices of mentors.

Instrumentation

Data were collected using a structured questionnaire developed from the literature on teacher education reform (Acheampong, 2003; Rice, 2006; OECD, 2008). The instrument consisted of four main parts:

1. Demographic information (age, gender, teaching experience).
2. Mentors' and mentees' views on the relevance of T-TEL innovations.
3. Mentees' perceptions of the twelve-week professional competency plan.
4. Views on the involvement of mentors in assessing mentees' professional performance.

Items were measured on a five-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5).

Pilot testing and reliability

The instrument was piloted with a small group of student teachers and mentors who were not part of the main study. Feedback from the pilot led to minor adjustments in wording and sequencing of items. Internal consistency was then established using Cronbach's alpha, with coefficients ranging from 0.78 to 0.89 across the main scales. This correction addresses the earlier misstatement in the manuscript where reliability was wrongly described as a "Pearson's coefficient."

Data collection procedure

Permission was sought from the College authorities and participating schools. Questionnaires were administered directly to student teachers and mentors during practicum supervision visits. Respondents were briefed on the purpose of the study and assured of confidentiality. Completed questionnaires were collected on the same day to maximise the response rate.

Ethical considerations

Ethical approval was obtained from the relevant institutional review committee. Participation was voluntary, and informed consent was secured from all respondents. No personal identifiers were collected, and data were stored securely. These measures were added to strengthen transparency in line with reviewers' concerns.

Data analysis

Both descriptive and inferential analyses were conducted using SPSS. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarized

respondents' views on T-TEL interventions. Inferential analysis involved an independent samples t-test to compare the professional performance of the 2014 and 2018 cohorts. Assumptions of normality and homogeneity of variance were tested and satisfied before analysis. Results are reported with test statistics, degrees of freedom, exact p-values, effect sizes (Cohen's d), and 95% confidence intervals. This ensures statistical interpretation is accurate and avoids the earlier error where the null hypothesis was misstated.

RESULTS

This section presents the findings of the study in line with the research hypothesis and the three research questions. Both descriptive and inferential analyses were conducted. Results are presented first for the hypothesis using an independent samples t-test, followed by responses to each research question.

Hypothesis testing

Hypothesis: *There will be a statistically significant difference in the professional performance of student teachers trained under the T-TEL programme compared with their counterparts trained under the previous system*.

Table 1 shows the descriptive statistics for the two groups.

Table 1. Mentees' group statistics.

Cohort	N	Mean	SD	SE Mean
2014	150	71.25	3.97	0.32
2018	150	77.19	4.22	0.34

The 2018 cohort, trained under T-TEL, had a higher mean professional performance score (M = 77.19, SD = 4.22) than the 2014 cohort trained under the previous system (M = 71.25, SD = 3.97).

Table 2. Independent samples test.

Levene's Test F	Sig.	t	df	p (2-tailed)	Mean Difference	95% CI (Lower–Upper)	Cohen's d
1.25	.264	-12.56	298	< .001	-5.94	-6.87 – -5.01	1.47

Table 2 provides the results of the independent samples t-test.

Levene's Test indicated equality of variances (F = 1.25, p = .264). The t-test revealed a statistically significant difference between the two cohorts, $t(298)$ = -12.56, p < .001. The mean difference of 5.94 points, with a 95% confidence interval [-6.87, -5.01], indicates that the T-TEL cohort outperformed the pre-T-TEL cohort. The effect size was large (Cohen's d = 1.47), suggesting a substantial practical difference in professional performance between the two groups.

Research question 1: *What are mentors' views on the relevance of T-TEL innovations for teacher training?*

Figure 1 shows mentors' responses regarding the relevance of T-TEL reforms.
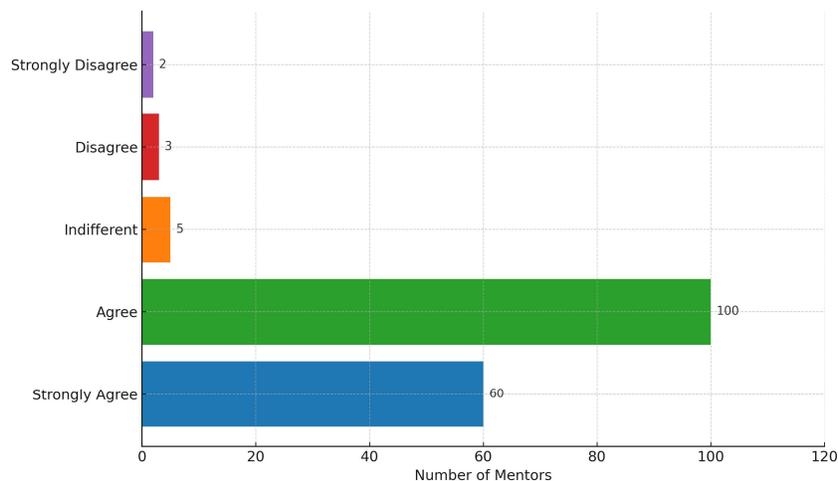

Figure 1. Mentors' views on the relevance of T-TEL professional development innovations.

A clear majority of mentors (n = 130) agreed or strongly agreed that T-TEL innovations were highly relevant to the professional development of student teachers. Only 15 mentors disagreed, while five were neutral. Most of these mentors had prior experience with both pre-T-TEL and post-T-TEL systems, reinforcing their endorsement of the reforms.

Research question 2: *What are mentees' views on the weekly professional competence development sessions?*

Figure 2 summarises student teachers' evaluations of the twelve-week professional competency plan.
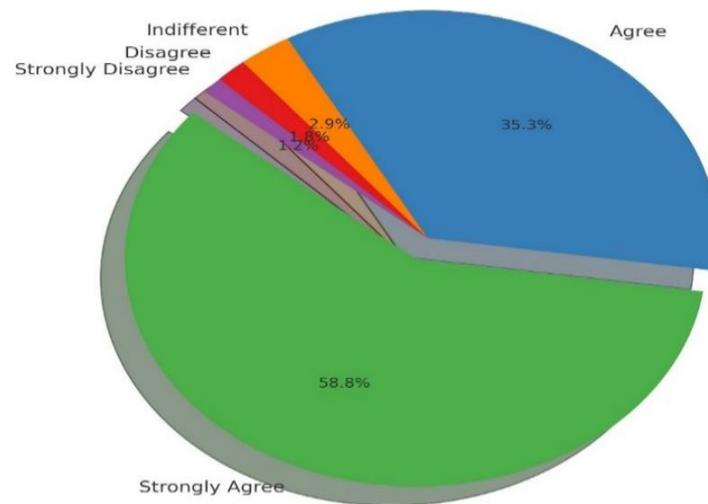

Figure 2. Mentees' responses to the relevance of the twelve-week competency plan.

More than 120 of the 150 mentees endorsed the twelve-week plan as relevant to their training, with over 80 strongly agreeing. Fewer than 15 respondents disagreed or strongly disagreed. These results suggest that the plan was widely valued for its contribution to classroom preparedness and reflective practice, despite its demanding workload.

Research question 3: *What are mentees' views on the involvement of mentors in assessing their professional work?*

Figure 3 presents mentees' perceptions of mentor involvement in assessment.
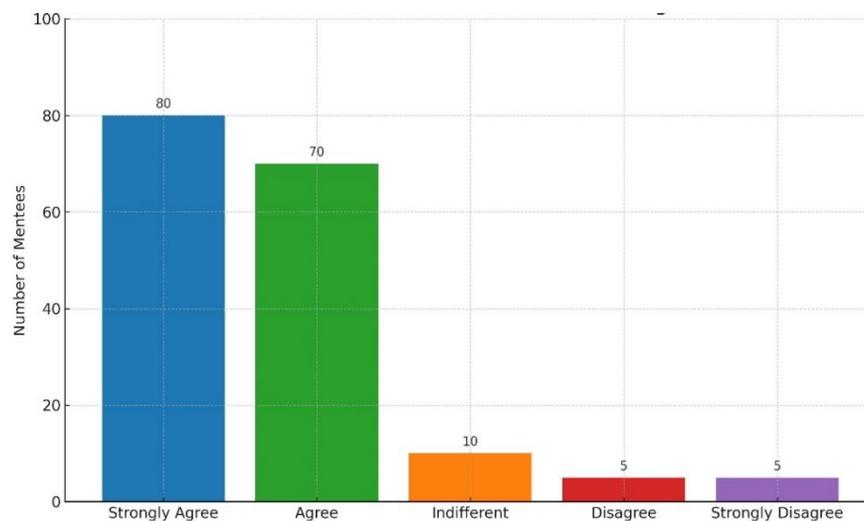
Figure 3. Mentees' views on mentors' involvement in assessing professional work.

A substantial majority of mentees (80 strongly agreed; 70 agreed) reported that their mentors actively participated in assessing their professional work. Only a handful of respondents were neutral (n = 10) or disagreed (n = 10 combined). This indicates that co-assessment, a central feature of T-TEL, was successfully implemented and appreciated by mentees.

Summary of findings

1. The hypothesis was supported: student teachers trained under T-TEL demonstrated significantly higher professional performance than those trained under the previous system, with a large effect size.
2. Mentors overwhelmingly affirmed the relevance of T-TEL innovations.
3. Mentees strongly endorsed the twelve-week professional competency plan as beneficial to their development.
4. Mentor involvement in assessment was widely perceived as active and supportive, reinforcing the collaborative spirit of the reforms.

DISCUSSION

The independent samples t-test showed that student teachers trained under T-TEL significantly outperformed their counterparts trained before its introduction, with a large effect size (Cohen's d = 1.47). This suggests that T-TEL innovations, particularly the twelve-week competency plan and structured mentorship, contributed substantially to trainee preparedness. These results echo the OECD's (2009) position that teacher quality is the most critical determinant of learner outcomes, and align with Postholm's (2012) review, which emphasises that sustained professional development opportunities improve teacher competence.

Mentors' strong endorsement of the relevance of T-TEL reforms also validates arguments made by Rice (2006), who identified mentoring as a decisive factor in trainee development. Similarly, mentees' appreciation of the competency plan reflects Acheampong's (2003) critique of earlier Ghanaian teacher education models that left trainees to "sink or swim" during practicum. By embedding structured planning and feedback, T-TEL directly addressed this gap.

Systems theory perspective

Viewed through Systems Theory (Rooney and Rooney, 2010), the findings illustrate how coordinated reforms across policy, training institutions, and schools produced systemic change. Inputs (policy frameworks, funding, mentor training) interacted with processes (competency planning, reflective practice, co-assessment) to generate outputs in the form of improved performance scores and professional identity. This confirms Opoku-Prempeh's (2018) assertion that reforms succeed only when practicum is prioritised and supported at both institutional and school levels.

Comparison with previous research

The present findings reinforce Kirby, McCombs, Barney and Naftel's (2006) argument that teacher education reform requires both structural and cultural change. Whereas earlier efforts in Ghana primarily concentrated on upgrading colleges to tertiary status (Acheampong, 2003), T-TEL moved beyond structural adjustments to embed professional competencies directly into training. This study adds to the literature by providing empirical evidence of improvement in trainee performance—a dimension often missing in prior T-TEL evaluations, which focused mainly on tutors' competencies (Ameyibor, 2018).

Furthermore, the collaborative role of mentors in assessment corresponds with Yidana's (2025) recent findings that stakeholder involvement in curriculum and assessment design is essential to improving teacher preparation across sub-Saharan Africa. The evidence from Akatsi demonstrates how involving mentors not only enhanced assessment validity but also strengthened trainee confidence and reflective practice.

Implications for policy and practice

The evidence suggests that institutionalising the twelve-week competency plan and formally recognising mentors in assessment frameworks could improve the consistency of professional training across Ghana's Colleges of Education. As OECD (2008) noted, retaining effective teachers requires investment in supportive professional environments, not just policy mandates. By providing training, time allowances, and psychosocial support, policymakers can ensure that the demanding but beneficial reforms introduced by T-TEL are sustainable.

Limitations

Despite the study's strong findings, it has several limitations. It was conducted in one College of Education, which may limit the generalisability of results to the broader national context. The design was cross-sectional, which prevented causal conclusions beyond the observed associations. Furthermore, reliance on self-reported data from mentors and mentees may introduce response bias.

Directions for future research

Future studies should extend this comparative approach to multiple Colleges of Education across Ghana to test whether the observed improvements hold nationally. Longitudinal research could trace the professional performance of T-TEL-trained teachers into their early years of service to determine the sustainability of the reforms. Mixed-methods designs incorporating classroom observations and qualitative interviews would also add depth by capturing how competencies are enacted in practice and how trainees experience the mentoring process.

Conclusion

This study examined the impact of the Transforming Teacher Education and Learning (T-TEL) programme on the professional competence of student teachers at Akatsi College of Education. By comparing two cohorts—one trained before the implementation of T-TEL and the other trained within the framework of the reforms—the research provides robust evidence of improvement in trainee performance under T-TEL.

The findings confirm that the structured twelve-week competency plan, coupled with enhanced mentor involvement in assessment, made a substantial contribution to the development of classroom readiness and professional identity among trainees. Mentors and mentees alike affirmed the relevance of the reforms, while statistical analysis revealed a significant difference in performance scores between cohorts. Anchored in Systems Theory, the study demonstrates how systemic reforms can produce synergistic effects when policy inputs, practicum processes, and stakeholder collaboration reinforce one another.

Although limited by its single-college scope and cross-sectional design, the study nonetheless provides compelling evidence that T-TEL has helped to reshape teacher education in Ghana in ways that are both practical and sustainable.

RECOMMENDATIONS

Policy

1. Institutionalise the twelve-week professional competency plan across all Colleges of Education as a mandatory component of teacher training.
2. Formally integrate mentors into teacher assessment frameworks, ensuring their roles are recognised in policy and resourced with adequate training and incentives.
3. Allocate dedicated resources and time for implementing T-TEL-aligned reforms, including workload adjustments to ease the intensity of the competency plan.

Practice

1. Encourage regular mentor–mentee review meetings and reflective sessions to sustain collaboration and deepen professional learning.
2. Provide continuous professional development for mentors on competency-based assessment and mentoring strategies.
3. Embed professional development activities into the weekly teaching schedules of student teachers to reduce overload and improve implementation fidelity.

Counselling and support

1. Offer psychosocial support services for both mentors and mentees to manage stress and workload demands associated with the reforms.
2. Establish peer-support networks that allow student teachers to share experiences, challenges, and coping strategies.
3. Provide career guidance services that highlight the long-term benefits of competence-based teacher preparation and encourage sustained professional growth.

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