European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available online at: www.oapub.org/edu

DOI: 10.46827/ejes.v12i1.5816 Volume 12 | Issue 1 | 2025

TRANSFORMING SUPERVISION PRACTICES: THE IMPACT OF TARGETED COACHING ON REFLECTIVE QUESTIONING SKILLS AMONG LECTURERS IN NATIONAL TEACHERS' COLLEGES IN UGANDA

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Abstract:
This study investigated the influence of coaching on the reflective questioning skills of lecturers in National Teachers' Colleges in Uganda, drawing on the principles of Cognitive Apprenticeship and Vygotsky's Sociocultural Theory, which emphasize learning through guided experience and social interaction. Employing a sequential embedded mixed-methods approach, the research utilized a pretest-posttest control group design to assess whether coaching significantly enhanced lecturers' reflective questioning skills. A sample of 128 lecturers was purposively selected, stratified, and randomly assigned to experimental and control groups, with the experimental group receiving structured coaching sessions. A self-administered questionnaire and an observation checklist provided the quantitative data, while qualitative data was collected using a semi-structured interview guide. The quantitative data were analyzed using descriptive statistics and inferential statistics through a t-test, while qualitative data were examined through content analysis. The post-test results revealed that the experimental group performed better, with a mean difference of 0.4766 points and a p-value of 0.000 < 0.05, which is statistically significant. The qualitative data further underscored how coaching transformed participants' ability to employ effective reflective questioning techniques during pre-observation conferences. The experimental group demonstrated substantial progress, highlighting the potential of coaching to foster meaningful improvement in their reflective questioning skills. Conversely, the control group's limited improvement emphasizes the necessity of continuous refinement and adaptation of coaching strategies to better address the supervisors' gaps. These findings reinforce the value of personalized coaching approaches and professional development through

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targeted workshops and training sessions and follow up coaching sessions to build capacity of supervisors.

Keywords: coaching, reflective questioning skills, cognitive apprenticeship, sociocultural theory

1. Introduction

Effective education and skilled educators are essential for the Sustainable Development Goals (SDGs), which cater to the educational needs of the 21st century (Rieckmann, 2018). Teacher training institutions serve as pivotal environments where future educators develop their skills and philosophies of teaching. Pre-service teacher education integrates theoretical instruction with practical training through teaching practicums, which are vital for student teachers to practice teaching skills, adopt strategies, understand student psychology, and apply theoretical knowledge in real classroom settings (Ulum, 2020). Positive teaching-practice experiences are attainable when preservice teachers receive quality guidance that empowers them with requisite skills (Jita & Munje, 2022). Supervisors play a vital role in guiding and supporting preservice teachers as they navigate the complexities of the classroom (Haberlin, 2018).

Supervisors during practicum are expected to "*support preservice teachers' learning to teach*" (Orland-Barak & Wang, 2021). Supervisors can function as catalysts to help students become aware of aspects they have not paid sufficient attention to, and enable them to widen and broaden their experience of the situation (Biesta, 2022). One key aspect of this role is the ability to engage in reflective questioning, which can foster deeper understanding and growth in the preservice teacher. (Mukoro & Ogheneovo, 2013). By asking questions that prompt deep reflection, supervisors can guide preservice teachers to critically examine their own teaching practices, identify areas for improvement, and develop strategies for growth. The importance of reflective practice in teacher development is well-documented. Schon's work on the "*reflective practitioner*" emphasizes the need for continuous learning, practice, and experience to improve one's professional work (Haberlin, 2018). However, ineffective mentoring has been reported in national and international contexts (Mukeredzi, 2017). Traditional supervision methods in institutions often fall short of preparing student teachers for the complexities of the real-world teaching environment (Wabyona, 2021). These traditional supervision practices, which are often based on outdated models, frequently fail to provide the reflective questioning necessary to enhance student teachers' pedagogical skills and promote deeper understanding (Bwiruka *et al.*, 2021).

The problem addressed in this study is the gap in the support that supervisors are expected to give students to help them reflect as they plan and prepare to conduct successful lessons. Students reported the absence of pre-observation conferences and where they are held, supervisors hurriedly peruse through the lesson plans without commenting or proposing areas to improve on (NTC Kaliro, 2019). This leaves them

unsure of the correctness of their plans for teaching, which sometimes affects their teaching quality. Related literature reveals similar gaps in supervision practices globally, where pre- observation conferences are often inconsistent, hurried, or entirely missing (Ngara & Magwa, 2018; Oppong, 2013; Russell, 2013). Students who are confronted with a new environment and its specificities, including pupils and their learning, need advice and feedback from an experienced teacher to facilitate their professional development (Garcia & Badia, 2023). Russell (2013) claims that "*student teachers rarely gain meaningful experiences of being reflective practitioners at practicum*". Foong *et al.* (2018) asserted that novice student teachers require adequate support to reflect more deeply. The absence of effective support not only hampers the professional growth of student teachers but also perpetuates a cycle of educational underachievement; as inadequately prepared teachers struggle to deliver the quality education necessary to meet their students' needs (Ministry of Education and Sports, 2016). Consequently, this gap in supervision has fueled widespread concern over the quality of teacher graduates, many of whom are perceived as lacking the essential reflective skills and professional ethics required for effective teaching (Omara *et al.*, 2021).

Beauchamp (2015) argues that those who are involved in supporting pre-service teachers' reflection should learn an appropriate way to do so. Miller (2023) proposed that identifying how to facilitate and support reflective practices can lead to a more consistent understanding of the concept and its connections to professional growth and positive student outcomes. Coaching supervisors to enhance their reflective questioning skills can have a significant impact on the quality of support provided to preservice teachers during their school practice. It also encourages a culture of continuous learning and improvement, where both supervisors and preservice teachers are actively engaged in self-reflection and professional development (Duvall & Angelo, 2014). Furthermore, it helps to create a more collaborative and nurturing environment within the school setting, where preservice teachers feel empowered to take risks, experiment, and learn from their experiences (Haberlin, 2018). After engaging in coaching, supervisors become more effective mentors, providing preservice teachers with the guidance and support they need to grow and develop their teaching practice (Selmo & Orsenigo, 2014).

Given the critical role of reflection in teacher development, this study was motivated to implement coaching as an intervention to enhance the reflective questioning skill of lecturers in NTCs. The objective of the study was to examine the effect of coaching on the reflective questioning skill of lecturers in National Teachers' Colleges in Uganda. A null hypothesis that states that there is no significant difference in the reflective questioning skill of lecturers who received coaching compared to those who did not receive coaching was stated for the study.

2. Theoretical Review

The study was underpinned by the Cognitive Apprenticeship Theory developed by Collins, Newman and Brown in 1989. The theory emphasizes authentic learning,

providing cues, scaffolding, feedback, modelling, reminders, and raising the performance of the learners to expert (Collins & Kapur, 2014). Apprenticeship is a process through which a more experienced person assists a less experienced one by way of demonstration, support and examples (Dennen & Burner, 2008). Imiere (2019) defines a cognitive apprenticeship as "*a learning process in which experts and novices interact socially to complete a task with a focus on developing cognitive abilities by engaging in real-world learning opportunities*". Cognitive apprenticeship theory supported coaching by integrating modeling, guided practice, and social interaction into the participants' learning. By focusing on the cognitive aspects of skill development and providing targeted support, coaches helped participants move from novice to expert, fostering both competence and confidence in their abilities.

The study also adopted the Social Cultural Theory developed by Levi Vygosky in 1978. The theory emphasized the importance of social interactions in cognitive development. Collet (2015) stated that, "*the sociocultural theory emphasizes the role of social interaction in learning because it is through dialogue that coaches, acting as the more knowledgeable others, could provide scaffolding to teacher learning within their zone of proximal development*". Vygosky (1978) posited that learners initially acquire knowledge and skills through interactions with others, such as peers or more knowledgeable individuals. In the study, participants collaboratively engaged with the coaches who considered their ZPD, and offered appropriate support to gain more expertise in the reflective questioning skill. The two theories supported the intervention of coaching by engaging participants in social interaction and guided practice to learn and to improve their reflective questioning skills.

3. Review of Related Literature

3.1 Reflective Practice

In the training of preservice teachers (PSTs), the practicum plays a central role in honing their ability to reflect (Pereira *et al.*, 2023). Reflective practices are essential in developing pre-service and/or in-service teachers' classroom teaching practices. Reflection for action is the teachers' thinking about how to plan the next lesson based on the experiences that they gained from the reflection in action and reflection on action (Ghaye, 2011). Suphasri (2021) exemplified reflective practice as having pre-service teachers and the supervisor meet in the university setting for a specific meeting where they discuss lesson plans. Kho *et al.* (2020) reported that, "*the main purpose of the discussion is to allow the crucial process of co-construction of understanding between the coaches and teachers in the implementation of the lessons to take place*". The value of these formal mentor-mentee meetings and interactions cannot be over-emphasized and should not be taken for granted (Zhang, 2014). Studies demonstrate that reflection can improve instructors' capacity to impart knowledge, have better teacher-student interactions, and hone their classroom management abilities (Naseem *et al.*, 2023). Also, through the practicum, PSTs can address real-world challenges within the classroom by engaging in reflective analysis of their teaching-

learning practices (Murphy *et al.*, 2021). Past studies have shown that reflective practice can support pre-service teachers' ability to overcome their fear of performing in a real classroom setting, and become more resilient in handling the reality shock (Slade *et al.*, 2019).

3.2 Reflective Questioning

Supervisors use a number of successful techniques to help student teachers develop reflective practices that promote greater involvement and introspection. Integrating structured reflective questioning is one important strategy that encourages students to critically evaluate their plans and teaching experiences in a collaborative setting. "*To initiate reflection, a question is usually identified to direct thinking towards an area of practice*" (Marshall, 2017). Research by Loughran (2002) emphasizes that reflective questioning not only aids in the development of teaching skills but also encourages student teachers to articulate their thoughts and feelings about their practice during pre-observation conferences. Reflective questioning is a pedagogical technique that involves prompting teachers or learners to critically analyze their thoughts, actions, and decisions in order to gain deeper insights and improve their practice. It enhances a wide range of skills, including motivational, pedagogical, and classroom management abilities, thereby preparing prospective teachers for the complexities of the teaching profession (Parveen *et al.*, 2020).

According to Brookfield (2017), "*reflective questioning allows educators to challenge assumptions and promote critical thinking among student teachers, which is essential during pre-observation discussions*". Reflective questioning during conferences is essential for guiding student teachers to critically analyze their lesson plans and teaching strategies. A study by Jarrah (2020) reported that student teachers often feel anxious and unsupported during practicum, partly due to inadequate pre-observation sessions where reflective questioning could play a pivotal role in easing their transition into real-world teaching environments. As noted by Korthagen (2010), effective reflective questioning can lead to enhanced professional growth for both lecturers and student teachers, facilitating a more productive learning environment during practicum. Study findings confirmed the notion that supervisors are, or at least can be, influential actors during reflective conversations, depending on how they construct reflective environments for reflective conversations with students (Emil, 2024). Effective questioning prompts student teachers to consider their lesson objectives, anticipated student outcomes, and assessment methods, leading to more thoughtful and effective lesson execution (Acheson & Gall, 2003). Zepeda (2012) describes these questions as "*ice breakers*" that stimulate reflective thinking, helping teachers connect their instructional practices with desired learning outcomes. An action research study by Azevedo *et al.* (2023) reported that by using various question types (e.g. leading, probing, and procedural next-step questions) designed to address individual needs, pre-service student teachers progressed from a basic reflection level to thinking critically about their teaching-learning practices.

It is, however, noted that supervisors often fail to engage student teachers in meaningful reflective dialogue that encourages critical thinking and self-assessment (Mbusiseni *et al.*, 2021). In most cases, supervisors only tend to direct the teachers to change their practices and follow what the supervisors say (Algraini, 2021).

3.3 Coaching to Improve Skills

Studies have used coaching as an intervention to improve performance in a variety of areas of education, these add to the empirical value of coaching in supporting learning, even though in different contexts. Coaching as a professional development strategy has been shown to significantly enhance the reflective questioning skills of educators, leading to improved teaching practices (Papay *et al.*, 2016). Arslan *et al.* (2022) investigated the implementation of peer coaching by five female lecturers at a school of foreign languages in a foundation university in Turkey. This also sought the effects of peer-coaching on teaching and classroom management skills, relationships and solidarity among colleagues, professional development of lecturers and obstacles during the implementation. During the implementation, the pre- and post-observation meetings, observations, and self-evaluation were conducted. The findings showed that peer-coaching could contribute to the professional development of the lecturers' instructional and class management skills.

Another study by Bates & Morgan (2018) reported that when coaches used reflective questioning during coaching sessions, teachers were better able to critically assess their instructional practices and make informed changes that improved student outcomes. Relatedly, Amanda and Alyson (2021) did a study to improve the instruction of their students through dialogue and reflection. Three exemplary coaches were involved. These used elements of coaching in their supervision of pre-service teachers. The coaches shared that the pre-service teachers became more reflective practitioners who took ownership of their own learning and development through inquiry. Also, Songsiengchai (2021) investigated the effectiveness of the coaching program in communicative listening-speaking skills for pre-service teachers. The study involved 20 pre-service teachers who were coached over 18 hours on 3 consecutive days. Findings revealed that the pre-service teachers' knowledge and understanding of listening-speaking skills through communicative language teaching activities were significantly increased.

Several other studies (e.g. Stahl, 2016; Kho *et al.*, 2020; Hollweck & Lofthouse, 2021; Hanno, 2022; Arslan *et al.*, 2022) relate coaching to improvement of skills in teacher education. However, there is a knowledge and contextual gap on how coaching has been used to support supervisors improve on their supervision skills. This was a basis for implementing coaching as an intervention in the study to support lecturers in improving their reflective questioning skills.

4. Methodology

4.1 Research Design and Sample

This study employed an embedded mixed-methods design (QUAN + qual) with a randomized pretest-posttest control robust quasi-experimental approach. The quantitative strand utilized a quasi-experimental design (N = 128), and structured observations (N = 64), while the qualitative approach had semi-structured interviews (N = 20). The sample of comprised of 128 participants drawn from four public National Teachers' Colleges in Uganda. The sample of participants was determined by using a sample size table by The Research Advisors (2006) where 128 participants and lecturers from four National teachers' colleges were purposively sampled from a population of 142. These participants were stratified and matched based on their supervision experience level and randomly assigned to either an experimental group which received coaching or to a control group that did not receive coaching.

4.2 Instruments

Data collection was carried out using a multi-method approach to capture both quantitative and qualitative aspects of the lecturers' supervision skills. By using a survey, a self-administered questionnaire collected quantitative data on the lecturers' self-assessed skills, against a 5 Likert scale ranging from 1(Strongly disagree) to 5 (Strongly agree). An observation checklist was used to objectively assess participants' observed performance during practicum supervision. It had a scale ranging from a minimum of 1 (Not observed) to 5 (Outstanding) as the best scenario. Additionally, semi-structured interviews were conducted to gather qualitative insights, allowing for a deeper exploration of the lecturers' experiences and perceptions of the coaching intervention. The three instruments were checked by experts to improve on the items. The validity for the questionnaire was 0.81, and a reliability alpha (α), which was 0.84. The observation checklist reliability was 0.786, while its content validity index was 0.84, both greater than 0.7 which indicates an acceptable level for research instruments (Taber, 2017).

4.3 Data Management

Quantitative data were coded and entered into a computer using SPSS which analyzed them at univariate level into descriptive statistics of means, standard deviations and ranges between scores. At the bivariate level, inferential statistics were analyzed through a paired sample T-test to determine the significance of the difference between the pretest and posttest means of both groups. Qualitative data were analyzed through content analysis, which identified and explored patterns and themes within the interview responses, providing rich contextual insights that complemented the quantitative findings. All data collected for the study is available for reference.

4.4 The Intervention

The intervention of coaching was done by internal coaches who had a training background to support their peers. Coaches were trained on the procedure which was based on a framework adapted from Kho *et al.* (2020). This had four stages of Pre-observation conference, observation, post-observation conference and intervention. Coaches attended practicum sessions and observed participants as they supervised student teachers. Each coachee was observed three times by the same coach who had an observation checklist. The coaches and coachees had sessions for reflecting, feedback and planning for action. Trained research assistants conducted and recorded the interviews from participants in the experimental group after the post-tests were done.

4.5 Ethical Consideration

This study was approved by the Gulu Research Ethics Committee of Gulu University (GUREC) and registered by the Uganda National Council for Science and Technology (UNCST) under registration number SS891ES. Informed consent was obtained from all participants prior to their involvement in the research. The study adhered to ethical guidelines, and participant confidentiality was maintained throughout the research process. Pseudonyms and codes were used to maintain anonymity of institutions and participants. No external funding was received for this study.

5. Results and Discussion

5.1 Demographic Information

Table 1: Demographic Characteristics of Participants

Item	Category	Frequency	Percent
Gender	Male	103	80.4
	Female	25	19.6
	Total	**128**	**100**
Education level	Bachelor's degree	98	76.6
	Post graduate diploma	8	6.3
	Master's degree	22	17.1
	PhD degree	0	0
	Total	**128**	**100**
Years of supervision experience	1 but less than 5	7	5.5
	5 but less than 10	48	37.5
	10 but less than 15	41	32
	15 and above	32	25
	Total	**128**	**100**

Table 1 shows the demographic characteristics of the participants who were engaged in the study specifically gender, education level and years of supervision experience. The demographic profile of the study participants indicated that the modal percentage (80.4%) was males, with females being 19.6%. This demographic distribution reflects a

predominantly male group. Regarding the highest level of education, the modal percentage was (76.6%), who hold a bachelor's degree. In terms of supervision experience, it was (37.5%) with an experience of supervision of more than 5 years. This profiled a suitable group of participants for the study.

5.2 The Effect of Coaching on Lecturers' Reflective Questioning Skill

To assess the effect of coaching on lecturers' reflective questioning skills, both the experimental and control groups were subjected to a pre-test and post-test.

Table 2: Test Scores for the Experimental and Control Groups on Reflective Questioning

Aspects	Groups	Pre-test	Post-test	Range
I possess the knowledge, skill and disposition to hold a pre-observation conference	EG	0.65	0.81	0.15
	CG	0.64	0.67	0.03
I can support students in generating SMART lesson competences	EG	0.65	0.78	0.13
	CG	0.66	0.68	0.02
I can use reflective questions for students to explain their planned lesson procedures	EG	0.75	0.85	0.12
	CG	0.77	0.77	0
I can prompt students to identify areas on which they want feedback.	EG	0.67	0.74	0.07
	CG	0.66	0.67	0.01
I can prompt students to focus on better options.	EG	0.55	0.68	0.13
	CG	0.57	0.61	0.04
I give students the opportunity to ask questions for clarity before supervision.	EG	0.59	0.71	0.12
	CG	0.57	0.57	0

Results in Table 2 show a significant improvement in the reflective questioning aspects of the participants in the experimental group who received coaching. Quantitative data from the experimental group demonstrates notable enhancements in all aspects of the post-test scores. The ranges indicate a difference between 0.07 and 0.15 in the tests. On the contrary, data from the control group, which did not receive any coaching, exhibited minimal changes in reflective questioning skills between the pre-test and post-test. The changes ranged between 0.01 to 0.04. There are also scores for two aspects that did not change. These were using reflective questions for students to explain their planned lesson procedures, something that had the highest score in both tests for the group. The aspect with the lowest score, which also did not change in the post-test, was the aspect of participants' being able to give students the opportunity to ask questions for clarity before supervision.

Table 3: Paired Sample Statistics for the Pre-test Scores for Both Groups

	Mean	N	Std. Deviation	Std. Error Mean
Pair Pretest EG	3.386	64	.4193	.0524
Pretest CG	3.423	64	.4713	.0589

Table 3 presents the paired sample statistics comparing the pre-test scores for reflective questioning skills between the experimental and control groups. The mean score for the experimental group was 3.386, with the control group slightly higher at 3.423, indicating a marginal difference of 0.037. This minimal variance suggests that, before any intervention, participants in both groups started at a similar competency level in reflective questioning skills. Moreover, the standard deviation for the experimental group was 0.4193, and for the control group, 0.4713, revealing a slight discrepancy of -0.052 between the two groups. These statistics highlight comparable variability in scores, indicating that initial skill levels within each group were similarly dispersed before coaching interventions began. The marginal differences in both mean, and standard deviation underscore the close parity in the reflective questioning skill between the experimental and control groups prior to the intervention.

Table 4: Paired Samples Test for the Pre-test Means of Both Groups

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest-EG Pretest-CG	-0.0375	0.5135	0.0642	-0.1658	0.0908	-0.584	63	0.561

Significance at level (0.05).

Table 4 shows the results of a paired sample t-test conducted to determine whether the difference in post-test scores was statistically significant. The t-value of -0.584 indicated that the difference was quite small in relation to the variability of the data. The p-value of 0.561 was much greater than the significance level of 0.05. This indicated that both groups had comparable levels of proficiency in reflective questioning skills before the intervention. These results imply that there was no statistically significant difference between the pre-test scores of the experimental group and the control group. The mean difference of -0.0375, combined with a confidence interval, which includes 0 and a p-value of 0.561, suggests that any observed difference in scores was likely due to random chance rather than a true difference in performance.

Table 5: Paired Sample Statistics of the Post-test Scores for Both Groups

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post-EG	4.047	64	0.425	0.0531
	Post-CG	3.57	64	0.4981	0.0623

Table 5 shows that the experimental group had a higher mean score (4.047) compared to the control group (3.570). This suggests that the experimental group performed better on the post-test. Both groups consisted of 64 participants, which is a good sample size for statistical analysis. The standard deviation for the experimental group (.425) is lower than that of the control group (.4981), indicating that the scores in the experimental group are

more closely clustered around the mean than those in the control group. The standard error mean is smaller for the experimental group (.0531) compared to the control group (.0623), suggesting that the estimate of the mean is more precise for the experimental group.

Table 6: Paired Sample Test for Post-test Scores for Both Groups

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Post EG–Post CG	0.4766	0.5001	0.0625	0.3516	0.6015	7.624	63	0

Significance level at (0.05).

Results in Table 6 indicate that the experimental group performed better, with a mean difference of 0.4766 points which is statistically significant. The relatively low standard deviation of 0.5001 suggests consistent improvement across the experimental group, while the small standard error of 0.0625 reflects the precision of this estimate. The 95% confidence interval from 0.3516 to 0.6015, which does not include zero, suggests that the difference is statistically significant. This means that we can be 95% confident that the true difference lies within this range. The t-value of 7624 indicates a strong difference between the two groups. The p (Sig. 2-tailed) of 0.000 is less than the conventional alpha level of 0.05, indicating that the difference in means is statistically significant. This result implies that there is a significant difference between the post-test scores of the experimental group and the control group.

Table 7: Observation Results of Participants Before and After Coaching

	Before coaching			After coaching		
Aspect	**Item Means**	**Overall means**	**SD**	**Item Means**	**Overall means**	**SD**
Creates rapport with the student teacher to start the pre-observation conference.	4.16	3.55	.821	4.63	4.65	.577
Asks to see the lesson plan.	5.00		.000	5.00		.000
Ask how the lesson correlates with the syllabus.	4.05		1.133	4.75		.563
Ask the student teacher the purpose of the lesson.	3.08		1.337	4.42		.956
Ask the student teacher how the lesson relates to the previous and next lesson.	3.50		.926	4.66		.761
Ask the student teacher about the planned instructional strategies to be used.	3.61		1.255	4.53		.796
Ask the student teacher about the T/L resources to be used.	3.58		1.096	4.75		.535
Ask the student teacher about the assessment techniques to be used.	2.81		.906	4.56		.794

Ask the student teacher to propose the focus for the lesson observation.	2.97		1.168	4.56		.814
Offers student teacher options to reflect on some areas in the plan.	2.78		1.119	4.66		.623

Source: Primary data from the field.

The results in Table 7 show that the overall mean from the observation data collected using an observation checklist changed from 3.55 which was which was high, before coaching to 4.65, indicating very high, after the coaching. Notably, all the means of the aspects for reflective questioning observed increased, except for asking for the lesson plans which was constantly very high. This indicates the efficacy of coaching in supporting skill development among supervisors.

Qualitative results obtained from participants from the experimental group through semi-structured interviews support the results of the observations. Participants indicated that coaching contributed to their reflective questioning skill development.

Participant MB9 stated that,

> *"Asking about the objective of the lesson is a key question because it leads to a lot of information... that's what I used to focus on before lesson observation...my realization now is that it requires further probing because some say very little. These cannot be helped, even when they have gaps in other areas... that leaves you to guess about their plans."*

Also, participant UN15 acknowledged the change in performance after coaching by stating that,

> *"Some of us learnt supervision on the job... I didn't know that you have to ask so deeply before observing students' lessons. The coach prompted me to do more probing to identify what the students really plan to do."*

KL1 noted that,

> *"I see a shift from the routine questioning to a more comprehensive exploration of lesson planning, teaching strategies, and student preparation. This opens opportunity for more support, where the students are challenged."*

Generally, participants acknowledge the coaching activity they had participated in as beneficial. Participant MB6 said that,

> *"...coaching is very good for us who may not gain in big group learning. Learning with a colleague was motivating. I took many lessons from the one-on-one sessions."*

Similarly, MN3 opined that,

"It was a worthwhile learning experience. My coach was confident and supportive... asking me questions that made me realize that the answers were really with me."

However, the participants shared some challenges that limited their implementation of the proposed strategies during coaching. Participant MN6 stated that,

"There is usually no time to ask students very many questions before the lesson observation during the tight schedule. Pre- observation conferences are mainly about asking a few basic questions as you wait to see the rest in class."

Relatedly, KL15 stated that,

"...the strategy to engage the student teachers through questioning to help them reflect before their lessons are good as proposed and practiced... the issue of available time with each student to be able to explore as required, is now the challenge."

Also, participant MN2 admitted that,

"It is not very common for us to ask students the focus of the supervision....that would limit the support, yet challenges may occur in many areas. The question to ask about it may not be that directly stated."

Results indicate that even with the coaching, some participants did not fully embrace the proposals for change. Participant UN3 mentioned that,

"Practicing the reflective questioning during the sessions appeared to be artificial as many students are not used to so many questions before teaching."

The results from the three triangulated survey sources, observation and interviews highlight the contribution of coaching in supporting skill development and improving supervision practice amongst lecturers.

6. Discussion

This study conclusively demonstrates the significant effect of coaching on enhancing lecturers' reflective questioning skills in National Teachers' Colleges in Uganda. The findings reveal a statistically significant difference between the experimental group and the control group, as evidenced by a paired samples post-test result with a p-value of 0.000 ($P < 0.05$), hence rejecting the null hypothesis, which stated that there is no statistically significant difference in the reflective questioning skill of lecturers who received coaching compared to those who did not receive coaching was rejected.

This rejection of the null hypothesis indicates that coaching effectively enhanced the lecturers' abilities to engage in reflective questioning, a critical skill for fostering deep thinking and self-assessment among student teachers.

There were improvements observed in all aspects of reflective questioning skills, especially in areas such as creating rapport with students in the pre-observation conference, asking students how the lesson correlates with the syllabus, prompting students to discuss their assessment techniques, asking them to propose the focus for the lesson observation and offering them the opportunity to reflect on some areas in the plan. This practice is supported by Al-Abri (2011), who highlights that "*an opportunity should be provided to teachers, and they should feel free to reflect upon their practices, and the help offered by supervisors can involve occasional probing questions or just comments*". This observed improvement underscores the transformative potential of the structured coaching intervention employed in the study. Darling-Hammond *et al.* (2020), stated that "*effective teacher evaluation systems incorporate reflective practices that encourage teachers to think deeply about their instructional strategies and their impact on student learning*". The study implemented the intervention to sharpen the lecturers' skills so that they are able to enhance students' reflective practice during school practice. This relates to what Gornall & Burn (2013) stated that "*coaching relates to learning, where a coachee is accompanied through the darkness in the forest to the light of learning, and helped to draw on their inner resources to set forth their own journey in the future*".

The findings that indicate a positive change in the participants' performance after coaching aligns with Kraft *et al.* (2018) who opined that coaching is a promising option for expediting skill development. It helps individuals with the performance and development of certain skills through some form of facilitation activity or intervention (Beattie *et al.*, 2014). So, when coaching was employed in this study, a positive change in all aspects was recorded. However, the challenge of time limiting participants' support to students was notably highlighted in the interview data. This is also mentioned by Hixon & So (2009) that "*the opportunity for reflective practice is hindered because of several obstacles, such as time and travel constraints*".

The two theories of Cognitive apprenticeship theory and the Social Cultural theory also aligned well with the study variables. The coaches were able to work along with the coachees through social interaction and guided learning. Participants in the interviews highlighted the acquisition of knowledge and practicing the skill during supervision after guidance by the coaches. Many were able to quote specific incidences from their implementation that they appreciated to have learnt from the interaction with and guidance of the coaches.

In contrast, the control group, which did not receive any coaching, exhibited minimal changes in some aspects between the pre-test and post-test. The slight improvements observed in this group suggest that without targeted coaching, lecturers may not improve their skills. For this, Duan *et al.* (2022) recommended that training for supervisors is needed because clinical supervision is very technical and unique. Therefore, supervisors need professional development for new knowledge, competencies

and skills to comply with the emerging demands of innovative pedagogies and inter-professional teamwork (Lakkala *et al.*, 2017).

While challenges such as time constraints and individual preferences of what they feel about areas to ask about were noted, the findings clearly affirm the substantial positive impact of coaching on lecturers' ability to employ effective reflective questioning, ultimately contributing to improved teaching practices and student learning outcomes. These results have important implications for teacher education programs, advocating for the integration of coaching into professional development curricula to foster continuous improvement and enhance the quality of education.

7. Conclusion

This study underscores the significant impact of coaching on improving lecturers' reflective questioning skills in National Teachers' Colleges in Uganda. The substantial enhancements observed in the experimental group, compared to the minimal changes in the control group, highlight the effectiveness of targeted coaching interventions in developing critical supervisory skills. Enhancing reflective questioning skills among lecturers through targeted coaching presents a viable pathway to improving supervision practices at National Teachers' Colleges in Uganda. By focusing on personalized development strategies, educational institutions can foster an environment conducive to professional growth and improved educational outcomes. The results clearly demonstrate that coaching not only enhances the technical aspects of reflective questioning but also encourages a mindset shift towards more intentional and reflective engagement with student teachers. These findings reinforce the importance of integrating coaching into professional development programs to ensure that educators are well-equipped to support student learning effectively.

8. Recommendations

Based on these findings, several recommendations are proposed to maximize the benefits of coaching in educational institutions. First, personalized coaching programs targeted to the specific needs and experience levels of lecturers should be developed and implemented. To enhance the reflective process, tools like video-based reflection should be incorporated into coaching sessions, allowing lecturers to critically analyze their instructional techniques and improve their practices. Additionally, institutions should cultivate a culture that prioritizes professional development, supported by targeted workshops and training sessions, followed by coaching. By addressing challenges such as time constraints during supervision and varying individual lecturers' preferences and by promoting an environment that values continuous improvement, educational institutions can ensure that the benefits of coaching are fully realized, leading to better teaching practices and improved student learning outcomes.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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