

Factors Influencing the Implementation of the Lesson Study Approach in Pre-service Teacher Education in Tanzania

Jimmy Ezekiel Kihwele, PhD

ORCID: <https://orcid.org/0000-0001-9152-5029>

Department of Education Foundations and Teaching Management, Mzumbe University, Tanzania

Email: jikiwele@mzumbe.ac.tz

Edward Noel Mwamakula

ORCID: <https://orcid.org/0000-0001-6897-6884>

Department of Education Foundations and Teaching Management, Mzumbe University, Tanzania

Email: ednoel@mzumbe.ac.tz

Corresponding Author: jikiwele@mzumbe.ac.tz

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Abstract: Teachers' education programs inadequately produce highly knowledgeable and competent teachers to support quality education. The situation necessitates plans to ensure the availability of systemic and continuous teacher professional development. This study explored factors influencing the implementation of lesson study in pre-service teacher education for continuous professional development. The data collection involved observation of classroom teaching with 72 students and in-depth interviews that purposively selected ten respondents from the class. Analysis involved content analysis. The findings show that collaboration and teamwork among pre-service teachers influenced the implementation of lesson study in a positive way while time requirement, negative perception and their seclusion behavior affected it negatively. The lesson study approach benefits pre-service teachers in igniting innovative and creative pedagogy compared to block teaching practices. The study recommends that future studies should consider the improvised solutions to existing challenges to enable the systemic implementation of lesson study in pre-service teacher education programs for professional development.

Keywords: Lesson study; teacher education; pre-service teachers; teacher professional development.

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Introduction

Globally, teacher training programs have been inadequate to produce highly knowledgeable and competent teachers to support quality education throughout their career (Koda, 2014; United Republic of Tanzania, 2014). While teachers require frequent and continuous learning opportunities to update their skills and knowledge, their access to professional training programs has been challenging; for example, Laddunuri (2012) reported that in Tanzania, only 34% of secondary school teachers had attended training in ten years from

2002 to 2012. He further revealed financial challenges as a hindrance towards teachers accessing professional development programs. Koda (2014) warned that teaching for a prolonged period without in-service training to update skills and practices harms the profession. The situation calls for more systemic innovation to reform and add value to teacher education programs. Therefore, systemic and sustainable teacher professional development programs are inevitable to keep teachers professionally active and updated. While studies have found that introducing lesson studies in

pre-service teacher education has the benefit of developing teachers' professionalism (Larssen et al., 2018; Leavy and Hourigan, 2016), this study explored factors influencing the implementation of lesson study in pre-service teacher education to enhance the continuous improvement of pedagogical competencies.

Lesson study is a collaborative practice of teachers to critically study the planned lessons to improve pedagogical knowledge and skills that will transform classroom teaching activities (Saito et al., 2006). Lesson study originated in Japan, called '*Jogyou-Kenkyu*' as a research method of improving lessons where teachers worked in teams to identify challenging areas requiring a collaborative solution (Thinwiangthong et al., 2012). Ono and Ferreira (2010) defined lesson study as a type of classroom research in which a few teachers investigate the teaching and learning in an actual single class lesson. In that attempt, teachers collaborate in planning, teaching, observing and reflecting on the lesson to remedy weaknesses observed (Lewis, 2016). Embracing lesson study practices offers a sustainable opportunity for teachers to continue the professional development through collegial collaboration (Coe et al., 2010; Lewis & Perry, 2014).

Literature Review

While different factors have enabled the adoption and implementation of lesson study in various countries such as South Africa (Coe et al., 2010), Thailand (Inprasitha, 2015), the US (Akiba & Wilkinson, 2016) and Netherlands (Schipper et al., 2017), these researchers have reported the rationale for adopting lesson study, factors influencing its implementation and the challenges hindering its effective implementation.

Rationale for Adopting Lesson Study

In many parts of Africa, block teaching practice is being used in pre-service teacher education programs to consolidate required professional competencies of teachers, especially pedagogical skills, time and student behavior management (Msangya et al., 2016). The authors further defined block teaching practice as the period in which a student teacher spends time in a real school setting to try the art of teaching. One of pillars for teaching practice is a pre-service teacher demonstrating the mastery of learned theoretical knowledge and discussion for improvement comes later after identifying areas with weaknesses (Kihwele & Mtandi, 2020). Teaching practice offers pre-service

teachers an opportunity to attach themselves to schools for a specified period where they merge theories they have learned in class and practices. However, its conduct hardly promotes the sense of continuous learning to sustain their professional learning innovatively.

Despite the contribution of the block teaching practice in enhancing pedagogical improvement, block teaching practice faces several challenges (Saban & Çoklar, 2013). It develops seclusion behavior as teachers work in isolation with little or no interaction with other teachers at the school, which fails to enhance a sense of continuous learning among teachers (Saito & Sato, 2012). Hart and Carriere (2011) and Gero (2014) reported that pre-service teachers do not allow their fellow pre service teachers to attend classroom sessions and observe the teaching process. Therefore, block teaching practice has a limited mechanism of providing feedback to teachers, does not encourage collaboration and teamwork among teachers and has less emphasis on content knowledge (Khan, 2015; Remesh, 2012). Kihwele and Mtandi (2020) revealed particular challenges facing teaching practices and how little it enhances the pedagogical improvement due to implementation modalities. To overcome these challenges, lesson study approach has proved to be more beneficial than block teaching practice, given its nature of collaborative learning in respective working environments (Akiba & Wilkinson, 2016; Lee & Madden, 2019; Ono & Ferreira, 2010).

Lesson study is one of the innovations in teacher education and a sustainable method for teachers' continuous learning (Akiba & Wilkinson, 2016). The adoption of lesson study focuses on strengthening pre-service teachers' pedagogical competencies like merging theoretical and practical knowledge and enhancing collaboration. Although the lesson study approach is considered an old approach merged back in the 1880s (Inprasitha, 2015), it has gained momentum in many countries with different innovative implementation strategies, especially in Asian countries (Saito & Sato, 2012). Some variations in implementing lesson study have emerged as practitioners try to localize it to suit their contexts. Lesson study starts with identifying and understanding the problem, setting learning objectives, planning and designing the lesson, teaching and observing, debriefing and re-designing and finally sharing the findings collaboratively in teams (Coe et al., 2010; Saito et al., 2006). It follows

the principle of collaboration as a resource for elevating professional competencies and impacts classroom teaching practices through acquiring new practical skills and knowledge.

Benefits of Lesson Study

Studies have reported the role of lesson study in promoting teachers' continuous professional development. Lesson study fosters collaboration and self-reflection among participating teachers (Coe et al., 2010; Sims & Walsh, 2009). It further offers an opportunity for teachers to experiment pedagogical innovations (Fujii, 2013; Inprasitha, 2015). There is evidence that lesson study deepens the understanding of the subject matter and enhances confidence, which improves class teaching practices (Akiba & Wilkinson, 2016; Leavy & Hourigan, 2016; Lee & Madden, 2019). Olson et al. (2011) found that lesson study helps teachers accommodate different perspectives in teaching and learning. Lesson study has also enabled teachers to change their role from being the source of knowledge to knowledge construction facilitator (Hart & Carriere, 2011).

Furthermore, lesson study provides a wider platform for internalizing pedagogical skills through its central principle of collaboration and teamwork. It possesses a systemic mechanism of providing constructive feedback to teachers for self-reflection and improvement. Through this approach, teachers develop needed skills including project-based learning, new technologies, collaboration and innovative pedagogy, social networking, critical thinking and integrating social artefacts in the learning process (Boholano, 2017; Jan, 2017).

Lesson Study Implementation Challenges

Due to its benefits in sustaining teachers upgrading their professional competencies, some countries have emphasized implementing lesson study to help pre-service teachers learn, internalize and practice. These countries include the US, Zambia, Canada, the UK and South Africa (Kihwele & Sang, 2020). However, lesson study faces several constraints in its implementation, which hinder the achievement of expected learning outcomes among teachers. Studies report that the variation in approaches and procedures of implementation leave some practitioners in a dilemma (Fujii, 2013; Ono & Ferreira, 2010). The perceived variation in stages might confuse new adopters and affect the implementation rate.

Another challenge is the misconception of lesson study as researchers in different parts try to localize, customize and simplify it to fit their context and there are some emerging variations which are translated differently in other parts (Ono & Ferreira, 2010; Shingphachanh, 2018; Coe et al., 2010). In this regard, this study sought to harmonize the variations of the lesson study by merging those models and the researcher's approaches in different contexts and applying them to see how it helps pre-service teachers in English language classes improve their knowledge and skills and attitudes.

Theoretical Perspectives

There are various theoretical perspectives regarding the implementation of the lesson study approach as shown in figure 1.

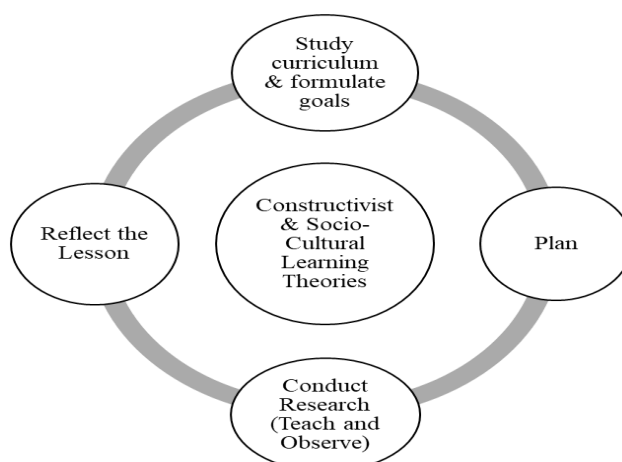


Figure 1: Conceptual Framework Model as modified from Lewis et al. (2006).

These theories focus on how the social framework of interaction guides its implementation, practice,

scaffolding level and collaboration. In understanding the context of implementing lesson study, this study

adopted the Vygotsky's sociocultural learning theory (Shabani, 2016). The theoretical assumptions such as Zone of Proximal Development (ZPD), scaffolding, social artefacts and interaction in learning are potential to implement lesson study (Fernandez & Zilliox, 2011). ZPD is the gap between what pre-service teachers can achieve alone and what one can achieve with the assistance of knowledgeable others. Scaffolding is the assistance from peers and lecturers during the observation and discussion process in lesson study activities. In this context, the interaction in groups and teamwork in lesson study assist and develop new insights and competencies that individual teachers require. The concerned parties' interaction pattern helps identify ZPD and offer appropriate scaffolding. Teachers' learning process involves sociocultural assumptions through collaboration and teamwork to achieve the learning objective. Fernandez and Zilliox (2011) had assumptions that learning communities help construct knowledge about teaching. Learning communities can be in forms of collegial collaboration and teamwork conducted at workplaces where teachers can learn improved practices from team members as they work together. The collaboration gradually transforms pre-service teachers as they accumulate and construct new knowledge and competencies for better practices to become professional experts (Bocala, 2015).

In Figure 1, the study integrated two theories, socio-cultural and constructivist theories concerning the lesson study model to better explain teachers' learning process. Scholars like Fernandez and Zilliox (2011) employed socio-cultural learning theory to explain teachers' learning process during lesson study. In another context, Ono and Ferreira (2010) used a constructivist theory in implementing the lesson study. The constructivist theory helped to understand how teachers construct new pedagogical knowledge. The study uses this integrated model to understand pre-service teachers' interaction in learning and their construction of new pedagogical knowledge.

Methodology

This section describes the study's design, participants and the procedure used in implementing the lesson study approach and a series of activities.

Design

The study involved a planned intervention of the lesson study approach to infusing sustainable

learning skills to pre-service teachers that offers opportunities for teamwork and collaboration, leading to improved knowledge, skills and attitudes. The study adopted a qualitative research approach with a case study design. The design allowed a thorough investigation of the case with multiple methods of gathering data.

Participants

Lesson study was integrated into the Pedagogy of Teacher Education (EDU 304) course in the second semester of the third year in the 2020/2021 academic year. The participants in this study were third-year pre-service teachers pursuing Bachelor of Education in Languages and Management at Mzumbe University. While the participants were 72 pre-service teachers, the course instructor categorized them into ten groups. Eight groups had seven members and two groups had eight members. These participants were chosen for this study because they had participated in block teaching practice twice in previous semesters where they had experienced hands-on classroom teaching. The opportunity to participate in the lesson study placed them in a better position to provide their perceptions, experience and a broader spectrum of critical thinking when preparing for teaching activities.

Procedures

The study started with course instructors familiarizing themselves with the lesson study and deciding the model and approach. Instructors spent one hour per day for two weeks searching for relevant materials, reading them and watching sample lesson studies on YouTube channels. Course instructors then introduced lesson the study approach to pre-service teachers using the selected model they thought would work for them. Students used some cases, online videos, reading articles and discussions to familiarize themselves. The instructors and the selected course fit this study because of their educational background and experience in the teacher education field. Furthermore, the course involved classroom practices and pedagogy of teacher education. Instructors organized a plan to adapt the lesson study and integrate it into the pre-service teacher education course.

The agreed schedule of lesson study activities lasted for 15 weeks. In week one and two, teacher educators oriented themselves on the lesson study. In week three, pre-service teachers spent three

hours on the training to understand lesson study. In week four to thirteen there was the implementation that included designing, presentation and discussion. In week 14, teacher educators conducted interviews with selected respondents and the last week was for final remarks and conclusions from the teacher educators.

The orientation to familiarize with lesson study intended to reveal how (under what conditions) it should be implemented in improving teaching skills

and sustained broader content learning. Also, through teamwork and collaboration, teachers identified possible challenges expected based on literature reviewed. In this way, they identified topics to teach based on the experience of their teaching practices. Out of several problematic areas identified, the study picked four areas with the highest frequency: analysis of literary works, grammar, writing skills and parts of speech.

Table 1: The description of lesson study stages as adapted from Lewis et al. (2006)

No	Stage	Description	Pre-service teachers' activities
1	Studying the curriculum & formulating learning goals	Identify a topic, link it with curriculum goals and real-life situations, and identify specific concepts to teach in the lesson.	PST analyzed Form two and Form four national examination results. They identified the topics that students had achieved low. These include analysis of literary works, grammar, writing skills and parts of speech.
2	Plan	Develop and re-develop a research lesson. What are the long-term goals? What do students need to achieve? What are the teaching and learning activities? And are these activities suitable in the classroom setting?	The researchers divided the topics into six groups where members had to read and plan a lesson on how they will teach the topic. The groups had several meetings to design and revise the lesson and determine the resources, teaching aids and methods suitable for enhancing learning.
3	Conduct Research	A representative teacher conducted a 40 minutes research lesson and recorded it later. The team observed, and each member noted down points for discussion in the meeting.	Ten groups, each week two groups presented their designed lesson and conducted classroom discussion. In the second round, each group had to share their feedback from the first presentation, highlighting what they noted as the weakness or strengths of the first designed lesson and presentation and how they have improved. The second-round presentation revealed the improvement in planning the lesson and teaching.
4	Reflect	A detailed discussion in which observers (other group members and non-group members in the class) share views of the lesson they have observed. The focus was to ascertain whether the lesson implementation followed the plan and how to improve it based on observed weaknesses and commended properly demonstrated areas.	After the first lesson study cycle, Preservice teachers reflected on the teaching practices. Each member reflected on areas they have changed, new skills acquired, and the discarded practices or beliefs resulting from the lesson study process. The second reflection was detailed, as each group had to share what they had learned from what they knew before the lesson study and after the two cycles of presentation.

The instructor distributed these identified areas as follows: literary works (3 groups), grammar (2 groups), writing skills (3 groups) and parts of speech (2 groups). Each group had to present once in the first five weeks and re-teach once in the last five weeks. In each week, two groups presented whereas one group had one hour for presentation and discussion. During the lesson presentation, each group conducted three activities sequentially. Firstly, the group, which was to present their lesson, explained how the members organized and worked to develop and present the planned lesson, citing

difficult and interesting moments. Secondly, one member taught the lesson for 20-30 minutes while others observed and noted the specific issues they thought would need clarification or improvement. Lastly, another group member led a discussion that started with group members, followed by the rest of the class contributing, asking for clarification, critiquing, and giving alternative ways to improve the lesson. Later on, pre-service teachers shared their perceptions about lesson study, what they observed regarding the planned lesson, what they expected and what transpired.

The groups presented their planned lessons and critically discussed them while reflecting on what they planned and their expectation for post-discussion improvement. After 15 weeks, the researchers selected ten participants, one from each group, to participate in a semi-structured interview for 20 to 30 minutes. The criteria for selection were that a participant should be the one who presented the planned lesson. Researchers obtained participants' consent at the beginning of the study to observe classroom activities and interview selected ones. The respondents gave their consent orally and the information gathered was the only part of the study to understand their perceptions, practices and challenges of implementing the lesson study.

Findings

The study explored factors influencing the implementation of lesson study in pre-service teacher education to enhance the continuous improvement of pedagogical competencies. It categorized the findings into two sections: factors that promote the implementation of lesson study and those that hinder its proper implementation. The section presents the findings that describe the responses concerning the study's main objective.

Factors that Promote the Implementation of Lesson Study

The findings revealed several factors that promote the implementation of lesson study. These factors include opportunity to experiment with innovative and new instructional methods, development of rules and regulations to guide the interaction during the learning process and a steady pace of learning. Availability of resources for reference and flexibility in utilizing these resources is another factor that supported a successful implementation of lesson study.

Opportunity to Experiment with Innovative Instructional Methods

The findings revealed that lesson study provides pre-service teachers with an opportunity to construct new innovative methods to transform classroom interactions. The participating pre-service teachers showed that they had learned new ways of critiquing their peers and they developed a mechanism of accepting those critiques in a positive way to improve their skills. Pre-service teachers admitted to have developed skills to innovate new pedagogical techniques and methods within their working environment and to use available

resources. Through peer discussion and observation, pre-service teachers revealed that they had learned new pedagogies that could help improve their classroom instructions. In supporting this finding, pre-service teacher 7 said, "I recognized that actual teaching and discussion are much more powerful in building pre-service teachers' capacity to teach and instruct learners regardless of their contexts and backgrounds." This response shows that pre-service teachers had transformed their classroom teaching practices into a broader spectrum through lesson study.

In an interview, pre-service teachers admitted that the knowledge they acquired through practical experience in lesson study gives them more opportunities to apply it in other contexts during classroom teaching. They further believed that lesson study provides teachers with an immediate platform for trying to merge theories and practices in a real context and experience the outcome before delivering that particular lesson to the classroom. In comparing the lesson study with other approaches like block teaching practice, one pre-service teacher said that all models are important but have different focus areas. The respondent believed that lesson study could merge to have one strong approach, which will develop teachers' broader competencies in making them complete:

While in block teaching practice, I learned how to handle students' behaviors in the classroom and to ensure they are attentive. Through lesson study, I also learned to balance the teaching process to ensure no students lag behind. Most importantly, I have learned to collaborate with colleagues to find solutions to issues which will improve teaching and learning (Pre-service teacher 5, 2021).

Establishing Guiding Rules and Regulations

After the first round of lesson study presentations (five weeks), researchers noted some presenters and members lacked confidence and were too defensive, which indicated the process diverged from the original intention of collaborative learning. The researcher noted that observing members directed their concerns to individual presenters who de-motivated them. Some members were reluctant to take the presenting role avoiding such direct attack from observers. The instructor and pre-service teachers decided to develop guiding principles to help manage the learning process. Pre-

service teacher 1 said, "Sometimes you present your work and they start attacking you. It lowers your confidence and courage. We needed to have guiding rules."

The findings from pre-service teachers revealed that enacting rules and regulations encouraged them to participate freely in lesson study activities. From the observations, researchers noted pre-service teachers being more confident in the second round after setting the rules that restrict personal attacks or bad language; instead, they should direct their comments, criticism and perspectives to the lessons. Respondents during the interview said they felt more secure as the discussion helped identify what was right and what to improve. After a discussion, the team enacted the following regulations to guide learning.

- a. The purpose of conducting lesson study is for each person to learn and improve classroom teaching practices from planning, delivering and assessing students. It's a collaborative learning process, so we all should participate fully in allocated activities in our respective groups.
- b. The planned lesson is the center of the discussion, not the teacher presenting; hence members should address all comments, criticism, critiques or recommendations to the lesson observed and not an individual teacher who is presenting.
- c. Members must use polite language with constructive input to air out or communicate our contributions.
- d. There is a need to respect, value, attend and behave well in the whole process of lesson study.

Steady Progress Overtime

The instructor revealed that implementing lesson study for the first time was not as smooth as planned. After two rounds of implementation, the second round showed more promising signs of sprouting critical learning. Pre-service teachers took time to grasp the lesson study approach's real meaning and central purpose toward teacher professional development. The findings showed that despite some pre-service teachers' low participation in teaching that results from seclusion behavior, they gradually accommodated the collaborative nature of lesson study. Pre-service teacher 9 supported the findings as she said

It [lesson study] is interesting when you work in a group with everyone giving opinions on the best way to improve the lesson. After the presentation and the discussion in the first round, we improved more in the second round. Before, I was afraid it would not work (Pre-service teacher 9, 2021).

The instructor further revealed that some students initially lacked confidence and were shy during the presentation. However, they learned the process and started to work in their teams, giving their thoughts and learning from their peers. The study also revealed that due to a lack of self-confidence and the isolation culture to stand critique and reflective practices, some pre-service teachers preferred a teaching model where one receives comments from the supervisor only rather than a collaborative process of the lesson study. The instructor created a friendlier and more encouraging environment to inspire and motivate pre-service teachers to accept lesson study as a learning platform rather than an activity for evaluation.

Availability of Resources

The findings revealed that the availability of learning materials influenced pre-service teachers in sustaining the lesson study practices. The findings revealed that course instructors assisted pre-service teachers in obtaining relevant materials to ease their discussion and personal reading. In some cases, where it was difficult to obtain materials, the instructor encouraged them to be innovative and creative to improvise materials or teaching aids from the available resources. Pre-service teachers admitted that they raised the interest in effectively engaging in lesson study as they improvised learning materials. During the interview, a pre-service teacher 4 confirmed this as she said that; -

This approach looks interesting but we need adequate resources for our teachers and students. Since we lacked the specific resources for the level we wanted because we did not have access to them, there was no school around where we could borrow, so we had to design our materials (Pre-service teacher 4, 2021).

Flexibility in Utilizing Available Resources

The study revealed that pre-service teachers fully utilized resources to construct and develop the intended pedagogical knowledge and skills. Pre-service teachers revealed that they believed one has

to complete the planned lesson, which sometimes resulted in speedy teaching. Still, later they learned that they had to reduce the content and implement a simple but effective lesson. During the lesson study process, pre-service teachers said they struggled to finish all aspects of the subject planned within a given time without focusing on a specific issue. Their pace increased as the time was about to finish. The evidence from pre-service teacher 8 supports the findings as she said, "At first, we did not understand the lesson study well, we thought finishing what we planned was crucial, later we learned it is what we learn from each other. The initial understanding affected our teaching as we hurried to finish."

In an interview with the instructor, he revealed that pre-service teachers' struggle to finish the planned content indicates two misconceptions they had about the lesson study. The instructor admitted the two misconceptions, saying,

They have not well comprehended the basic purpose of lesson study. They think that for a successful lesson study, it is a must to finish what we designed in the lesson plan and to accomplish all activities within a given time.

Further, during the discussion, the researchers observed that when members told the presenter was teaching too fast, the presenters responded defensively, trying to justify their pace. The researchers again noted that some members did not ask questions, hoping they would not be asked when their turn came. The instructor used probing techniques to ignite the discussion with other observing members to discourage this behavior. Pre-service teacher 5 confirmed the findings as he said;

The lesson study was a classroom activity. Most of us [pre-service teachers] believed we were in assessment, and the more we received criticism, the more we lost our scores. Sometimes, members find a way to reduce criticism by not asking or criticizing others (Pre-service teacher 5, 2021).

Factors Hindering the Prosperity of Implementing Lesson Study

On the other side, the findings revealed factors that hinder the prosperity of implementing lesson study. These factors include time-demanding, seclusion behaviors among pre-service teachers, teachers

focusing on perfection than learning, the behavior of re-paying kindness and frequent change of teachers.

Lesson Study Requires Adequate Time to Implement

Pre-service teachers reported that lesson study required a thorough preparation that involved reading adequate resources to develop a general understanding of the approach before conducting discussions in a team. They further reported that a team had to agree on a lesson plan framework to be delivered and obtain comments from colleagues for improvements before its implementation. Pre-service teachers revealed that through its implementation, lesson study enhances their ability to work as a team to plan the lesson and teach as a team regardless of its time-consuming nature. Pre-service teachers also report that these efforts helped them develop a broader understanding and increased their confidence level which was vital in general discussion after presenting the lesson. Some pre-service teachers said the following during the interview:

Lesson study requires us to design a lesson together and stand before others to explain how we designed it and then teach our colleagues. We identify areas that are challenging and we work on them in detail to find the best ways to move forward and that we can use various methods to present them. So, we must read and think critically before deciding on the material, teaching aid, methods and strategies. While in teaching practice, it required only you to plan your lesson and present it before the supervisor in the classroom and show teaching methods you can employ in teaching and learning process according to the level of student (Pre-service teacher 2, 2021).

It was further revealed that:

Lesson study presentation demonstrates what the group planned collectively and discusses the observation made after teaching about strengths and weakness or whether the plan worked well. A group must work hard on preparing and modifying the skills and knowledge of lesson planning and delivery (Pre-service teacher 8, 2021).

The findings show that pre-service teachers developed confidence from the lesson study process, opened their minds to challenging discussions and learned to be flexible in using various methods in the teaching process.

Seclusion Behavior among Pre-service Teachers

In the first round of implementing lesson study, the researchers observed that pre-service teachers showed reluctance to work in teams, lacking confidence and fear of being criticized by their colleagues. Pre-service teacher 6 confirmed the findings by saying, "I felt like they asked the questions to make me feel uncomfortable in front of them and make me seem like I know nothing. But that was my first presentation; however, for now, I feel normal." Respondents associated the seclusion culture with the nature of the block teaching practice model, requiring teachers to plan and teach alone with minimal or no collaboration with others.

While implementing lesson study, the instructor grouped pre-service teachers where they had to work and present the lesson they had planned. The instructor reports that many pre-service teachers were unprepared to volunteer to present the lesson. Despite developing rules and regulations to boost confidence, the instructor reported that pre-service gradually elevated their confidence level. When asked why they were not ready to make a presentation during the interview, the responses revealed that it was difficult to face and accept the critique, criticism, and different perspectives on the discussion topics from what they already believed. They admitted that changes need adequate time to internalize and emphasize educating them well on how lesson study can benefit them throughout their career. Pre-service teacher 1 said, "During the discussion, sometimes they use languages that make you feel like you have done nothing or are wrong. It makes you afraid to present again."

The researchers observed that the discussion after the lesson presentation was more critical to many pre-service teachers. Some members considered every contribution as disregarding their opinions or presentation. When asked to explain how they felt, pre-service teachers used phrases like 'it was annoying', 'I was not comfortable', 'I felt bad', 'it was good' and 'I was confident' to express their feelings. However, the instructor admitted that the more pre-service teachers conducted the discussion, the more they gained new ideas, skills, and general understanding, slowly changing their beliefs,

attitudes, and practices uncomfortably. The researchers observed that many pre-service teachers acknowledged the contribution of the lesson study process in fostering teamwork and accepting different opinions from colleagues as not opposing their perspectives.

Struggle for Perfection

Pre-service teachers, during the interview, revealed they experienced discomfort during the discussion in lesson study. The findings reveal that the discomfort was due to poor preparation among pre-service teachers, improper-planned lessons and a low confidence level because the teaching-practice model involved only a tutor and a pre-service teacher. In the final closing remarks after 15 weeks, during an interview, pre-service teachers revealed that they worked hard to read from different sources to prepare a good lesson that could reduce the number of questions from their colleagues during the discussion. Also, they admitted to having struggled to present a perfect lesson due to the interaction in the lesson study process. One pre-service teacher said, "We were given few minutes to present the lesson. Sometimes you realize time is almost over, and you have not finished. That makes you panic somehow."

Another respondent added that:

Our group presented the planned lesson the previous week. Every time we attended the sessions and learned from presentations. We had to review our lesson plan and ask ourselves some questions from the discussions. We realized it had many gaps and missing information and ended up re-designing it (Pre-service teacher 10, 2021).

Behavior of Re-paying Kindness

During the rounds of lesson study, researchers observed that some pre-service teachers had critical questions and useful contributions for the members presenting their lessons. However, they refrained from asking those critical questions fearing they would face similar critical questions during their presentation. The instructor also admitted that this "scratch my back, I scratch yours" experience deprives the lesson study of its natural flavor of learning through different perspectives and experiences from the observing members. The instructor supported the findings by saying, "Sometimes you could see they are not asking questions or giving their views. The tendency implies that they are doing a favor to the group so they cannot face difficult questions in their turn".

Changing Teachers Affects the Sustainability of Lesson Study

The instructor, during his interview, admitted that the foreseen challenge in implementing lesson study is the inconsistent institutional culture in assigning courses to instructors due to various reasons. For example, the instructor revealed, "This year, teacher educators who teach the EDU 304 course might not teach in the next year." The instructor admitted his worry about changing course teachers; he said new teachers might have little interest in lesson study and drop it. In an interview with the teacher educator who was assigned the course after the one who was teaching went for further studies, he revealed that after the implementation, he was planning to implement the same in the next academic year. But he worried he would be assigned to teach the same course. In the interview, the instructor revealed that; - "I have learned a lot about lesson study. I have a good starting point for the next academic year. Although I am not sure if I will teach the same course."

Discussion

The study explored factors influencing the implementation of lesson study in pre-service teacher education to enhance the continuous improvement of pedagogical competencies. Findings show factors that promote lesson study, resulting in gradual changes in teaching skills and practices among teachers. Sustaining the learning process can help teachers work together and elevate their professional competencies.

Promoting a Sustaining Lesson Study

Lesson study implementation offers pre-service teachers an opportunity to develop a culture of sharing and collaborating in teaching and learning activities that improve skills and practices. In this study, the lesson study approach required a friendlier and more encouraging environment. Establishing rules and regulations inspired and motivated pre-service teachers to participate in lesson study freely. The enacted rules and series of discussions changed pre-service understanding that lesson study is a learning strategy rather than an evaluation technique. The friendlier environment is because some pre-service teachers were reluctant to collaborate freely for fear of being judged on what they contributed. The findings echo the findings of Hart and Carriere (2011) and Saito and Sato (2012) that many teachers were reluctant to cooperate and preferred to work independently.

The behavior observed in this study contradicts the primary purpose of lesson study which is to instill a sense of collaboration and teamwork in learning toward improving professionalism. However, the development of rules during the process helped change teachers' attitudes and showed more collaboration.

The findings support Kelly (2006) who reported that transformation in teaching competencies gradually develops when teachers collaborate and learn from each other. Collaboration and teamwork among pre-service teachers enhanced pedagogical competencies such as transformation in planning better lessons and changed attitudes toward perceiving students' behaviors (Olson et al., 2011). Since they planned lessons together and read various materials to refine the subject matter, they learned how to select appropriate instructional materials and teaching methods suitable for that particular lesson. Hart and Carrier (2011) add that collaboration deject the tendency of rigidity and isolation and boosts self-confidence among teachers. Through observation, the study revealed that some groups lacked cooperation and teamwork. One might ask whether these pre-service teachers could enhance their learning and boost self-confidence if they work in such an individualized context. In this view, Shi (2020) recommends maximizing the pedagogical benefits for pre-service teachers. Integrating lesson study into the teaching practice model is vital for effective teacher professional development.

The lesson study process reflects the sociocultural learning theory where pre-service teachers assess their abilities, identify knowledge gaps and through collaboration, learn through observing and reflecting on the lesson activities and constructing new understanding. The finding resonates with Fernandez and Zilliox (2011) who used the same theory and found that it enhanced teachers' internalized learning. Their study revealed that meaningful learning among teachers should focus on identifying the gap, that is, areas with difficulties where teachers want to learn and improve their practices. In this study, course instructors provided coaching, guiding and monitoring of the activities where pre-service teachers were key practitioners in collaborating and assisting in getting solutions to various learning issues. Novice teachers develop expertise in their field by integrating sociocultural theory and lesson study (Bocala, 2015). Again, the finding is similar to Ono and Ferreira (2010) in their

study, where they used constructivist theory in the case study of implementing lesson study for teacher professional development. In their study, Ono and Ferreira found that constructivist activities such as inquiry, self-reflection and collaboration helped teachers acquire new teaching methods and content knowledge. The findings in this study have also shown that through a set of lesson study procedures and collaboration, pre-service teachers acquired new skills, knowledge and practices.

Addressing Challenges Ensures Sustainability of Lesson Study

A unique observation that challenged the lesson study process was the behavior of pre-service teachers refraining from asking critical questions so that they would not be asked when it was their turn to present their lessons. The culture built on the social norm of "scratch my back, I scratch yours" was a major setback in the first round of implementing lesson study. It weakens the intention of lesson study in developing professional knowledge and skills for novice teachers. The findings match the ones reported in Mahmud (2015) study. The study reveals that the nature of university teaching methods makes it difficult for students to ask questions as it makes them feel they cannot. However, Mahmud (2015) further asserts that the tendency of students not to ask questions may be due to language barrier that they cannot construct the question well or fear. The rules developed helped neutralize the tendency not to ask questions. Therefore, effective lesson study adoption should start with counterbalancing individual and institutional cultures and making them ready to accept new approaches.

The findings have also revealed some common challenging issues like the seclusion behavior of teachers, low motivation for pre-service teachers and teacher educators and the misconception of lesson study. The finding concurs with findings reported by Saito and Sato (2012), Gero (2014) and Ono and Ferreira (2010) that seclusion behavior affects teachers learning and promotes dominance of rigid classroom teaching practices as teachers hardly accept or adopt new teaching methods from their colleagues. The proliferation of lesson study will fail to address the mentioned challenges of teachers confining to their classroom's practices. Although teachers admitted they had boosted their confidence, developed knowledge and skills and understood different perspectives, the seclusion culture is a setback towards reaping more benefits

from lesson study. In block teaching practices, teachers developed isolation tendencies as they worked alone to design lessons and teach. Introducing lesson study to all faculty members and embracing it at the institutional level should address this challenge.

Lesson Study and Pedagogical Practices

The lesson study provides teachers with an immediate platform to merge theories and practices in a real context and experience the outcome before delivering that particular lesson to the classroom. In lesson study, pre-service teachers assumed the role of learners, asked themselves possible questions regarding the lesson and prepared answers in advance. Pre-service teachers improvised learning materials and teaching aids that could help learners understand the lesson. The findings reflect what Inprasitha (2015) and Schipper et al. (2017) reported: teachers came up with innovative ideas and creative methods to facilitate the learning process through lesson study.

The findings further build on what Kelly (2006) found that teacher collaboration promotes creativity and innovation that helps teachers rejuvenate and benefit professionally. It also gives feedback to teachers. That feedback helps them evaluate their innovations and improve future classroom practices. Chassels and Melville (2009) found that lesson study helped teachers dive into resources and think of the best way of presenting new knowledge to students in a simple, clear and straight way that could help them develop new insights. The finding contradicts the blocks teaching practices model where pre-service teachers individually plan and execute their teaching plans.

Through participating in lesson study activities, pre-service teachers developed self-confidence, a new understanding of students' behaviors, how to manage them and flexible classroom teaching practices involving various teaching methods. Lee and Madden (2019) reported a similar observation that understanding teaching methods well and students' behaviors boost teachers' self-confidence in classroom teaching practices. Lesson study reverses the belief that pre-service teachers have developed through the teaching practice model that preparing a lesson plan is an individual activity. The belief limited pre-service teachers' involvement in designing and presenting the lessons.

Conclusions and Recommendations

Conclusions

Factors that influenced the implementation of lesson study include giving enough time for steady progress and ensuring adequate resources are accessible. Other factors are; motivating pre-service teachers to flexibly utilize the resources and enacting rules and regulations to enable collaboration among participants. The study further concludes that time-consuming, seclusion behaviors among pre-service teachers and returning the favor by not asking questions were among hindrances to implementing lesson study. Pre-service teachers struggled to have a perfect lesson rather than to learn from the process and changing teachers affected the sustainability of lesson study. Lesson study enhanced knowledge construction to promote confidence in teaching and provided an opportunity to innovate and experiment with instructional methods. The lesson study promotes innovation that inculcates a sense of continuous learning at workplaces through teamwork and collaboration among teachers. The lesson study brought teachers together to share knowledge and improve their practices. The knowledge and experience variations were crucial for learning and developing pre-service teachers' pedagogical competencies.

Recommendations

Teacher training institutions should embrace the lesson study approach in preparing teachers as it has proven to provide teachers with skills for school-based and cost-effective continuous professional development. Trained teachers should be encouraged to collaborate and learn from each other to elevate their pedagogical and content knowledge through lesson study groups. Further research should be on institutionalizing the lesson study approach and integrating it into pedagogy courses in initial teacher education. Institutionalizing lesson study will help produce teachers with a systemic mechanism for updating their teaching skills without depending on occasional teacher professional development programs like seminars, workshops, conferences or meetings. Moreover, the studies should focus on understanding factors that promote and sustain the implementation of the lesson study approach among teacher educators.

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