

Towards an Implementation of the Lesson Study During the Pre-service Training of Basic Education Teachers in Burkina Faso

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Abstract

This study aimed to implement an effective Lesson Study model during primary school pre-service teachers' training in Burkina Faso. The stakeholders were trainee teachers, full-time trainers, INFPE officials, and some former JICA short-trainees who were promoters of the implementation of Lesson Study in in-service teacher training. Several tools were designed and used for the data collection. As a result, two possibilities were identified. The first is to introduce the approach in General Pedagogy to better define its theoretical contours and practical implementation through the didactic subjects taught. Second, while some want to use Lesson Study in certain key subjects, such as science and mathematics, most actors recommend transversal use in all subjects. Therefore, some recommendations have been set for the effective implementation of the Lesson Study model during the pre-service training of primary school teachers.

Keywords: Pre-Service Training, Trainee-Teacher, Lesson Study, Basic Education, Burkina Faso

1. Introduction

Professional development remains a major asset in institutional development and the achievement of high-quality results. In education, in-service training is the linchpin in the quest for an irreproachable quality of teaching/learning. Burkina Faso is not left behind when it tries to create permanent frameworks for the pre-service and in-service training of teachers (Bonkougou & Ozawa, 2021). Thus, the need to implement Lesson Study in the pre-service training of primary school teachers to meet the crucial training needs of classroom teachers is strongly justified.

In this context, this article will establish and compile strategies for the successful implementation of the Lesson Study during the pre-service training of primary school teachers at the National Institute of

Educational Personnel Training (INFPE: Institut National de Formation des Personnels de l'Education, former ENEP (Ecole Nationale des Enseignants du Primaire)).

1.1. Background

Improving teaching methods in the field of science in African countries is a real challenge for continents. Burkina Faso is no exception to this noble ambition, and is giving itself the means for development through training and education. Training teachers remains a useful mechanism for ensuring quality education for children. All that is required is the provision of good scientific and technical training for teachers to propel them on this path.

Unfortunately, what we generally observe in many classrooms in Burkina Faso primary schools is

that some teachers do not rigorously apply the main pedagogical principles in lessons' practice. In most cases, they remain routine and do not renew their practices. Some of them have been teaching science and mathematics without having appropriate materials or giving concrete instructions. In these cases, teaching is abstract, unattractive, theoretical, and difficult. As a result, students never obtain the best teaching from their teachers, which leads to decreased learning and, therefore, academic dropout (MENA/JICA, 2014).

Currently, in-service training sessions for teachers in the classroom are rarely encountered, making it difficult to reduce the quality of teaching, especially in science and math. Thus, a great challenge for the quality of education today is to provide a solution to teachers' in-service training MENAPLN (2019). It is quite convincing that pre-service training alone cannot contribute to a good education. It is urgent to find a solution for in-service teacher training in Burkina Faso. We then suggest the implementation of the lesson-study model during pre-service training to truly supplement in-service training. Potentially, the trainee-teachers at the end of their pre-service training will already be equipped with this new competence focused on the reflexive practice of their pedagogical action that the Lesson Study would have brought about.

Fortunately, the current observation is that the implementation of the Lesson Study in Burkina Faso was done progressively with teachers and pedagogical supervisors in the schools. Thus, the lesson-study model would be very beneficial and its generalization would be more effective if integrated into teaching from the pre-service training of teachers at the Institut National de Formation des Personnels de

l'Education (INFPE). Focusing on the research on Lesson Study, the expectation is how to adapt it to the reality of Burkina Faso in the field of basic education, particularly during pre-service training of trainee teachers. The implementation of the lesson-study model could be one solution to establish good habits from the pre-service training of trainee teachers to activate and maintain their commitment to training beyond pre-service training.

1.2. Why does the Lesson Study Initiate during Pre-service Training in Burkina Faso?

Like other African countries, the teacher deficit for more than a decade created the social legitimacy of sending poorly qualified personnel into schools. Indeed, after the pre-service training received at the National College of Teachers Training (former ENEP), pedagogical training was barely sufficient. Indeed, Kyelem and Barro (2007) and Beogo (2014) noted, despite some progress, the lack of training for teacher trainers and the lack of resources for better monitoring of trainee teachers remains (Djibo & Gauthier, 2017, p.36). Teachers' quality remains a concern. The teaching-learning activities implemented by the teachers were analyzed as acting as pedagogical-educational mediation on the learning process and conditions, on the students' activities, and their cognitive mediation in context. The learning-teaching situation is the meeting place of this double mediation teacher-student relationship; it is characterized by its interactivity (Altet et al., 2015, p.32).

Figure 1 shows the rationale for the implementation of the Lesson Study model during the initial training of primary school teachers in Burkina Faso.

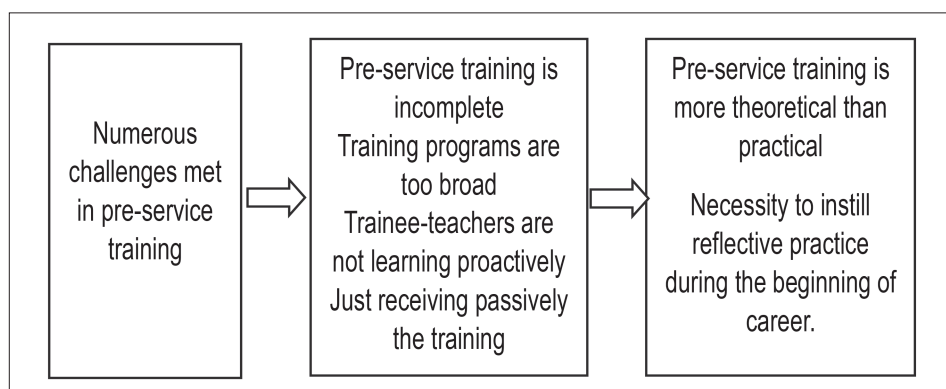


Figure 1. Diagram justifying the Lesson Study during initial training in Burkina Faso.

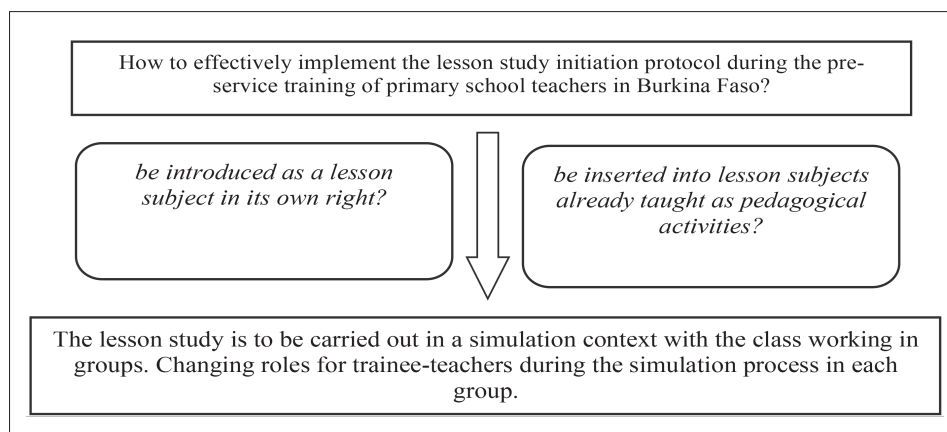


Figure 2. Diagram of completion of the Lesson Study in the initial training.

Considering the lack of an in-service training set for teachers, it is supposed that trainee teachers who benefited from pre-service training on Lesson Study concepts could maintain a good habit of gathering themselves and having some Lesson Study sessions where they are teaching in their respective schools. Based on the experience of Japanese professional education practices involving Lesson Study, we note the gains made when teachers work together to improve the practice of science lessons through Lesson Study. By transferring this lesson-study approach, which brings beneficial changes to improve pedagogical practices, we can then estimate that its generalization would be more effective if it were integrated into the initial training of teachers at the Institut National des Personnels de l'Education (INFPE).

Moreover, in the learner-centered approach, it is recommended that there be a real change in pedagogical practices that must migrate from teacher-centered teaching to learner-centered teaching. However, how can this be achieved?

Therefore, the main purpose of this research is to implement an effective Lesson Study practice during primary school teachers' pre-service training based on discussion and new learning/teaching methodologies in Burkina Faso.

1.3. How can the Lesson Study be conducted in pre-service training?

We suspect two paths to effectively implement the Lesson Study initiation protocol during pre-service primary teacher training in Burkina Faso. This would be to introduce Lesson Study as a course subject in its own right or to insert it into the host course subjects

already taught as pedagogical activities during pre-service training. Of course, beyond any consideration, for this research, a Lesson Study should be conducted in a simulation setting with classes working in groups by changing the roles of the teacher trainees during the simulation process in each group. This idea is summarized in Figure 2.

Thus, there are two main hypotheses for us to deal with how to implement the Lesson Study model during pre-service training. To try it as a subject to teach or just a specific activity in a teaching subject, or maybe both? A great question for us is whether experimentation alone can help to be precise.

2. Methodology

2.1. Field of study and Sampling

The investigations took place mainly at the DR-INFPE of the Central Plateau, located in Loumbila, Oubritenga province. DR-INFPE was chosen to conduct the research because of the proximity of this training center to other departmental structures where we had to collect survey data. The DR-INFPE Loumbila is close to the capital city of Ouagadougou and is the first and largest of the centers and even hosts the infrastructure of the INFPE's General Directorate.

The quantitative data will be able to guide certain aspects that are taken into consideration during the survey. As this study is qualitative in nature, the contribution of qualitative data would be more decisive. Indeed, they will make it possible to identify the implementation process of the Lesson Study during pre-service training, especially to prospect its generalization in all pre-service training

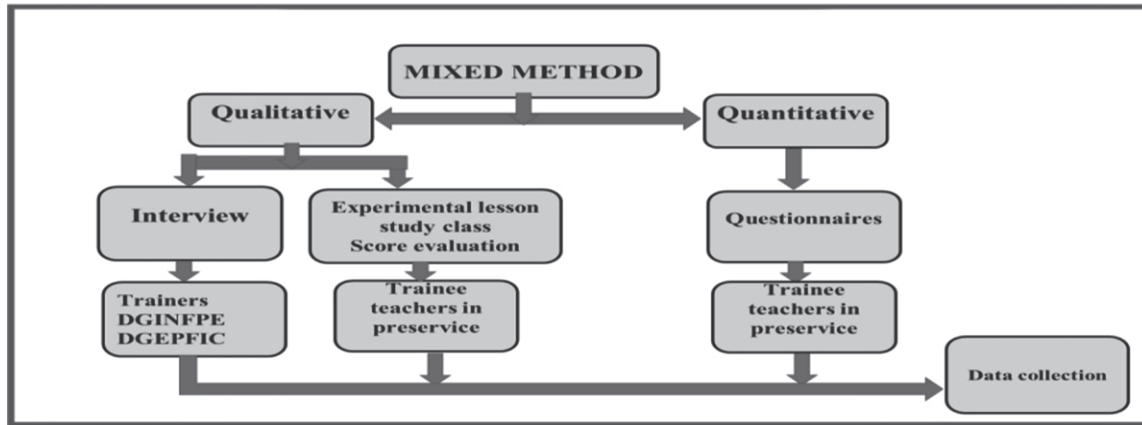


Figure 3. Research methodology.

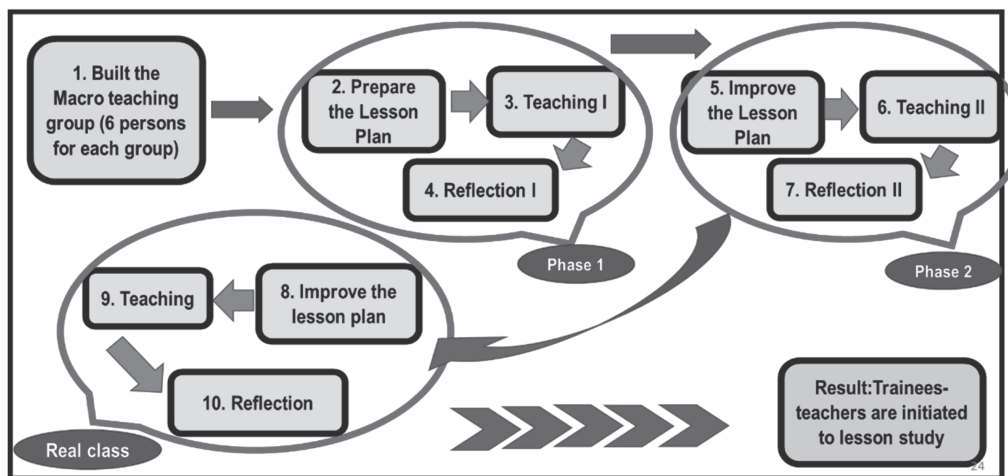


Figure 4. Simulation process in the experimental group.

classes and better to all INFPEs as initial pedagogical practice. In this context, it seems more appropriate to adopt the mixed method, prioritizing the qualitative approach. This allowed the research to reach a limited public and collect relevant opinions through interviews and individual evaluation sheets for trainee teachers. Figure 3 provides an overview of our research methodology.

The stakeholders of this research were the trainee teachers who were given the Lesson Study experimental protocol, full-time trainers, INFPE officials, and some former JICA short-term trainees who are promoters of the implementation of Lesson Study in in-service teacher training.

Groups of six trainee teachers were included in the simulations. All the groups were designated to prepare the same lesson and work with the same content. One group was presented and the others contributed. Macro-teaching was used to conduct this study. This is individualized learning that begins with the development of a teaching plan, reflecting on the

teaching process, and improving the lesson plan (Sulaiman et al., 2011). Figure 4 shows the simulation process for the experimental group.

Several tools were designed and used for the data collection. These were the lesson observation sheet for Phase 1, the lesson observation sheet for Phase 2 and the real situation class, the individual evaluation sheet for trainee-teachers, and finally, the interview with the trainers, the INFPE authorities, and the Lesson Study's veterans.

2.2. Intervention Process and Data Analysis Techniques Instruments and Instrumentation

All the trainee teachers participated in the Lesson Study process in their groups. With the time constraint, it should be remembered that the investigation took place almost at the beginning of the vacations and the trainee teachers, for the most part, were mobilized in other school activities. Therefore, approximately 30 trainee teachers were able to participate in the experimental protocol. Two science

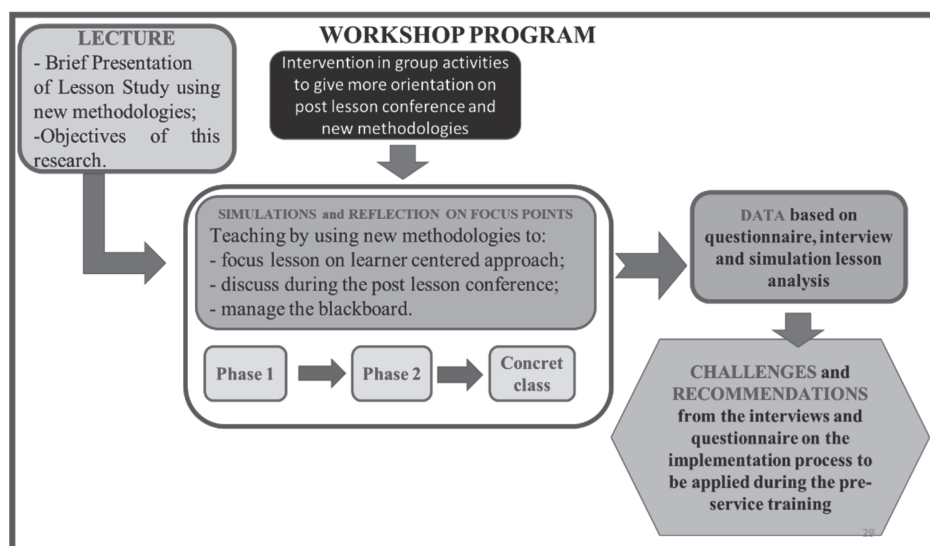


Figure 5. Overview of the Lesson Study Experimental Protocol Administration Workshop.

lessons were designed and presented in this study. The first lesson (le corps humain = human body) was presented in Phase 1, and then in a real classroom situation. The second lesson (la mangue = mango) was presented in phase 2. The class was divided into groups of six trainee teachers. Three groups designed lesson 1, and the other two groups prepared lesson 2. The lesson presenter was chosen randomly, and the other trainees in all groups were students who followed the lesson. After the presentation of Lesson 1, they moved on to improve the lesson presented in Phase 1 of the Lesson Study.

After the two simulation classes entered the real class. The trainee teachers presented the previously presented and amended lesson 1 in a real classroom situation. All groups reconstituted the real class; one group presented its lesson, and the other groups observed the lesson, followed by a post-lesson conference.

The real classroom is the result of two simulations performed earlier (lessons 1 and 2), as shown in Figure 4.

To record their performance, what they experienced during the process, and the set of lessons they did, each student mentioned on their evaluation sheet that changed in the way they prepared the lesson, developed and gathered the material, presented the lesson, discussed during the post-lesson conference to improve the lesson, how they learned to make each student their own learner, and how to teach and learn by focusing on the learner-centered approach.

The last part of the protocol consisted of the completion and collection of the evaluation form completed by the trainee teachers who followed the entire experimental protocol from start to finish, covering the three cycles or phases of the Lesson Study. The individual trainee teacher evaluation form was used as a data collection tool at the trainee-teacher level. Figure 5 displays an overview of the Lesson Study experimental protocol administered during the workshop.

Data processing was carried out after the administration and recovery of all completed individual evaluation sheets for trainee teachers and all interviews. It consisted of an analysis of the individual evaluation sheets for trainee teachers and a transcription of the interviews. Quantitative data were translated into statistical tables and figures to make them more readable. Qualitative data collected during the interviews were transcribed and interpreted using the Constructivist Grounded Theory Approach (GPA) (Charmaz, 2006). After this compilation, a thematic and cross-analysis of the different data from the individual evaluation sheets for trainee-teachers and the interviews were carried out to draw out the different implications.

3. Results

3.1. Evaluation of the experimental protocol to the trainee teachers' level

Figure 6 shows the appreciation of the benefits of the Lesson Study approach.

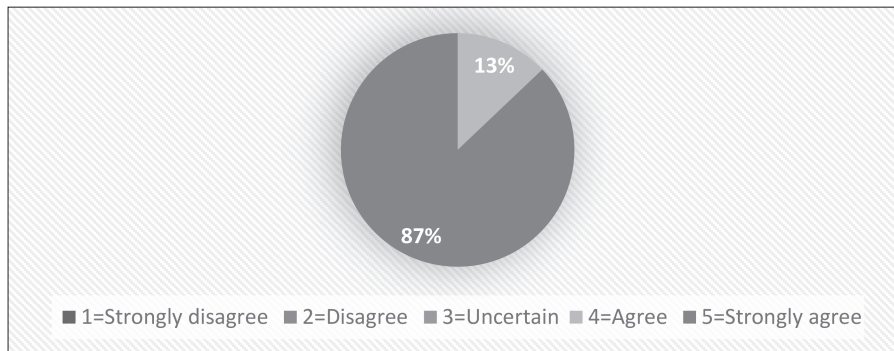


Figure 6. Appreciation of the benefits of the lesson-study approach.

Concerning the appreciation of the benefits provided by the lesson-study approach, 87% (27/31) admitted that the lesson-study approach is advantageous; it allows:

- *Teacher to improve teaching learning to reach the targeted objectives;*
- *All learning is learner-centered, and the learner conducts the experiments.*
- *stimulates the child to speak, participate in work, and seek to understand and cultivate team spirit, solidarity, and cooperation.*
- *improves the performance of the teachers, cultivated in their team spirit.*
- *to consider the positive aspects, aspects to be improved, and suggestions to move each time.*
- *Overview of the content and efficient use of the curriculum.*

Related to the changes in the way the new methodologies were used after the Lesson Study (Figure 7), 93.5% (29/31) of the trainee teachers were very satisfied with their new way of integrating and using the new methodologies disseminated through the implementation of the Lesson Study method.

The following actions are reasons given to testify

to the change in the use of the new methodologies conveyed through the Lesson Study model:

- ✓ practice the principle of child-centeredness,
- ✓ drawing good lessons on this approach to improve the Activity, Student, Experiment, Improvisation – Plan, Do, See, Improve (ASEI-PDSI) approach,
- ✓ using the new methodologies to improve and facilitate the understanding of learners based on their participation, concretizing the lessons through videos, audio, etc...,
- ✓ reframing the different roles played by everyone

Regarding the level of appreciation for discussing how to improve the lesson, figure 8 presents several summaries. As shown, 97% (30/31) agreed that the way they talked in the groups improved.

The qualitative leap in the discussion is as follows:

- *discuss and courteously make observations*
- *consult with colleagues to improve their way of doing things well.*
- *realizing that one should not point out an aspect to be improved without suggesting improvement;*
- *always questioning oneself to improve the*

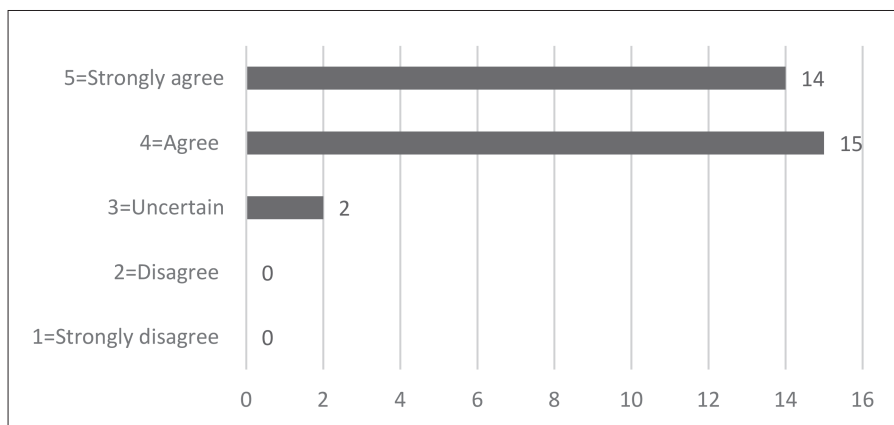


Figure 7. Changes in the use of new methodologies

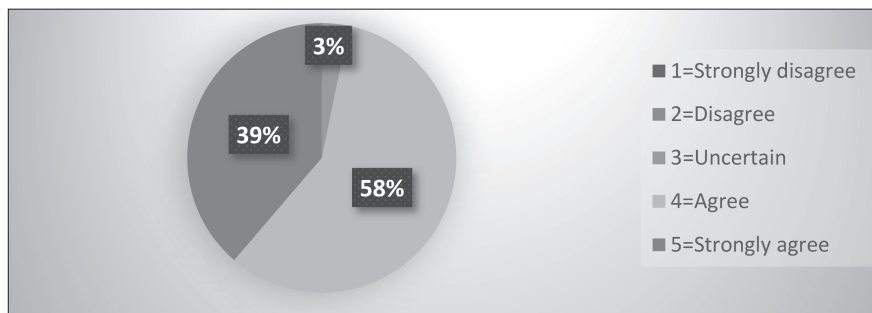


Figure 8. Level of appreciation for discussing ways to improve the lesson.

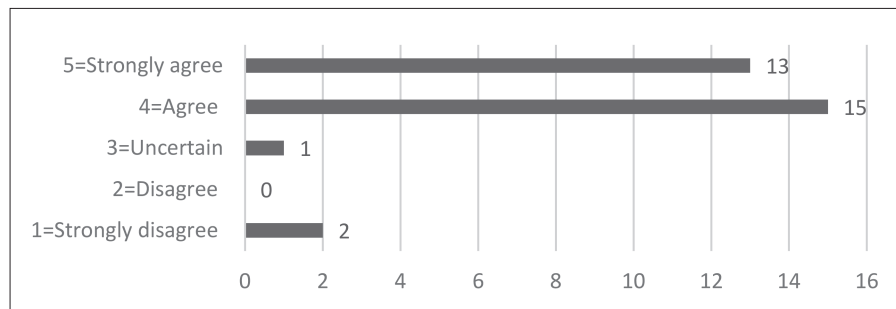


Figure 9. Level of Change in the Management of Blackboard.

lessons.

Finally, related to the level of change in Blackboard management, 90.3% (28/31) of trainee teachers acknowledged that they had changed their way of managing the blackboard.

They noted the following:

- exploitation of the blackboard is performed from left to right.
- Everything said and written on the blackboard during the lesson should not be erased.
- write the summary legibly on the blackboard within the reach of all the students.
- how to divide the blackboard with respect to the learners' instructions and difficulties.

3.2. Results of analysis and interpretation of interviews with full-time lecturers, pre-service training administrators, and other veterans of the BF Lesson Study

87% (20/23) of the interviewees referred to the Groupe d'Animation Pédagogique (GAP) organization, which was once a bridge to in-service training, as a link to the Lesson Study as a newly introduced in-service training in Burkina Faso. Most were direct actors in charge of the implementation of Lesson Study after a short training course in Japan, where they participated in various pieces of training that integrated the theme of Lesson Study at that time.

One hundred % of interviewees (23/23) recognized that the introduction of the Lesson Study model improved trainee teachers' learning performance.

The Lesson Study will allow trainee teachers to

- be able to repeat a lesson after peer review;
- reinforce the trainees' ability to improve through practice;
- further develop humility and collegiality;
- to develop a good taste for a job.
- sharpen trainees' critical thinking, analysis, and self-criticism skills
- and are better equipped for practical training.

Related to INFPE, the Lesson Study will allow it to reinforce the acquisitions both in the preparation of lessons and in the conduct of simulation sessions. The reflective practice of the lessons presented during the simulation phase will be a source of pedagogical enrichment and contribute to a better mastery of classroom practice.

3.3. Opinion related to the strategies for implementing Lesson Study during pre-service training for trainee teachers

Initiating effective Lesson Study practice during the theoretical training of trainee teachers is indeed possible. All the speakers made equally attractive proposals. Some of them do not mince words when it comes to specifying strategies to be adopted.

Regarding the question of how to initiate a Lesson Study during the pre-service training of primary school teachers, there are many different proposals in terms of content and form. Whether one is a policymaker, an authority, or a full-time trainer, the way to propose a practical framework for integration differs somewhat. On how to conduct Lesson Study, Murata & Pothen (2011), and Sim & Walsh (2009) already suggested: “*Involving pre-service teachers in Lesson Study can be done through various models. Lesson Study can be infused into the fieldwork program for pre-service teachers...*”

Now, talking about the strategies to implement Lesson Study during the pre-service training, On the one hand, the full-time trainers seem to be direct with proposals in the direction of classroom practice:

- *inclusion in the curricula;*
- *Providing it in the annual planning of the science course,*
- *training of full-time trainers;*
- *implementation in different subjects;*
- *collaboration with the annex schools and the application schools based on the simulated lessons or trial lessons that the trainee teachers will present to the annex school.*
- *integration of the approach into the training module. Start by developing the theory of the approach: definition, foundations, and approach. Move on to a practical phase with trainees and simulations.*

On the other hand, the ideas gathered from administrators tend to follow a somewhat more elaborate path, where hierarchical priority is incorporated to decide first before any classroom implementation:

- *a feasibility study beforehand to determine a slot, a time slot in the batch of disciplines already registered;*
- *simulation lessons in a scenario that followed the Lesson Study.*
- *Anyway, we need to mention that there is no fundamental difference, except that some adaptations should be taken into consideration before inserting it into pre-service training.*

3.4. Opinion related to the possible difficulties and proposed solutions and suggestions

This last section uncovers all the difficulties likely to hinder the development of the new Lesson Study approach to be introduced during the pre-service training of trainee teachers. “All new, all nice; all new, all difficult.” The fact that Lesson Study is a new approach will create organizational and time difficulties. The various actors questioned about possible difficulties are not short of words to point out the risks and risk factors likely to jeopardize this new approach at the level of pre-service training for primary school teachers.

The following comments are illustrative.

- *the annual timeframe, which is not extensible, just as the school year does not.*
- *the lack of knowledge and the possibility of rejection of the Lesson Study model because it comes from another country;*
- *lack of willpower among some people;*
- *what time volume to give to the theme, and how to include it in the training program for how much hourly volume and there we evolve in terms of credits 12/24 if it is necessary to put it in terms of 12 or 24 h, it is where it is necessary to go to find these hours, it is which matter it is necessary to go to decrease because we cannot go any more beyond these credits which vary from 800 to 960 h;*
- *lack of a regulatory and legal framework, the quality of the institutional system, and the possible limited conviction of all decision-makers of the INFPE on the relevance of the lesson-study model.*
- *lack of sufficient tools in the hands of trainee teachers for adequate handling of different observations.*

Finally, as a limitation of this research, we need to mention the size of the study population, which may not be sufficiently representative of all full-time trainers engaged in pre-service training of primary school teachers, just as the trainee teacher population is not statistically representative of the number of trainee teachers in training in the eight DR/INFPEs in the country.

As expected, the interviewees did not fail to offer suggestions to alleviate the difficulties exhibited when asked:

- *train and sensitize full-time trainers, include Lesson Study in the content to be taught and in the annual planning of courses, and follow up its implementation in the classrooms during training.*
- *include it in the INFPE curricula, develop a module adapted to pre-service training, and collaborate with annex schools and application schools.*
- *increase the time spent on subject didactics and find a slot in the timetable for the practice of Lesson Study.*
- *may the Lesson Study sessions be organized in the annex schools, and lesson practices and lectures be given to trainee teachers.*
- *Strengthen the capacity of full-time trainers by necessity, allowing them to draw directly from Japan in terms of Lesson Study because what is done in Burkina Faso is only an adaptation of what exists in Japan.*

4. Discussion: Summary of research findings and Conclusion

4.1. Research findings

This article, inspired by the state of defects in the chain of in-service teacher training in Burkina Faso, aimed to implement effective Lesson Study practice during pre-service teacher training based on discussion and new learning/teaching methodologies.

At the end of this work, it emerged that the lesson-study model could constitute a powerful means of in-service teacher training if it is well implemented during pre-service training to initiate graduates and facilitate their integration into classroom work.

Thus, in terms of initiating collaboration for reflective teaching practice through the Lesson Study model, it could be retained that it constitutes a practical framework of professional metacognition, which can consolidate teaching/learning. In fact:

- ✓ Lesson Study exercise is an opportunity for reflection oriented on the current practice, a kind of metacognition for teachers to reconsider several aspects in doubt or consolidation to achieve optimal teaching/learning.
- ✓ Lesson Study allows for reflection on one's learner-centered teaching practice, having students work in groups and then manipulating

things themselves.

- ✓ The introduction of Lesson Study has an induced effect on improving the learning performance of trainee teachers by:
 - reinforcing the acquisitions both in lesson development and in conducting simulation sessions,
 - constituting a source of pedagogical enrichment and
 - contributing to better mastery of classroom practices;
 - being an opportunity to share experiences.

To increase pre-service teachers' motivation and perception in implementing Lesson Study, many relevant proposals were offered by all stakeholders.

- ✓ For those interviewees, it is also important to raise awareness that the practice of Lesson Study is a learning experience and not a time for mockery among learners.
- ✓ Initiate a group mark on the evaluation of the improved lesson sheet and competition in this area.
- ✓ Support and accompanying trainee teachers and teacher advisors in action research.
- ✓ For assessments during pre-service training, integrate Lesson Study and practical sessions into the exit exam;
- ✓ Integrate the Lesson Study model as a unit component and assign a grade with a significant coefficient.

At the end of this implementation, it turned out that the trainee teachers involved in this experiment positively changed their behavior regarding their way of conducting a lesson, but above all, their ability to analyze the lesson objectively also changed.

A qualitative comparison of the aspects that changed positively throughout the three lessons allowed for the gradual mastery of both the protocol for the practical implementation of the Lesson Study and the learning situations highlighted in this exercise. On the one hand, during the presentation of the lesson, especially the management of the board, the placement of the child at the center of learning, the handling of the material, and the organization of group work. On the other hand, the essential aspects of the post-lesson conference are progressively well-conducted with less tattooing: courtesy, reasoning by suggestion, the concrete proposal of a solution to

always make up for a noted insufficiency, practical organization, and reporting of the activity.

Finally, related to Identifying a protocol for implementing Lesson Study at INFPE, Murata & Pothen (2011), and Sim & Walsh (2009) already suggested: "Involving pre-service teachers in Lesson Study can be done through different models..." Moreover, Fernandez (2010) mentioned to incorporate Lesson Study with microteaching for pre-service teachers. Thus, two possibilities were offered according to this research investigation:

- ✓ The first is a proposal tending to introduce the approach in General Pedagogy to better define its theoretical contours and practical implementation through didactic subjects.
- ✓ On the other hand, while some want to use the lesson-study model in certain key subjects, such as science and mathematics, most actors recommend transversal use in all subjects.

Therefore, the following recommendations are essential for the effective implementation of Lesson Study during the pre-service training of primary school teachers at two levels.

4.2. Recommendations

There are upstream and downstream for Lesson Study.

4.2.1. Upstream

- ✓ Identify the disciplines of inking and implement them progressively to evaluate their impacts before their generalization in all INFPE;
- ✓ A feasibility study will free up time slots and identify trainers to provide training. Proceed with the pre-validation and validation of the modules developed to boost the implementation of the approach.
- ✓ Lesson Study must first be integrated into the curricula of pre-service training;
- ✓ See how to adapt it to pre-service training because "cut and paste" does not work because we are not in the same context as in-service training.
- ✓ Find the time slot to engage the trainers and annex school that will serve as a laboratory as well as the installation of video projectors in the classrooms.

4.2.2. Downstream

- ✓ Introduce Lesson Study in all didactic subjects:

- in General Pedagogy for teaching aspects of generalities and
- conduct simulations in all disciplinary fields in the didactics of subjects.
- ✓ Increase collaboration with the annex school and focus on hands-on simulations combined with video observations of filmed sessions followed by analysis by class.

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