

## **Enhancing professional development with Lesson study training for Lecturers at Higher education institution in Lao PDR**

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This research used to action research that result from the implementation of a training course to promote the lesson study process for lecturers at the higher education in the Lao PDR. This study aimed to evaluate cognitive effectiveness, ability in lesson plan design, and skills in lesson study in lecturers' professional development at Souphanouvong University, Lao PDR. This paper focuses on the relevancy assessment, implementation, and evaluation of the lesson study skills in lecturers' professional development as the subsequent study. The researchers employed action research, a three-step process adopted for lesson study, encompassing planning, four days of training, implementing teaching and observation in the classroom, and finally evaluating its effectiveness as a reflection of lesson study skills, which was a portion of lecturers' professional development. 56 lecturers from six faculties were used as a sample for training, and 10 lecturers who voluntarily participated were used in the application. Testing, an assessment form for the ability to design lesson plans, a lesson study skills assessment form, and the teaching record book were research tools. The mean, standard deviation, and t-test were applied to statistical analysis. The findings were: 1) the cognitive effectiveness of the lesson study process was significantly improved over criteria on a double percentage at a level of .05; 2) the design ability of the lesson plan was at a high level; and 3) the lesson study skills for the lecturers' professional development results were at good levels. This is the first application of the lesson study process in the context of higher education in Laos. Lesson study was an approach that assisted lecturers to increase professional competency to be true "teacher professionals" in the future .

**Keywords:** Training, Lesson Study, Professional Development.

To achieve the Sustainable Development Goals by 2030, Lao citizens must have equal and equitable access to quality education so that they can develop themselves into good citizens of the nation, qualified, healthy, knowledgeable, and competent. Professionalism to develop a sustainable country can help it compete regionally and globally, particularly in human resource development and educational quality. The Government of the Lao People's Democratic Republic (Lao PDR) has set a vision for cultural-social development until 2030 as follows: "Human resources are developed to a level close to the local and international level; a strong productive force responds to the needs of more national socio-economic development; the level of general education of Lao citizens is at the end of high school; people enjoy universal access to quality

health care services and an average life expectancy of more than 75 years". Therefore, the government has established a comprehensive direction for the socio-economic development strategy to 2025, in which the government has made cultural-social development a priority of the development strategy by emphasizing improving the quality of life of the people step by step, solving poverty, developing the field of education, developing culture, developing labor skills, and controlling both quantity and quality (Ministry of Education and Sports, 2020). It shows that the vision, strategy, and policies that focus on the development of education are very important, and that the government regards education as a guideline or an important tool to drive policies that are implemented in various forms in line with the changes in current social conditions.

The Department of Teacher Education (DTE) in the Ministry of Education and Sports (MOEs) has played a direct role in producing teachers and improving the quality of education. They are aware of teacher professional development that links the quality of teaching of teachers to education management for self-improvement and education for learners' outcomes. Operations in this section are considered an important drive according to the strategy. Policy for the development of teachers and educational personnel can push higher education institutions to become learning centers and serve society and communities in all regions. Collaboration is required from all sectors, including learners, teachers, parents, and stakeholders, in education management. This is a collaboration to solve educational problems through innovation development and classroom development across all regions of Lao PDR (Department of Teacher Education, 2020). In order to improve the quality of education, Lao PDR has a clear approach to developing and modifying the teaching methods of teachers and lecturers, focusing on continuous professional development of teachers, and building capacity for teachers, lecturers, and educational personnel to improve their quality. It also focuses on teacher development and teacher professional networks to cooperate in improving teaching and learning quality, especially the exchange of lessons between teachers, to push and promote the teacher production system and stationed teachers through the process of continuous professional development of teachers, and to raise teachers' educational qualifications to meet the standards of teaching professional competence within the scope of national education qualifications (Department of Personnel Affairs, MOEs, 2020).

The most vital person in developing education quality is the teacher (Suwannoi, 2012). Buasangthong and Phanhthavong (2016) stated, "Teachers play a crucial part in the educational system by ensuring that all students receive high-quality instruction in order to achieve desired learning outcomes. In this regard, it is essential that instructors are provided with the necessary pedagogical and subject-matter training and placed where they are most needed." This also corresponds to Wongyai (2020), who said that a successful school is one that has excellent teachers, engages students effectively, emphasizes student learning, and offers instruction that emphasizes a diversity of direct experiences, shifts the paradigm of instruction, and incorporates novel activities that are appropriate for the subjects they teach. At every stage, students are given the chance to decide and take part in the decision-making process. Parents and managers are motivators, cheerful students who are willing to attend classes and provide good support. The teaching profession is one that calls for ongoing improvement. Teachers should never stop learning. Numerous new technologies have been created as a result of changes in the economic and social climate of the world. To stay up with these changes and to become informed, capable, and situationally aware, teachers must study and adapt and improve their ability to carry out their own responsibilities well (UNICEF, 2019; Government of Lao PDR, 2015).

Souphanouvong University (SU) was established by the Prime Minister's Decree No. 169/PM.LA; dated November 4, 2003. SU officially held an inauguration ceremony on November 5, 2003. According to the Decree on Organization and Activities of SU No. 099/PM dated April 3,

2009, SU is a public higher education institution, a national education and cultural center supervised by the Ministry of Education and Sports (MOES) with a focus on serving higher education in the eight provinces in the northern part of Lao PDR. Its role is to conduct educational activities to produce academics, researchers, and scientists in various fields, conduct scientific research, preserve and promote the fine art and culture of the nation and Lao multi-ethnic people, and provide academic services to society. SU will develop by realizing its vision of Specialization, as the best university; Localization, striving for community members' wellbeing; and Globalization, aiming at international standards. This has been the mission statement to produce academics and administrators who work more effectively in society and develop human resources in scientific research that produce new knowledge; provide good quality academic service to the community; provide a quality labor force; preserve and enhance local culture in keeping with national traditions and adopt best cultural practices, and make the university a source of information, science, and technology. SU is driving the objective of educating and forming specialists-holders of bachelor's degrees with good quality in terms of knowledge, skills, morals and values, health, and physical and spiritual civilization to be centers of excellence in education in the north provinces (Souphanouvong University, 2016).

For the last two decades, based on the empirical data of teacher professional development with an emphasis on teachers' potential in Lao PDR, it has been found that the teachers' specific capabilities are not comprehensive and progressively due to many factors and reasoning of training, most teachers in Laos even the colleges or University Lecturers are lacking of the opportunity to access the professional training. It was mentioned that the goal to improve the teaching quality of teachers has not been achieved as planned, which is inconsistent with improving student learning outcomes and has had a poor impact on student learning outcomes overall (Inclusive Education Center, MOEs, 2015). This corresponds to the results on the development of teaching and learning quality problems across the country from 2016 to 2020 by the National Institute of Educational Sciences Research, which found that overall student performance across the country was still at a relatively low level. At the same time, many teachers' ethics and responsibilities are still at the basic level, teaching knowledge and skills are still at the minimum assessment criteria level, and the methods for assessing teacher learning are inefficient and are not operating normally; and thus the discrete teaching quality of teachers in educational institutions does not achieve the national criteria (National Institute of Educational Sciences Research, MOEs, 2020). In the 2019 academic year summary report of the Academic Affairs Office of SU, it was found that each year SU has improved and developed the quality of lecturers' instruction capabilities through training for enhancing the knowledge, skills, performance, processes and teaching methods for lecturers. However, the instruction quality has not achieved the target every time due to many factors, such as lecturers lacking skills and various teaching methods, lack of cooperation and lack of team work in instruction capability. These all affect the academic achievement of the students as a whole. The goal has not yet been achieved with a cumulative grade point average in the academic years 2017, 2018 and 2019 at the level of 72.75, 85.56 and 71.25, respectively, with the goal of student achievement of not less than 90 percent in each academic year (Academic Affairs Office, SU, 2020).

With the phenomena and conditions mentioned above, it is necessary to find a solution to the problem, and the most appropriate and widely used method of teaching and learning management in the world is lesson study. According to a review of relevant documents and research, as well as empirical data and the researcher's experience as a university lecturer for more than 15 years, the lesson study process is perceived as one way to improve teachers' teaching-learning potential. The process of studying the lesson or studying the classroom is part of a professional development system that uses the school as the place where teachers should develop from the beginning of their teaching career. An important process is that groups of teachers meet

regularly to collectively develop a lesson management plan, create teaching innovations, experiment in the real classroom, and improve learning management plans together. The basic concept of this approach is that the most effective method for improving and developing teaching in the classroom is the development and improvement of lessons in the context of the actual classroom (Inprasitha, 2007). Research on lesson study has also revealed that teachers can jointly develop the teaching and learning process as well as contribute to the development of students' advanced thinking skills, which enables students to gradually develop the learning skills and innovations of the 21st century. In addition, it helps in the design of teaching and learning management, strengthens problem-solving skills in classrooms, and fosters creativity and innovation skills (Inprasitha, 2009; Inthawongsa, 2017; Saosing, 2014; Bayram & Bikmaz, 2018; Shingphachanh, 2020).

For lesson study to be effective, it is important to use professional development to increase the potential of teaching and learning management. Such lesson study can help the participants develop knowledge, expertise, and positive attitudes toward the content delivered. This will enable them to learn or change their behavior effectively and efficiently in accordance with the objectives of instruction capability. It also helps to enhance positive behavior, actions, and expression, which enables people to think and do what is right and good to encourage people to live together in society peacefully. Lesson study as an approach to professional development for teachers or lecturers has been recognized as causing many positive changes in teachers or lecturers, especially in their teaching. However, lesson study is a complex innovation because it has a socio-cultural context involved, due to it being an innovation from Japan. Here, the owner of the innovation has used it for hundreds of years until it has become a normal part of work culture. The institutions that will be using this innovation require the cooperation of everyone in the organization to unanimously change the organizational culture, the culture of thinking, beliefs, and attitudes to help this innovation stay in the organization successfully (Inprasitha, 2012; Inprasitha, Isoda, Wang-Iverson & Yeap, 2015).

Furthermore, an approach that will increase the potential of professional development is training. It can help the participants develop knowledge, expertise, and positive attitudes toward the content delivered. This will enable the trainees to learn or change their behavior effectively and efficiently in accordance with the objectives of training. It also helps to enhance positive behavior, actions, and expression, which enables people to think and do what is right and good to encourage people to live together in society peacefully (Sanrattana, 2011). Therefore, training is a process that will enhance trainees' knowledge, understanding, skills, and positive attitudes towards a subject or change behavior according to the objective of the training. Hence, in order to develop training courses to match the current situation at Souphanouvong University, assessing training needs is a necessary process in order to analyze the exact needs and priorities of training requirements (Chintatiyo et al., 2017).

According to the aforementioned rationale, the researchers are interested in the application of the lesson study process to enhance lecturers' professional development at Souphanouvong University, Lao PDR. It is also the beginning of a change in the cultural teaching context at the university that will lead to the development of sustainable instructional capabilities in the future.

### **Objectives**

The following are the objectives of the study:

- To evaluate the cognitive effectiveness of the lesson study process of lecturers at Souphanouvong University;
- To assess ability in lesson plan design for the lecturers' professional development;

- To evaluate skills in the lesson study process for the lecturers' professional development at Souphanouvong University.

### **Literature review**

This section summarizes research literature relevant to the objectives of this paper; in particular, it is a review of training, professional development and the lesson study process.

The first relevant literature review is related to training. Griffin (2002) defines training as a guide for practice, so most policies are in the form of a standing plan established for conducting a certain activity. Therefore, training will bring knowledge, understanding, ability, and a good attitude, which will affect a person's ability to perform assigned tasks according to the standards of the workplace. Quality organizations will recognize the importance of training in order to reduce various problems in their operation and development. They appreciate the potential of human resources, adjust the attitudes of employees to develop training habits, and take an interest in and support training. This can cause the behavior of people in the organization to change and create a new vision for the organization. Charmine et al., (2007) state that training is an indispensable tool to help organizations bridge the gap between actual performance and desired performance in terms of knowledge, skills, and abilities to encourage employee engagement in ongoing organizational development.

Lewis, Goodman, and Fandt (2011) have concluded that training is essential for human resource development. The success of an organization is very important because it is related to many human resource management activities, including personnel planning, recruitment and selection, performance appraisal, and employee motivation. Included in the human resource development policy of an agency, training will help create clarity and be able to communicate to personnel in the organization an awareness of attitudes and various behaviors that will support the business's success in terms of training and development. At the same time, Nuambounlue (2010) said that training is aimed at pursuing specific skills or assigning practices, exercises, etc., in order to lead to desirable conditions or guidance training. Training is the process of developing an organization through systematic, procedural, well-planned and continuous action. There is a need for everyone to strive for more knowledge in a timely manner. Changing circumstances requires work to be more effective, and enhancing skills enables staff to adjust by changing their attitudes and behaviors in an appropriate and acceptable way (D'Elia, Mazzeo & Raiola, 2018).

In summary, training is the process of developing personnel in an organization to have knowledge, understanding, new ideas, skills and a good work attitude. It also increases the efficiency of their work. It is therefore necessary for the organization to provide training for personnel on a continuous basis.

The next section discusses the teaching profession, which is one that requires constant development. Teachers must always be learners. Due to changes in the world's economic and social conditions, the progress of science and technology has resulted in many new technologies. Teachers need to learn and adapt to keep pace with such changes, and to become knowledgeable, capable, aware of various situations, and undertake the performance of their own duties effectively. In Lao PDR, the term "teacher" is defined in Article 2 of the Government Teacher Act as a person who performs teaching, and trains in schools and institutions, including public and private educational centers. This act divided teachers into two groups according to their roles, duties, and educational levels: Teachers were the groups who taught from the basic education level to the vocational level, while lecturers were at the higher education level and served to teach at the university level (Government of Lao PDR, 2015).

Therefore, this research specifically addressed lecturers' professional development. Lecturers' professional development sets a framework for teaching performance standards, requiring teachers to have knowledge and understanding of the components of professional competence, which are related to knowledge, competence, and competencies that are consistent with the mission of lecturers in Lao higher education, who serve in teaching, research, and academic service with the preservation of arts and culture.

This is consistent with Sinlarat (2009), Boonterm (2012), Ketchatturat (2020), who indicated that professional development in higher education should be as follows: Firstly, lecturers must thoroughly study and research the science that is the basis of all knowledge, the essence of knowledge, a truth that can be sprouted into lots of other knowledge, describing the mechanism of existence and the dynamics of nature and humans, which are the basic sciences, humanities, and social sciences. Secondly, the lecturers have to study the history, experience, and skills of solving difficult and complex problems that occur in nature and in humans. It must also be an education that exercises the skills and strategies of problem-solving through a systematic study and research process. There are methodologies that have been tested and practiced well. And it is a rational analytical thinking process; there is academic and professional evidence, not random guesses or trial and error. Thirdly, higher education professional development is a place for accumulating and transferring new knowledge and technology to open the door to new ways of living and social development in the framework of good morals and culture; that is to say, it is a source of academic and professional leaders, a pioneer of new paths, and the production of knowledgeable people for society. Finally, higher education is a source of profound martial learning, elaborate specialized arts, and high intelligence and skills, which is a science that is difficult to imitate in the profession. That is why it is a study to create and uphold the identity of a person of knowledge, knowledge that contributes to the prosperity and culture that are the pride of the community, society, nation, and world community (Ministry of Education and Sports, 2020).

In summary, lecturers' professional development involves the development of their professional competencies as follows: First, they have deep knowledge and can apply it to learners effectively; they have an understanding of the nature of the curriculum, the essence of the curriculum and the subjects; and, finally, there is also a standard framework for teaching and learning. Second, understanding learners and the learning methods or learning processes mentioned above will enable all learners to have the opportunity to learn according to their aptitudes, abilities, interests, and potential development. This includes having a true understanding of the learning theory underlying the learning process, intending to develop knowledge and morality, and having a good knowledge of the philosophies, theories, principles, methods, and techniques of various teaching methods. Third, planning teaching and learning management with appropriate activities for learners who understand the system of teaching and learning and its implementation, knowing how to choose teaching methods that will be used appropriately and in a variety of formats, as well as practicing writing a lesson plan that will be appropriately applied in practice, are also important. Fourth, they need skills in measuring and evaluating the learning progress of learners in terms of both quantity and quality. Finally, a lecturer's professional development involves self-development for professional advancement which understanding the subject of professional development, being able to apply research principles to professional development and using the research results to develop the learning of the learners, including in arts and culture, through knowing teaching and learning activities and offering extra-curricular activities. Accordingly, the lecturers' professional development is a process involving lesson study.

Finally, this section summarizes the research literature related to lesson study. Academics have used different words to describe this concept. Inprasitha, the initiator of lesson study in Thailand, uses the term "class education" (Inprasitha, 2009), while Thongsaeen (2010)

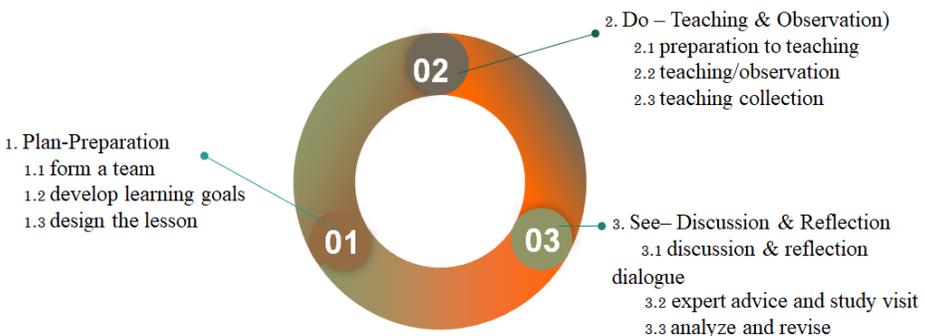
mentions that some people may use terms for lesson study such as research study, professional learning process, learning lessons, learning and lesson development, or lesson education.

Lesson study is the main model of teacher professional development created in Japan. It has been used there for about 130 years and is recognized as an effective method. The right to improve and develop mathematics teaching is a method that makes teaching better and more sustainable (Shimizu, 2006). In Thailand, lesson study was first introduced in the academic year 2003 by Inprasitha and the members of the Faculty of Education at Khon Kaen University. They used it to study the change in the worldview of students practicing mathematics. It is a way for teachers to drive improvement in teaching with a primary focus on students. It enabled teachers to develop good cooperation with each other and gave them the opportunity to exchange ideas and learn about teaching (Inprasitha, 2009).

Saosing (2014) discusses three types of lesson education models: school-based lesson study, district-wide lesson study, and cross-district lesson study. Thongsaen (2010) states that lesson study is an uncomplicated process consisting of four steps: setting goals (creating a teaching plan together), implementing the plan (observing teaching), discussing results (discussing the lessons), and conclusions (making quality lessons). Countries in which lesson study has been implemented include the United States, Germany, Singapore, Australia, Chile, Vietnam, and Thailand.

Lao PDR has been using lesson study since 2005. This process of teaching and learning was initiated and adopted concretely in 2015, and the term "pedagogical education" was used in the process of training, operating, and vocational development networks. A persistent teacher focus on school training with a teaching education model is being undertaken as an academic collaboration between the Department of Teacher Creation, the National Institute of Educational Science Research, and eight teacher colleges across the country. It is supported by the Japan International Cooperation Agency (JICA) in the Lao PDR and aims to develop the process and quality of teaching and learning management for teachers in government schools and teacher colleges to be better and create a professional teaching profession (Department of Higher Education, 2015).

To conclude, the lesson study process consists of 3 steps, namely: plan-preparation, do-teaching & observation, and see-discussion & reflection, that was applied to the training process of this research as shown in Figure 1



**Figure 1** The Lesson Study Process (compiled by author based on literature reviews)

As seen in Figure 1, Teachers work through the steps listed above; lesson study is a form of classroom inquiry in which several teachers collaborate in three steps, namely: plan-preparation, do-teaching and observation, and share the results of see-discussion and reflection in a single class lesson.

## Method

This study used action research methodology with an adapted lesson study process. The results are discussed on the basis of interpreting both quantitative and qualitative data (Creswell & Plano Clark, 2011). The population of this study consisted of lecturers from the six faculties of Souphanouvong University in the academic year 2022. The sample was divided into two groups. Group 1 was the Training group, comprising 56 lecturers selected to participate in training. They were specified by using Krejcie & Morgan with convenience random sampling. Group 2 was the Applications group, consisting of 10 lecturers who voluntarily participated in the adoption and passed the training (Isaac & Michael, 1982; Krejcie & Morgan, 1970, cited in Srisa-Art, 2010; Ketchatturat, 2020).

### Instruments Used

Research instruments consisted of the lesson study training course, a cognitive test, an assessment form for the ability to design lesson plans, a lesson study skills assessment form, and the teaching record book. The researchers improved the research instruments based on the evaluation results of the index of item objective congruence (IOC) and suitability from five experts, namely: curriculum and teaching experts, education measurement and evaluation experts, lesson study specialists, and experts involved in the development of the training process.

For the cognitive test, an assessment form for the ability to design lesson plans and a lesson study skills assessment form has been applied with 30 lecturers from each faculty of Souphanouvong University who had characteristics similar to those of true samples for finding out item difficulty, item discrimination, and Cronbach's alpha coefficient reliability.

1) The lesson study training course consisted of eight components: background, principles, goals, objectives, activities, contents' structure, visual aid, measurement, and evaluation. The item's objective congruence index was 0.97 (Mehrens & Lehmann, 1991). Suitability indicated an overall mean of 4.50, rated at the highest levels.

2) The cognitive test was developed; it was a multiple-choice answer with 4 options, with the scoring criterion of an incorrect answer given a score of 0 and a correct answer given a score of 1. The IOC showed that the suitability was 0.96 and overall mean was 4.62, as the highest level. Meanwhile, the item difficulty was between 0.20 and 0.93, the item discrimination was between 0.20 and 0.47, and the Cronbach's alpha reliability coefficient was 0.821 (Soonthornthai, 2014; Janjai, 2014).

3) Both an assessment form for the ability to design lesson plans and a lesson study skills assessment form were utilized with 5-point Likert scales, ranking values for ability and skills as follows: 5 = highest or very good, 4 = high or good, 3 = moderate or fair, 2 = weak, and 1 = poor. The criteria for interpreting the results of the data analysis are as follows: the means between 4.50 – 5.00 = highest or very good, 3.50 – 4.49 = high or good, 2.50 – 3.49 = moderate or fair, 1.50 – 2.49 = weak and 1.00 – 1.49 = poor (Best & Kahn, 1993; Srisa-art, 2010; Wongwanit, 2012; Phanakij & Nillapun, 2016; Tanthawanich & Jindasri, 2018).

3.1) the quality of the assessment form for the ability to design lesson plans with the IOC showed that the overall mean was 0.850 and suitability was 4.71 as the highest level. Meanwhile, the Cronbach's alpha reliability coefficient was 0.919 that assessed six aspects: determining the desired outcome; the design of teaching and learning; the determination of

components of the lesson plan; the formulation of evaluation evidence; the identification of measurement and evaluation approaches, and teaching aids or media.

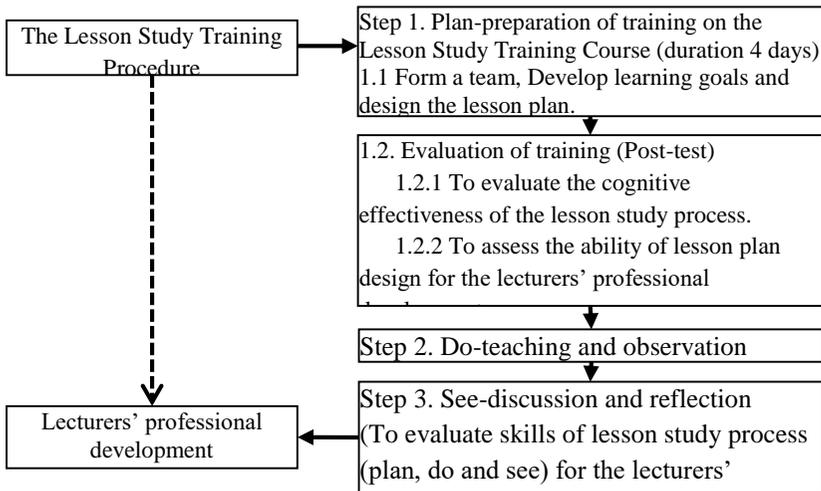
3.2) the quality of the lesson study skills assessment form with the IOC showed that the overall mean was 0.96 and suitability was 4.64 as the highest level. Meanwhile, the Cronbach’s alpha reliability coefficient was 0.823.

**Data Collection**

After the training course, improvements were verified by the expert and tried out. The research was carried out between October 2022 and December 2022, and the researchers requested that the President of Souphanouvong University and the deans of all six faculties of Souphanouvong University collect data from the sample. The research procedure used the three steps of the lesson study process. First was Plan preparation: the training course was ready to be implemented with the target group. The Lesson Study training course was conducted for 56 lecturers from all faculties of Souphanouvong University using the lesson study approach for a total of 24 hours in consecutive four-day training. One of the researchers was the trainer for the four-day training, while the other two researchers were the assessors to ensure the trainer was following the training course requirements closely. A one-shot case study as pre-experimental to the post-test only research design was used in this step to measure the cognitive effectiveness of the lesson study, and the ability to design lesson plans. Second was Do-teaching and observation, and finally, See-discussion and reflection. A lesson study skills assessment form and the teaching record book were used as instruments in the second and third steps. The target participants for these steps were 10 lecturers who attended the four-day training in step one and voluntarily participated in the application in the classroom. Approximately 4 weeks were appropriated for steps 2 and 3 after step 1, as shown in the research procedure in Figure 2.

**Figure 2**

Training Procedure (compiled by the author based on Figure 1)



**Statistical Techniques Used**

The statistical analyses used was designed as a post-test, a quasi-experimental research design to test the cognitive effectiveness. To achieve the objectives of the research, which were to assess the ability to design lesson plans and evaluate lesson study skills, the researchers used the mean ( $\bar{x}$ ), standard deviation (S.D.), descriptive statistics, the Cronbach’s alpha coefficient to

calculate the reliability coefficient, one sample t-test, and the teaching record book data analyzed using content analysis. To process the data and obtain accurate results, SPSS version 25 was used.

## Results

The results of this study are presented in accordance with the objectives of the study, as indicated above. The initial results were obtained from the post-test and assessed the ability to design lesson plans for training. The modified Lesson Study training course was conducted for 56 lecturers from six faculties of Souphanouvong University, Lao PDR, over four days, for a total of 24 hours. Then, there was follow up with the 10 lecturers for teaching and observation on step 2, and finally, an evaluation was conducted to measure the performance of lesson study skills in lecturers' professional development, as shown below.

Data regarding the results of evaluating the cognitive effectiveness of the lesson study process indicate an average score of 25.26 as compared to the criteria of 80 percent (or 22.40 points from a full score of 28), where there is a significant difference ( $t = 10.25$ ,  $\text{sig} = 0.000 < p\text{-value}$ ) in the post-test. These findings, which proved the cognitive effectiveness of the lesson study process, showed improvement greater than the criteria with significant statistical significance. These are presented in Table 1.

**Table 1**

*The results of evaluating the cognitive effectiveness of the lesson study process*

| Item           | Sample | $\bar{x}$<br>(Full score<br>28 points) | S.D  | Degree of freedom<br>(df) | t(55) | Sig. |
|----------------|--------|--|------|---------------------------|-------|------|
| Post-test      | 56     | 25.26                                  | 2.09 | 55                        | 10.25 | .000 |
| Criteria (80%) |        | 22.40                                  |      |                           |       |      |

According to these results that ensured cognitive effectiveness, there were 46 participants (82.14%) who passed the criteria of 80 percent (or 22.40 points), while 5 participants (17.86%) did not pass the criteria, as shown in Table 2.

**Table 2**

*The sample passing based on the criteria*

| Item       | Criteria                             | Sample | Percentage |
|------------|--------------------------------------|--------|------------|
| Passed     | The scores $\geq 22.40$ points (80%) | 46     | 82.14      |
| Not passed | The scores $< 22.40$ points (80%)    | 10     | 17.86      |
|            | Total                                | 56     | 100.00     |

The results of the assessment of the ability to design lesson plans in the lesson study process showed that the overall mean was 4.39 with a high level ( $\bar{x} = 4.39$ ,  $S.D = 0.37$ ); each item was in the range between 4.26 and 4.46. Among the ranked items, it was found that the first was the ability to determine the desired outcome ( $\bar{x} = 4.46$ ,  $S.D = 0.47$ ), followed by the design of teaching and learning activities ( $\bar{x} = 4.45$ ,  $S.D = 0.45$ ); the determination of components of the lesson plan ( $\bar{x} = 4.42$ ,  $S.D = 0.48$ ); the formulation of evaluation evidence ( $\bar{x} = 4.40$ ,  $S.D = 0.46$ ); the identification of measurement and evaluation approaches ( $\bar{x} = 4.34$ ,  $S.D = 0.53$ ); and teaching aids or media ( $\bar{x} = 4.26$ ,  $S.D = 0.44$ ), respectively. The results are displayed in Table 3.

**Table 3***The results of the ability to design lesson plans assessment*

| Item   | $\bar{x}$ | S.D. | Ability Interpretation |
|--|-----------|------|------------------------|
| 1. Determine the desired outcome                           | 4.46      | 0.47 | High                   |
| 2. The formulation of evaluation evidence                  | 4.40      | 0.46 | High                   |
| 3. Teaching and learning activities                        | 4.45      | 0.45 | High                   |
| 4. Teaching aids or media                                  | 4.26      | 0.44 | High                   |
| 5. Identification of measurement and evaluation approaches | 4.34      | 0.53 | High                   |
| 6. The determination of components of the lesson plan      | 4.42      | 0.48 | High                   |
| Overall mean   | 4.46      | 0.47 | High                   |

Moreover, the participants' lesson study skills for the lecturers' professional development at Souphanouvong University showed that the overall mean was 4.38 with a good level ( $\bar{x} = 4.38$ , S.D = 0.55); each item was in the range between 3.85 and 4.57. On the ranking items, it was found that plan-preparation was the first item at the very good level ( $\bar{x} = 4.57$ , S.D = 0.22), followed by teaching and observation, also at the very good level ( $\bar{x} = 4.50$ , S.D = 0.40). At that time, discussion and reflection were at a good level ( $\bar{x} = 3.85$ , S.D = 0.50), as shown in Table 4.

**Table 4***The results of lesson study skills for the lecturers' professional development*

| Item                             | $\bar{x}$ | S.D. | Lesson Study Skills Interpretation |
|----------------------------------|-----------|------|------------------------------------|
| 1. Plan-Preparation              | 4.57      | 0.22 | Very good                          |
| 2. Do – Teaching & Observation   | 4.50      | 0.40 | Very good                          |
| 3. See – Discussion & Reflection | 3.85      | 0.50 | Good                               |
| Overall mean                     | 4.38      | 0.55 | Good                               |

In addition, the data from the teaching record book concluded as follows:

- 1) Plan-preparation: This is a goal-setting and teaching-learning plan that is carried out among teachers, peers, experts, and administrators, including research teams that collaborate on setting goals, designing teaching plans, and how to assess learners together.
- 2) Do-teaching and observation: This is the process of implementing a teaching plan by teaching, where two instructors in a group use the plan while other instructors, experts, and administrators observe the teaching, including recording the teaching observations. They also focus on students to collect information about thinking processes and processes, student learning, student participation in activities, or learning behaviors. including all events that happened in the classroom.
- 3) See – reflection: This is an exchange of experience and analysis of information by groups of professors, experts, and administrators. Together, they consider the evidence that students have achieved their goals, whether or not they have developed, and how, with the first teacher reflecting on or discussing the results, then the others doing so. They try to answer the questions: What lessons can be removed by teachers, what problems and obstacles arise during the study of lessons, and what issues lead to improvements in teaching and learning plans? Student information and notes after teaching are used to reflect what the teacher has learned, as well as collect other evidence about what the students have learned.

## Discussion

This study aimed to evaluate cognitive effectiveness, ability in lesson plan design, and skills in lesson study in lecturers' professional development which it focuses on the relevancy assessment, implementation, and evaluation of the lesson study skills in lecturers' professional development as the subsequent study, training is the process of developing personnel in an organization to have knowledge, understanding, new ideas, skills and a good work attitude.

Therefore, this section discusses the research results and findings. The data analysis suggests a strong positive relationship between the cognitive effectiveness of the lesson study process of lecturers, their ability in lesson plan design, and the skills of the lesson study process for the lecturers' professional development at Souphanouvong University. The research objectives are well served, namely:

The cognitive effectiveness of the lesson study process passed the criteria (25.56 points from 28 points), and 46 participants passed the criteria (82.14%). In addition, the cognitive effectiveness of the lesson study process passed on the double percentage in both the mean scores and the amount of sample. Furthermore, the results of their ability to design lesson plans in the lesson study process were at a high level, through which most teachers were able to set clear teaching goals and set evidence consistent with activities. These results matched with Masaengsom (2018), who studied and developed a training curriculum on mixed-level learning management for teachers in small schools. It was found that teachers' cognitive abilities in mixed-level learning management after training were higher than before and that they were satisfied with the training curriculum at a high level. Siriwattanathakul (2019), who studied the development of a training curriculum for enhancing learning management competency for Thai language primary school teachers to improve students' reading and writing achievements, found that: 1) knowledge and understanding of learning management after training were higher than before training; 2) ability in learning management was at the highest level; 3) students' achievement in reading and writing the Thai language after training was significantly higher than before at 0.05; and 4) the training curriculum developed was a curriculum that was in line with the needs of teachers. This actually develops teachers' skills in teaching reading and writing Thai. Sopon et al., (2020) conducted a study to develop a training curriculum and create an electronic book for teachers at Ban Muang Wittaya School under the office of Sakonkakhon Primary Educational Service Area 1. It was found that their knowledge and understanding after learning were significantly higher than before learning at the 0.01 level. The e-book creation skills of teachers were at a very good level, and teachers' satisfaction with the e-book creation training course was at the highest level. Finally, some outcomes of this research are consistent with the findings of Sarnkhaowkhom and Suwathanpornkul (2022), who did research on designing and implementing a learning management process for enhancing health literacy among nursing students (an application of design-based research), which found that health literacy scores of nursing students in the experimental group on the post-test after manipulation were significantly higher than for the control group at 0.05. This is a part for guarantee that the post-tests are always more effective than before.

Even though the skills of the lesson study process for the lecturers' professional development results were at good levels, both the plan-preparation and teaching and observation were at the highest level because the lecturers were enthusiastic about the planning and designing of lesson plans for various subjects in collaboration with other lecturers. The process started with the study of policies or curriculum to set goals, directions, and practices for developing learning outcomes and anticipating problems, difficulties, and concepts of learners, including planning and designing lessons in line with the goals of teaching. The next step was Do – teaching & observation, including methods for collecting information on the teaching operations of instructors

and the learning outcomes of learners by themselves. Next was collaboration with other teachers to observe the problems, difficulties, and ideas of the students, and opening class to other teachers or stakeholders to observe the teaching-learning behavior of the students. Finally was See – discussion & reflection of the lecturer, who encouraged their colleagues to investigate teaching performance as well as to get students to reflect on their ideas about teaching and learning management, including open classes, namely, classes open for other teachers to observe the teaching and learning management.

In addition, the results of this investigation are consistent with those of previous studies. Pattanachak, Inprasitha, and Inprasitha (2011) undertook research on a study of students' mathematical communication in teacher professional development through the lesson study process. The research results found that teachers implement the lesson study process to greatly improve students' ability to communicate in mathematics. Compared with general classes, the emotional aspects of mathematical communication of students have created an emotional experience for students to communicate in every teaching phase, enabling students to have the most confidence in learning. In addition, Saosing (2014) reported on the development of mathematics curriculum to promote learning and innovation skills in the 21st century through the application of lesson study. The results showed that teachers can collaborate to develop a mathematics curriculum using the lesson study process, in which students gradually acquire the learning and innovation skills of the 21st century. The most cooperative skills that develop into communication skills eventually develop into critical thinking, problem-solving skills, and creativity and innovation skills. Furthermore, Leavy & Hourigan (2016) studied the use of lesson education to support teacher initial knowledge development. The results showed that classroom teaching reflection can help facilitate improvements across the room by sub-units of knowledge and effectiveness in an understanding of integrated teaching. It is also conveyed outside the context of education. The development of content knowledge will lead to effective activities by summarizing and identifying the characteristics of the lesson study, and helping to improve the teaching performance of highly effective teachers. Schipper, Goei, Vries, & Veen (2017) and Coenders and Verhoef (2019) point out studies on similar issues that reported a consistent conclusion that the development of self-efficacy, teaching behavior, and adaptation of teachers through the lesson study process showed that a professional development approach through lesson study enables teachers to meet student needs in a variety of ways, although it may not always be necessary to have the ability or skill to meet these expectations. Participation in lesson study influenced teachers' beliefs on self-efficacy and teaching behavior because it focused on responding to the learning process and learning outcomes of learners effectively.

### **Conclusion and Recommendations**

After the research, we have found the conclusion about the enhancing professional development with lesson study training for Lecturers at Higher education institution indicated the high level of efficiency; most participants can develop their high level for the ability on lesson plan design; and the participants gaining very good skill on lesson study process

The findings of this research can be helpful for teachers, lecturers, educators, and administrators in Lao PDR who is working on educational development. The results of this study confirmed that a lesson study is an excellent approach for teachers' and lecturers' professional development, both in terms of activities to raise cognitive and skill effectiveness and competencies that are essential and important to the profession. In higher education, lecturers' professional development is a lifelong task because lecturers' professional development will help improve the quality and methods of teaching; save time and reduce wastage; help them to design the lesson plan, teach, observe, and reflect efficiently; and make them always keep pace with new changes, especially in today's rapidly changing learning society. Moreover, this result contains best

practices and lessons learnt, which can serve as a reference in policy formulation, development, and implementation of activities related to lecturers' professional development.

Particularly, these study suggests that the higher education institutions in Lao PDR should be using these results as the basis for policy formulation or relevant work plans in the process of continuous systematic exchange of knowledge between lecturers, in order to create an identity of teaching and learning management with lesson study as professional development in the context of Lao PDR. There should be follow-up and evaluation of the impact of learners' outcomes arising from the results of using the research in the classroom due to this research having a limitation on its duration. The lesson study process from this research can be used to expand the research results by integrating the principles and concepts of lesson study with the professional learning communities in order to further develop the teaching profession.

### **Ethical consideration**

This article is part of a Ph.D. thesis in the development of a training course to promote a lesson study process for lecturers of Souphanouvong University, Lao People's Democratic Republic. The thesis was undertaken through the Curriculum and Instruction Program, Faculty of Education, Khon Kaen University. This research was approved by the Khon Kaen University Ethics Committee in Human Research of University (No.: HE653026; IRB00012791; and FWA00003418).

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