

The Effects of Lesson Study on Learning Community to the Learning Quality

Liza Putri Damayanti¹, Sri Sumarni², Sukatiman³, Waluyo⁴

^{1,2,3,4} The Faculty of Teacher Training and Education Sebelas Maret University Indonesia

¹ lizaputridm@gmail.com, ² srisumarni@staff.uns.ac.id , ³ sukatiman@fkip.uns.ac.id ,

⁴ drswaluyo@yahoo.com

Abstract: Lesson study requires collaboration between lecturers, and the community which makes it applicable. The learning community consists of fellow lecturers which share a purpose for mutual learning. In the learning community, lecturers not only learn from teaching other lecturers but can also discuss appropriate teaching methods in a learning process. In the learning community educators can learn from one another and exchange opinions to improve learning in accordance with the needs of students. The learning community can also see how students receive learning, so educators can find students with less categories so that there are no students left behind in learning. This study aims to determine the effect of the learning community through lesson study on the quality of a learning model. The study methodologically designed with quantitative method to study two variables, namely the lesson study community as an independent variable and the quality of learning as the dependent variable, the sampling technique with positive sampling is the lesson study community member, the data collection technique with a questionnaire that has been tested for validity and reliability with a simple linear regression analysis obtained a significance value of $0.00 < 0.05$ and $t_{count} = 16.058 > t_{table} 2.306$. The results of the study concluded that the learning community with criteria including: a sense of unity, motivation, cooperation, commitment, support, seriousness, reciprocity and organizational structure greatly influences the learning community which includes the content, process and assessment of learning.

Keywords: learning community, lesson study, learning quality

Introduction

Along with the times, educators are increasingly urged to improve the quality and elevate their level of professionalism by having relevant competencies with 21st century education. As for the typical skills that are urgently needed to realize 21st century learning, among others are learning to know, learning to do, learning to be, and learning to live together. In learning planning, it is necessary to prepare teaching materials, media, methods and learning evaluation. The 21st century learning model is identical to a basic principle which centered on students which in nature is collaborative, contextual and integrated with society. In order to realize learning relevant to the 21st century, the role of educators is needed. Therefore the role of educators is very necessary to support a productive learning community and this learning community will be created with lesson study. Lesson study concerns the development of learning methods adapted from Japan as an assessment of the learning process in improving the quality of education and carried out collaboratively among educators on an ongoing basis, thus the learning process can be documented for analysis and obtain valuable information in an effort to improve the teaching quality of teaching staff (Roback et al, 2017).

Teachers professional development, first and foremost is driven by the need to expand and update their practices, skills and beliefs. The stimuli for these needs are partly due to changes in curriculum, new classroom technology, advances in pedagogy, or all of them (Hammond, et al., 2019). However, the underlying effort on these stimuli is to improve student learning outcomes, which emphasizes either on their understanding, skills, attitudes, or involvement. (Doig, B., & Groves, S. 2011)

Fernandez (2003) notes that Lesson Study is a typical cycle of planning, implementation and observation carried out by fellow researchers or experts, analytical reflection on learning situations which are collaboratively occurred and increased (revised). Lesson study is a concrete step in establishing a learning community. Lewis (2002) further describes the Learning Study Cycle as having four phases: goal setting and planning - including developing lesson plans; teaching research lessons - enabling observation of lessons; post-lesson discussion; and the results of consolidated learning, which share many broad-range of consequences.

Lesson Study has a great positive effect on improving learning on meaning-oriented teachers. Vermunt, et al. (2019) argues that implementing lesson study is one of the efforts which are applicable in establishing learning communities. Through this method, it enables educators to discuss appropriate learning that is applied in the classroom. In addition, being able to work with the community, it enables educators to get to know students in their process of receiving the learning. Takahashi & Yoshida (2004) commented that many schools and teachers work hard in changing teaching models that aim to maximize student learning. There are many educational reports published in recent years encouraging collaboration among teachers. Professional development through study lessons provides many highly qualified approaches to professional development that are believed to improve student practice and learning in the classroom, which is collaborative and concrete, and sustainable for teachers. The lesson study approach allows teachers to engage in their own learning.

Akiba et al. (2019) reported that the teacher learning community has been promoted as a promising approach to systematically promoting improvements in student teaching and learning. After observing the learning process through the study of lessons, it was found that the facilitator's focus on student thinking, the quality of the material, and the duration of the learning lesson were significantly related to teacher participation in an effective inquiry process, which in turn was associated with positive changes that could be observed in teacher knowledge, efficacy self, and hope. By implementing lesson study, it is hoped that the learning community will further focus on students with low abilities and can significantly improve their learning quality as well. In addition, Chichibu, & Kihara (2013) observed that in Japanese schools, especially between primary and secondary schools, there is a correlation between learning methods and indicators of professional learning communities. Hart, L. C., & Carriere, J. (2011) suggested that the development, implementation and change of teachers in Lesson Study occurred when they participated showed the perspective of students who were richer qualitatively and in the perspective of curriculum developers.

The Government through Permenristekdikti No 44 of 2015 concerning the National Standards of Higher Education in improving the quality of learning, there are 3 main standards, namely standards for learning content, learning process standards and learning assessment standards. The standard of learning content is the minimum criteria for the depth and breadth of the learning material. The learning process standard is the minimum criteria on the implementation of learning in study programs to obtain learning outcomes. Meanwhile, learning assessment standards are the minimum criteria regarding assessments of students' learning processes and learning outcomes in the context of fulfilling the learning outcomes of the graduates.

This is why lesson study is an innovative constructive learning tool and a meaningful study guide product which improves the quality of learning (Sutadij, et al., 2013). This study seeks to find out the effect of community lesson study on the quality of learning. Hopefully this study enriches knowledge, insights and skills regarding the need to establish a learning community among educators.

Method

This study was designed with a quantitative method through correlational research to describe and measure the level of interrelation between two or more variables (John Creswell 2015). This research was conducted in the Building Engineering Education of FKIP, UNS in the Building Materials Science course. The sampling in this study was carried out using total sampling, where the total samplings were taken from the entire population. The population in this study was all members of the lesson study research team consisting of lecturers and students. The sample size is determined based on the Isaac and Michael's table (Sugiono 2012), for a total population of 10, the data used for the sample as many as 10 samples.

Data collection in this study was carried out by distributing questionnaires to teaching staffs and research team who applied the lesson study. The learning community questionnaire used with the following grids:

Table 1 Learning community instrument lattices

No	Criteria	Indicator
1.	Feel United	A Sense of Belonging One Family Interests are the same Sense of Concern
2.	Motivation	Willingness to study Willing to discuss Willingness to exchange opinions
3.	Cooperation	Responsible Contribution Exert maximum capacity
4.	Commitment	Strong determination Consistent Serious
5.	Support	Learning Support. Educator Support. Leader Support.
6.	Seriousness	Focus on the Learning Process. Learning is seen as a Social Experience. Learning is Problem Solving.
7.	Reciprocal	Giver Receiver The advantage
8.	Organizational Structure	Leader Member

Meanwhile, the learning quality questionnaire used with the following grids:

Table 2 Lattice of learning quality instruments

No	Indicator	Descriptor
1	Learning Content Standards	Students master the theoretical concepts of certain fields of knowledge and skills in general
	Learning Process Standards	Students master the theoretical concepts of certain fields of knowledge and skills in depth
	Learning Assessment Standards	Characteristics of the Learning Process (Interactive, Holistic, Integrative, Scientific, Contextual, Thematic, Effective, Collaborative and Student-Centered) Learning Process Planning (Appropriate Semester Learning Plan) Implementation of the Learning Process (There is interaction between educators, students and learning resources in the learning environment) Student Learning Load Principles of Assessment (Education, Authentic, Accountable and Transparent conducted in an integrated manner) Assessment Techniques and Instruments (Observation, Participation, Performance, Written Test, Oral Test and Questionnaire) Assessment Mechanisms and Procedures Evaluation Appraisal Reporting Graduation of Students

Testing the reliability and validity of the questionnaire with SPSS program version 20. The analysis technique is done using a simple linear analysis test.

Results and Discussion

The learning community plays an important role in implementing study lessons conducted through 3 stages, namely planning, do and see. Through the learning community, an applied learning can be discussed and evaluated all along with the learning community. At the planning stage, community participation is needed in planning and designing joint lesson designs. In the do stage, the learning community observes learning carried out in accordance with the lesson design in addition to recording student activities in receiving learning. Meanwhile, at the see stage, the learning community evaluates the learning that has been done and presents its findings during the do session. The results of the implementation of the session are a reference for improvement in the implementation of the next lesson study model. The following are the results of tests that have been carried out:

Validity Test and Reliability Test

Validity and reliability tests for the learning community (variable X)

The results of the validity test that has been done from 30 item items found 29 item items were declared valid and only 1 item item was declared invalid. The following are the results of the reliability test:

Table 3 Reliability Test of Learning Community

Cronbach's	
Alpha	N of Items
0,929	30

Based on the results of Cronbach's alpha values obtained 0.929 categorized as very high reliability.

Validity and reliability tests for the learning quality (variable Y)

The results of the validity test that has been done from 65 item items found 54 items were declared valid and only 11 item items were declared invalid. The following are the results of the reliability test:

Table 4 Reliability Test Of Learning Quality

Cronbach's	
Alpha	N of Items
0,941	65

Based on the results of Cronbach's alpha values obtained 0.941 categorized as very high reliability.

Test Prerequisite Analysis

The analysis prerequisite test is used as a condition for hypothesis testing using simple linear regression analysis. The prerequisite tests used were normality test and linearity test. Testing is done using SPSS version 22.

The normality test aims to determine whether in the regression model, the residual variable has a normal distribution or not to determine whether or not the data distribution is normal is carried out by the Kolmogorov Smirnov test.

Table 5 Normality test results

Research variable	Kolmogorov Smirnov Z	Asymp. Sig	Information
Learning communities towards the learning quality	0,206	0,200	Normal

Based on the above table, the value of Kolmogorov Smirnov Z is 0.206 and the Asymp value is obtained. Sig (2-tailed) of 0.200 is greater than 0.05, it can be concluded that the data is normally distributed.

Linearity test aims to determine whether two variables have a linear relationship or not.

Table 6 Linearity test results

Research variable	Sig. Deviation from Linearity	Significance Level	Information
Learning communities towards the learning quality	0,984	0,05	Linier

Based on the linearity test results table, it is known that the value of Sig. Deviation from Linearity of $0.984 > 0.05$, it can be concluded that there is a linear relationship between the learning community and the quality of learning.

Hypothesis Testing

After conducting the analysis prerequisite test, the next step is testing the hypothesis. The hypothesis used is to see the positive influence of the lesson study community on the quality of learning. Hypothesis testing uses simple linear regression analysis. Hypothesis test calculations are performed using the SPSS version 22 program.

Table 7 Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	,985a	,970	,966	1,564

a. Predictors: (Constant), Learning Community

b. Dependent Variable: Learning Quality

The table above explains the correlation / relationship (R) value which are equal to 0.985. The results obtained by the coefficient of determination (R Square) of 0.970, where a conclusion can be derived that the independent variable influence (Learning Community) on the dependent variable (Learning Quality) is 97%.

Table 8 Anova

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	630,926	1	630,926	257,865	,000b
	Residual	19,574	8	2,447		
	Total	650,500	9			
a. Dependent Variable: Learning Quality						
b. Predictors: (Constant), Learning Community						

From the table it is known that the F-count value of 257,865 with a significance level of $0,000 < 0,05$, it can be concluded that the regression model can be used to predict learning quality variables or in other words there is the influence of Learning Community variables (X) on Learning Quality variables (Y).

Table 9 Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	T	Sig.	
1	(Constant)	-,610	3,714		-,164	,874
	Learning Quality	2,096	,131	,985	16,058	,000
a. Dependent Variable: Learning Quality						

Based on the table above, Constant is known to be -0.610, meaning that the consistent value of the Learning Quality variable is 0.610. The regression coefficient X of 2.096 states that every 1% increase in the value of the Learning Community, the value of Learning Quality increases by 2.096. The regression coefficient is positive, so it can be seen that the direction of the effect of variable X on Y is positive.

Decision Making in a Simple Regression Test:

- Based on the significance value: from the Coefficients table a significance value of 0,000 <0.05 is obtained, where a conclusion can be derived that the Learning Community variable (X) influences the Learning Quality variable (Y).
- Based on t value: tcount is known as 16.058 > ttable 2.306, so it can be concluded that the Learning Community variable (X) influences the Learning Quality variable (Y).

Factors affecting the lesson study community include: a sense of unity, motivation, cooperation, commitment, support, sincerity, reciprocity, organizational structure. Where the results of the learning community performance questionnaire in the lesson study showed very good value shown from reliable and valid. The learning community team shows a high level of concern because the community is mutually beneficial in giving and receiving information in preparing learning in class, so they can work together and discuss. Perry and Lewis (2009) comment: Lesson study may stand a better chance of survival than specific instructional reforms because it is a means for bringing practice into line with goals that can be used flexibly to support various reform ideas. (p. 387)

The learning system by involving the lesson study community with good performance can show the results of a good learning quality assessment also viewed from the content standard criteria and assessment standards in learning

Conclusions

The learning community plays an important role in implementing lesson study which divided into 3 stages, namely planning, do and see. Through the learning community, an applied learning can be discussed and evaluated all along with the learning community. The lesson study community do influence the learning quality, and by having a good learning community performance with criteria including: a sense of unity, motivation, cooperation, commitment, support, seriousness, reciprocity and organizational structure, the learning quality which includes the content, process and assessment of learning can be significantly improved.

References

- Akiba, M., Murata, A., Howard, C. C., & Wilkinson, B. (2019). Lesson study design features for supporting collaborative teacher learning. *Teaching and Teacher Education*, 77, 352-365. <https://doi.org/10.1016/j.tate.2018.10.012>
- Asmani, J. M. (2014). *Tips Membangun Komunitas Belajar di Sekolah*. Yogyakarta : Diva Press.
- Chichibu, T., & Kihara, T. (2013). How Japanese schools build a professional learning community by lesson study. *International Journal for Lesson and Learning Studies*, 2,(1), 12-25.
- Creswell, J. (2015). *Riset pendidikan: Perencanaan, pelaksanaan, dan evaluasi riset kualitatif & kuantitatif*. Yogyakarta: Pustaka Pelajar.
- Doig, B., & Groves, S. (2011). Japanese lesson study: Teacher professional development through communities of inquiry. *Mathematics teacher education and development*, 13,

(1), 77-93.

- Fernandez, C., Cannon, J., & Chokshi, S. (2003). A US–Japan lesson study collaboration reveals critical lenses for examining practice. *Teaching and Teacher Education*, 19, 171–185.
- Fikri, K. (2014). Implementasi Lesson Study Dalam Membentuk Learning Community di Program Studi Pendidikan Biologi.
- Hammond, L.D., Flook, L., Cook-Harvey, C., Barron, B., Osher, D., (2019), Implications for educational practice of the science of learning and development, *Applied Developmental Science*, DOI: 10.1080/10888691.2018.1537791
- Hart, L. C., & Carriere, J. (2011). Developing the habits of mind for a successful lesson study community. In *Lesson study research and practice in mathematics education* (pp. 27-38).
- Lewis, C. (2002). A handbook of teacher-led instructional change. Philadelphia: Research for Better Schools.
- Lewis, C. C., Perry, R. R., & Hurd, J. (2009). Improving mathematics instruction through lesson study: A theoretical model and North American case. *Journal of Mathematics Teacher Education*, 12, 285–304. DOI 10.1007/s10857-009-9102-7.
- Roback, P., Chance, B., Legler, J., Moore, T. (2017). Applying Japanese Lesson Study Principles to an Upper-level Undergraduate Statistics Course, *Journal of Statistics Education*, 14, (2), 2006, <https://doi.org/10.1080/10691898.2006.11910580>
- Sugiyono. (2010). *Statistika untuk Penelitian*. Bandung: Alfabeta.
- Sutadji, E., Sutama, I. W., & Askury, A. (2013). Pembelajaran Bermakna Dengan Lesson Study Untuk Meningkatkan Mutu Pembelajaran Di Sekolah Dasar. *Jurnal Ilmu Pendidikan Universitas Negeri Malang*, 19, (2).
- Takahashi, A., & Yoshida, M. (2004). Lesson-study communities. *Teaching children mathematics*, 10, (9), 436-437.
- Vermunt, J. D., Vrikki, M., van Haleim, N., Warwick, P., & Mercer, N. (2019). The impact of Lesson Study professional development on the quality of teacher learning. *Teaching and Teacher Education: An International Journal of Research and Studies*, 81, (1), 61-73, <https://doi.org/10.1016/j.tate.2019.02.009>