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SUCCESSES AND CHALLENGES IN LESSON STUDY OF SCIENCE TEACHERS IN FUKUYAMA CITY, JAPAN

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Abstract

This paper examines the advantages and disadvantages of Lesson Study among junior high school science teachers in Fukuyama City, Hiroshima, Japan. Using the descriptive-survey research design to the two groups (young teachers and veteran teachers) of all the junior high school science teachers in Fukuyama City, assessment on the successes and challenges on Lesson Study was carried out. Survey questionnaire, interview, and observation sheets were used to assess the three categories namely professional development, administrative support, and team cooperation among the teachers, in the implementation of Lesson Study. The deep views and opinions were probed using open-ended questions. It was found out that science teachers achieved successes in terms of professional development, administrative support, and team cooperation. However, the challenge faced by teachers is the availability of time. The t-test of independent means made on the relevant data of the two groups implies that young and veteran teachers are of equal variances in terms of their successes and challenges in Lesson Study.

Keywords

Lesson Study, Professional Development, Administrative Support, Team Cooperation

1. Introduction

Jugyou kenkyou (授業研究) or Lesson Study is a Japanese model of teachers' professional development that improves the quality of teaching as well as enriches students' learning (Meng, C.C., et.al. 2013). Fetalvero, et.al (2014) stated that Lesson Study refers to a process in which teachers progressively strive to improve their teaching methods by working with other teachers to examine and critique one another's teaching techniques. Lesson Study includes five major components that are consistent with the recommendations for effective professional development. Lesson Study is a student centered, content based, collaborative, teacher-led, reflective practice (Lewis, 2002). It has been established that Lesson Study is an effective method of enriching students' learning as shown from different researches conducted in different countries. They work collaboratively and systematically to conduct research on teaching and learning in the classroom with a goal to improve their quality of teaching at the same time enrich students' learning experiences (Oyanagi, et.al. 2017).

Since Lesson Study had started a quite long period of time in Japan, teachers almost perfected its process and identified steps that are effective in promoting professional development while improving students' achievement (Isoda, 2008). Professional development among teachers has been established as one of the greatest effects of Lesson Study. The development of teachers professionally can be attained through learning from students and through learning from colleagues (Cheng and Yee, 2012). When Lesson Study is used as a professional development, it improved teachers' reflective and critical thinking about teaching, thus, new different teaching approaches were utilized.

The success of Lesson Study in Japan is attributed to factors such as administrative support (Ngang, T. et.al. 2015). Administrative support is very important to ensure the success of Lesson Study since teachers need to collaboratively plan, deliver, observe, reflect, and discuss lessons that are often related to difficult aspects of the subjects (Ngang, T. et.al. 2015). Through the support of the administration, teachers are able to achieve the objective of each Lesson Study smoothly.

Furthermore, Lesson Study has made the teachers more aware of the importance of paying

attention to every aspect of instruction and examining their teaching practice (Lucenario, J. L. S., et.al. 2004). In addition, they also become more cognizant on their own capabilities to question and modify prescribed instructional materials to achieve teaching experience (Lucenario, J. L. S., et.al. 2004). However, some of the challenges of Lesson Study as stated by Chokshi and Fernandez (2004) are teachers' conception of the time it takes to collaborate with others, the need for teachers to have greater content knowledge than teachers already possess, and the belief that teachers are reluctant to be critically evaluated by their peers. These challenges reflect the variation within cultural communities of practices.

This study established the perspective of Japanese junior high school science teachers in implementing Lesson Study and to identify the successes and challenges they encountered in the implementation of Lesson Study in terms of professional development, administrative support, and team cooperation.

2. Methods

This study used descriptive survey research design, where participants answered questions administered through the survey-questionnaire. The researcher underwent a process of obtaining data for research based on the existing rules and regulation in Japan educational system and bureaucracy.

The respondents were all the junior high school in Fukuyama City which includes 69 science teachers who answered the pretest and post-test. The teachers answered the survey questionnaire before and after the implementation of Lesson Study initiated by the City Board of Education which lasted 6 months across all junior high schools in Fukuyama City which are divided into six blocks namely 福山市立鳳中学校 (Fukuyama Shiritsu Otori Junior High School), 福山市立誠之中学校(Fukuyama Shiritsu Seishi Junior High School), 福山市立大成館中学校 (Fukuyama Shiritsu Taiseikan Junior High School), 福山市立城北中学校(Fukuyama Shiritsu Johoku Junior High School), 福山市立芦田中学校(Fukuyama Shiritsu Ashida Junior High School), and 福山市立神辺西中学校 (Fukuyama Shiritsu Kannabe Junior High School) for the school year 2017- 2018.

Survey questionnaire, interview, and observation sheets were used as the instruments of the study to be prepared by the researcher. The survey questionnaire was validated from the



Hiroshima University Graduate School of Education for content validity and was tried out to teachers taking up master’s degree for reliability.

After participants answered the questions, the researcher described the responses given as highly advantageous (HA), advantageous (AD), neutral (NE), disadvantageous (DA), and highly disadvantageous (HD). The results were analyze using appropriate tools such as mean, and average weighted mean. The t-test of independent means is a statistical treatment used in a research that calls for comparison of the means of two independent groups. The t-test of independent means was appropriately applied because this study was composed of two independent groups and calls for comparison among the two. This statistical treatment was used to know the significant difference between the perspective of junior high school science teachers with a teaching experience of below 10 years (young teachers) from junior high school science teachers with a teaching experience of 10 years and above (veteran teachers) in the implementation of Lesson Study.

3. Results and Discussion

After conducting the research, the result showed that science teachers in the junior high schools have the perception on the advantages and disadvantages of Lesson Study in terms of Professional Development, Administrative Support, and Team Cooperation.

Table 1: *Successes and Challenges of Lesson Study in terms Professional Development*

Professional Development	Mean	
	Pretest	Post-test
I am learning new and different ideas from the Lesson Study.	4.24 (HA)	4.22 (AD)
Knowledge gained from the Lesson Study improves my teaching skills.	4.12 (AD)	4.15 (AD)
I look forward to trying out new things in my teaching because of Lesson Study.	4.24 (HA)	4.21 (HA)
The Lesson Study increases my enthusiasm for teaching.	3.94 (AD)	3.96 (AD)
I am not confident in teaching when my colleagues are observing me.	2.96 (NE)	2.87 (NE)
The Lesson Study encourages me to share what I had learned with my colleagues.	4.03 (AD)	4.03 (AD)
The Lesson Study encourages me to reflect on aspects of my teaching.	4.25 (HA)	4.25 (HA)
The Lesson Study gives me useful ideas of how to improve student outcomes.	4.13 (AD)	4.13 (AD)
The Lesson Study enhances my content and pedagogical content through sharing of ideas during planning and post-lesson discussions.	4.16 (AD)	4.19 (AD)
I have difficulty in preparing my lesson for the Lesson Study.	3.85 (AD)	3.9 (AD)
My class has improved because of what I learned from Lesson Study.	3.72 (AD)	3.87 (AD)
Average Weighted Mean (AWM)	3.97(AD)	3.98(AD)

The table clearly shows that Lesson Study is advantageous in promoting professional

development among Junior High School science teachers in Fukuyama City as it is given an Average Weighted Mean of 3.97 and 3.98 for pretest and post-test respectively. It is also notable that Lesson Study encourages teachers to reflect on aspects of their teaching with the description of the their Average Weighted Mean which is Highly Advantageous. This confirms the statement of Lucenario, J. L. S., et.al. (2004), that Lesson study has made teachers to pay more attention to every aspect of their instruction and to evaluate more their teaching practice. Also, the teacher's responses supports Meng, C.C., et. al. (2013), that Lesson Study helps teachers gain and enhance their pedagogical content knowledge.

Another factor that made the Lesson Study advantageous or disadvantageous is the support given by the administration and the approval of the community to its implementation. To know the result, Table 2 shows the data on administrative support and community approval to the implementation of the Lesson study.

Table 2: *Successes and Challenges of Lesson Study in terms of Administrative Support*

Administrative Support and Community Approval	Mean	
	Pretest	Post-test
The administration easily approves request for tools and instructional materials needed in teaching.	3.07 (NE)	3.06 (NE)
Supplies necessary for Lesson Study experimentation such as reagents, chemicals, and equipment are provided.	3.21 (NE)	3.19 (NE)
The administration gives incentive to teachers who conducting the Lesson Study.	3.63 (AD)	3.71 (AD)
The school regularly evaluates how well they are achieving goals in the Lesson Study.	3.37 (NE)	3.40 (AD)
The administration gives freedom to teachers on how the Lesson Study be implemented and improved.	3.75 (AD)	3.72 (AD)
If problems, questions, and issues arise in the Lesson Study process, the administration is always ready to help or answer.	3.62 (AD)	3.60 (AD)
The administration sends the teachers to trainings, and seminar regarding Lesson Study.	3.04 (AD)	2.96 (DA)
The parents are happy and gives positive comments with the in the implementation of the Lesson Study.	2.88 (NE)	2.84 (NE)
The parents are satisfied with how their children progresses during the implementation of Lesson Study.	2.90 (NE)	2.88 (NE)
The parents maintain a good contact with teachers, checking and monitoring the attendance of their children	3.49 (AD)	3.43 (AD)
The school frequently communicates with teachers and colleagues in planning to improve assessment practices.	4.00 (AD)	3.97 (AD)
The student's evaluation and improvement during the Lesson Study are discussed by parents and teachers.	3.59 (AD)	3.47 (AD)
Average Weighted Mean AWM)	3.38 (AD)	3.35 (NE)



Table 2 shows the data for administrative support and community approval in implementing Lesson Study in Fukuyama City junior high schools. As gleaned from the table, it clearly shows how the JHS science teachers perceived administrative support and community approval as advantageous. This shows that the implementation of Lesson Study in junior high schools is supported by higher officials. One evidence is the current implementation of Lesson Study which is initiated by the City Board of Education. It is important to note that JHS science teachers perceived that the administration frequently communicates with teachers and colleagues in planning to improve assessment practices having a highest mean which are 4.00 and 3.97. With an Average Weighted Mean of 3.38 and 3.35 for pretest and post-test respectively, it is perceived by JHS teachers that it is an advantage that Lesson Study is supported by school administration and approved by the parents or the community.

As for the team cooperation among teachers, the data is shown in table Table 3.

Table 3: *Successes and Challenges of Lesson Study in terms of Team Cooperation*

Team Cooperation	Mean	
	Pre Test	Post Test
There is a lack of communication among and with my colleagues	2.49 (AD)	2.47 (AD)
There is a lack of communication with authority or administration.	2.62 (NE)	2.54 (AD)
I am nervous and self-conscious to open my ideas and opinion with my colleagues.	2.37 (AD)	2.31 (AD)
I have inhibitions to collaborate with my colleagues as we plan instruction and analyze teaching.	2.47 (AD)	2.55 (AD)
I believe that my own way of teaching is better than Lesson Study approach.	2.44 (AD)	2.47 (AD)
I am sometimes hurt when they critique my teaching during the Lesson Study process.	2.26 (AD)	2.24 (AD)
Average Weighted Mean (AWM)	2.44 (AD)	2.43 (AD)

Table 3 reveals that team cooperation among science teachers is an advantage in implementing Lesson Study. It can be gleaned from the table that the reverse equivalent of the Average Weighted Means of the two groups which are 2.44 and 2.43 are described as Advantageous (AD) which means cooperation and good communication exist among teachers participating in the Lesson Study.

To compare the significant difference between the pretest and post-test, table 4 shows the details.

Table 4: Comparing Successes and Challenges of JHS Young and Veteran Science Teachers in Lesson Study

Categories	Average Weighted Mean		t-value	Critical Value
	Pre-test	Post-test		
Professional Development	3.97	3.98	0.0817	2.086*
Administrative Support	3.38	3.35	0.182	2.074*
Team Cooperation	2.44	2.43	0.1519	2.228*

**no significant difference*

The table shows the t-test comparing the teachers' successes and challenges in implementing Lesson Study in terms of professional development, administrative support, and team cooperation. In all the three categories, teachers have almost the same perception in the pretest and post-test shown in the table where in there is no significant difference between the two groups. The t values in all the five categories are less than their respective critical value showing no significant difference. This only shows the reliability of the advantages of Lesson Study.

4. Conclusions

In view of the findings in this study, the following conclusions about the advantages and disadvantages of Lesson Study are drawn.

In the implementation of Lesson Study in junior high schools, science teachers achieved successes or advantages in terms of professional development, administrative support, and team cooperation. Science teachers are growing professionally in their career through learning from other teachers' experiences and through sharing of ideas to further improve their craft. Also, in the implementation of the Lesson Study, teachers get support from the administration through the provision of their needs. Team cooperation among Science teachers are promoted through constant collaboration of ideas to further promote the learning among students. However, the challenge faced by teachers in the implementation of Lesson Study is the availability of time. Some of the teachers have difficulty to find time to regularly implement Lesson Study.

There is no significant difference in the successes and challenges between the pretest and post-test in implementing Lesson Study. The t stat on the relevant data on the three categories such as professional development, administrative support, and team cooperation are less than their respective critical value showing no significant difference. Therefore, the successes and challenges before and after the city-wide implementation of Lesson Study are the same for both

young and veteran teachers. Also, based on the results and conclusions drawn from this study, it is recommended that Lesson Study be promoted and implemented regularly in all schools at all levels and similar studies be made to test the reliability and viability of the Lesson Study in other levels such as Elementary and College Levels.

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