

# Applying the Lesson Study Method in a Graduate Teaching Methods Course: Implications for Improving College Teaching

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## Abstract

The lesson study method is a community of practice approach to professional development designed to assist educators in increasing their content knowledge and pedagogical skills. This study focused on how lesson study was implemented in a graduate teaching methods course for students who had career interests in education and extension with varying levels of former teaching experience. Students were grouped into educational teams and charged with applying the lesson study method to plan and teach an agricultural lesson to a select group of students. As a result of the lesson study method, students' teaching self-efficacy scores increased substantially throughout the semester, for both experienced and novice teachers. However, the most growth was realized for novice teachers. It is recommended that the lesson study method be used with graduate teaching assistants as a professional development tool to improve their teaching effectiveness.

## Introduction

Students need a forum in which they can actively solve problems, make decisions, communicate in both oral and written form, and work in teams (Evers et al., 1998; Robinson et al., 2007). Assistance in acquiring these skills is perhaps even more pertinent for students who are preparing to become educators in either formal or non-formal settings. According to Lieberman and Mace (2010), "there is a worldwide concern that schools must change to meet the demands of rapidly changing demographics, the globalization of the economy, as well as the technological and cultural changes that are happening around us" (p. 77). To that end, pedagogical professional development is important and necessary (Lieberman and Mace, 2010).

Numerous European countries have begun altering the way they conduct professional development for teachers (Organisation for Economic Co-Operation and Development, 2005). However, the United States has yet to realize the effect that critical self-reflections can

have on teachers' effectiveness in the classroom (Darling-Hammond et al., 2009). Teaching students how to reflect and develop metacognitive skills is a difficult but worthy task (Tanner, 2012).

New teachers need to be inducted into the teaching profession with mentors who can help them with pedagogy and content (Fieman-Nemser, 2003; Greiman, 2010; Robinson, 2010), especially those who have little teaching experience and are considered novices. Research suggests that when compared to experts, novice teachers "showed more time-consuming, less efficient planning, encountered problems when attempts to be responsive to students led them away from scripted lesson plans, and reported more varied, less selective post lesson reflections" (Borko and Livingston, 1989, p. 473). Lieberman and Mace (2010) argued that professional development opportunities should exist "that use professional learning communities, center on the study of practice, and incorporate the use of technology" (p. 77). One approach for potentially rich and impactful professional development for teachers is the use of the lesson study method (LSM) (Fernandez, 2002; Lewis et al., 2006).

LSM "brings together groups of teachers to discuss lessons that they have first jointly planned in great detail and then observed as they unfolded in actual classrooms" (Fernandez, 2002, p. 393). LSM assists teachers in learning from their own practice through reflection (Fernandez, 2002). The purpose of LSM is to allow teachers within a particular discipline to collaborate in identifying a common problem that students struggle to solve and develop a unified lesson that addresses the problem. Once developed, teachers critique each other on the delivery of the lesson to students. At the end of each lesson, teachers reunite to reflect and modify the lesson plan to improve its effectiveness before re-teaching the material to a different group of students. Each teacher gets a turn at teaching the lesson to a similar age group of students. The hope is to improve

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the lesson's content and the teachers' pedagogical skills each time the lesson is taught. Lewis et al., (2006) stated that LSM assists teachers in learning new knowledge, improving their commitment to the art of teaching, and increasing necessary resources for lessons, thus creating an excellent mechanism for professional development (Fernandez, 2002).

Because LSM requires modeling and observation among all teachers who participate, it has implications for increasing efficacy levels regarding their teaching ability (Bandura, 1977; 1993). Therefore, this study was based on Bandura's (1977) self-efficacy theory prior to and at the end of the semester.

Self-efficacy is needed to help people achieve at performing tasks (Bandura, 1993). Self-efficacy is based on allowing people to observe a model demonstrate aspects of a task or skill and then apply that task or skill in a real life setting (Bandura, 1977). Experience in a particular domain is a key factor that impacts a person's level of self-efficacy. Weidert et al. (2012) found that university graduate teaching assistants (GTAs) who had previous teaching experience rated themselves as more engaging in the classroom than did those with no previous teaching experience. However, additional research is needed that compares experienced teachers with their novice counterparts "before, during, and after teaching" (Westerman, 2000, p. 292) experiences.

**Purpose and Objectives**

The purpose of this pilot study was to determine the total amount of change in self-efficacy of students who participated in a semester-long advanced teaching methods course in the Department of Agricultural Education, Communications and Leadership (AECL) at Oklahoma State University (OSU), using lesson study. The overarching objective for this study was to compare the total change in self-efficacy scores of students who had formal teaching experience prior to enrolling in the course with those who did not.

**Materials and Methods**

A variety of students enroll in the advanced teaching methods course at OSU each spring semester. According to the Oklahoma State University Catalog (2014-2015), AGED 5823 – Advanced Teaching Methods is described as, "Advanced concepts and methods relevant for both formal and informal presentations. Effects methods may have on individuals involved in the learning experience. Demonstrations of proficiency in use of various advanced methodologies, technologies and concepts" (p. 201).

The course attracts students from an array of academic majors. Each cohort includes a wide variety of diversity ranging in teaching experience, the type of graduate degree being sought, whether the students are domestic or international, and the departments in which the students are enrolled (i.e., the course is a requirement in AECL and an elective in all other depart-

ments in the College of Agricultural Sciences and Natural Resources [CASNR] at OSU). Specifically, the demographic makeup of the students used in this study (N=11) consisted of seven males and four females (see Table 1). Of the eleven students enrolled, five had formal teaching experience (i.e., these individuals had either taught in formal settings or participated in a semester-long student teaching internship) and six had no formal teaching experiences. Three were international students and eight were domestic students. Six were working on Master's degrees and five were working toward doctoral degrees. Four students were enrolled in the department of agricultural education and seven students were enrolled as general agriculture majors.

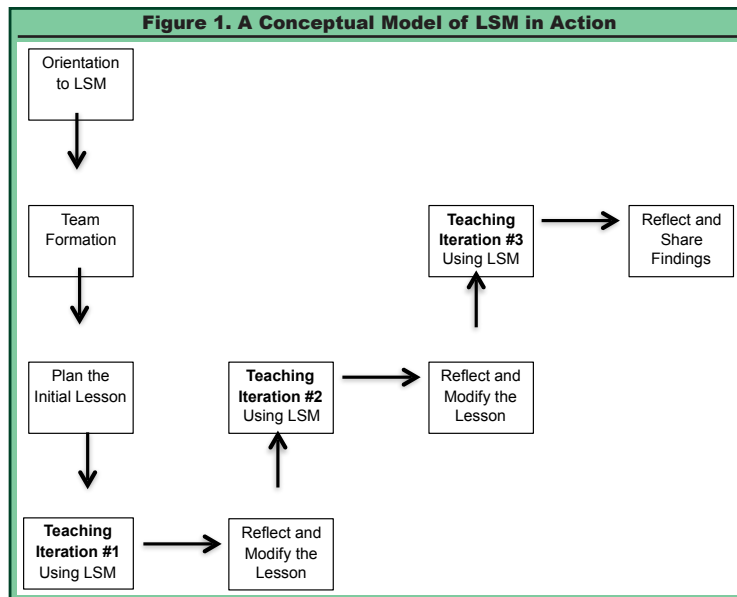
Due to the rich diversity of the class, a need existed to provide a learning experience that would be fruitful for both novice and experienced teachers. The lead instructor wanted to allow students to work in teams, reflect and use their metacognitive skills and develop rich experiences by teaching in real-life settings. Because LSM assumes students teach and reflect on a lesson multiple times, implications exist for such metacognitive skills to improve self-efficacy (Tanner, 2012).

At the beginning of the 16-week semester, the instructor of record allowed multiple opportunities for information building in which students shared aloud and oriented each other to their academic backgrounds and experiences, the problems in agriculture they were interested in highlighting and ultimately addressing, and the age group of students they would like most to interact with in relation to the assignment (see Figure 1). Once completed, students were allowed to select their own groups, consisting of no fewer than two and no more than three members, for the purpose of completing the lesson study assignment. In each group, students self-selected partners, or teams of individuals, who aligned with their own interests as it related to completing the project. In all, four groups were formed. These groups were similar regarding their academic major, future career plans and agricultural interests. Per the guidelines of the assignment (Robinson, 2011), each team determined who, what, when, how and in some cases, where they would teach their lessons. Specifically, the course syllabus stated that students were to

**Table 1. Demographics of Participants (N=11)**

Characteristic	f	%
Gender		
Male	7	63.6
Female	4	36.4
Teaching Experience		
Yes	5	45.5
No	6	54.5
Degree Being Sought		
PhD	5	45.5
Master's	6	54.5
Geographical Location of Students		
Domestic	8	72.7
International	3	27.3
Department of Enrollees		
Agricultural Education	4	36.4
General Agriculture	7	63.6

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contact the lead instructor to determine a possible date and specific topic (related to the problem you identified) in which you will teach. Ideally, you should plan to teach the lesson at least twice to the same age group of students (Robinson, 2011, p. 4).

The LSM was introduced to students in week five of the 16-week semester. Students were charged to determine the age demographic of students they would like to prepare their lessons and teach (e.g., elementary, high school, college, 4-H youth) and make their own arrangements to teach the multiple iterations of their lessons per the LSM guidelines (Fernandez, 1999). Beginning in week five, the instructor of record allowed students roughly 30 minutes to one-hour at the back end of the three-hour class session for LSM team planning and preparation. During this time, the instructor facilitated and answered questions, cleared up any confusion, helped make contacts for the teaching experiences, and guided the students to a sharper focus regarding the assignment's guidelines and the instructor's expectations. Students conducted their teaching assignments based on their own schedules outside of class time and reflected on them, via an oral poster presentation to the class, as part of their final assignment in week 16.

The essence of this study was to determine if LSM could improve students' levels of self-efficacy related to teaching. Because of its solid reputation and reliability estimates, the questionnaire used for the study was the long version of the Teachers' Sense of Efficacy Scale (TSES), developed by Tschannen-Moran and Woolfolk Hoy (2001). The TSES is a 24-item questionnaire that measures participants' self-efficacies across three constructs – student engagement, instructional practices, and classroom management. Each construct consists of eight items. Essentially, teachers are asked to respond to their ability to perform specific tasks in the classroom related to the three constructs. Because of the small sample size, only basic descriptive statistics (i.e., modes of central tendency) were employed to analyze

the data. A mean difference score was calculated as a form of assessing the practical significance of LSM on students' self-efficacy to teach.

## Results and Discussion

The objective of this study was to determine the total change in teacher self-efficacy scores among graduate students who had teaching experience versus those who did not. It was found that students with formal teaching experiences had the greatest amount of teacher self-efficacy in the area of classroom management prior to ( $M = 6.73$ ,  $SD = 0.84$ ) and at the end of ( $M = 7.68$ ,  $SD = 0.76$ ) instruction. Those without teaching experience had the greatest amount of teacher self-efficacy in the area of classroom management ( $M = 5.98$ ,  $SD = 1.22$ ) prior to instruction and instructional practices ( $M = 8.02$ ,  $SD = 0.95$ ) at the end of instruction.

The greatest amount of growth for both groups was in the area of instructional practices (Mean Differences = 1.38 and 2.71), respectively (see Table 2). Those with teaching experience were least efficacious with student engagement ( $M = 6.10$ ,  $SD = 0.78$  prior to instruction;  $M = 7.33$ ,  $SD = 0.49$  end of instruction). Those without previous teaching experiences had the least amount of efficacy in the area of instructional practices ( $M = 5.31$ ,  $SD = 1.03$ ) prior to instruction and classroom management ( $M = 7.71$ ,  $SD = 1.09$ ) at the end of instruction.

**Table 2. Self-Efficacy Measures at the Beginning of the Semester between those with Teaching Experience and those without Teaching Experience (N=11)**

Variables	Prior to Instruction		End of Instruction		Mean Differences
	M	SD	M	SD	
<b>Teaching Experience (n = 5)</b>					
Student Engagement	6.10	.78	7.33	.49	1.23
Instructional Practices	6.25	1.24	7.63	.69	1.38
Classroom Management	6.73	.84	7.68	.76	.95
<b>No Teaching Experience (n = 6)</b>					
Student Engagement	5.96	1.47	7.79	1.15	1.83
Instructional Practices	5.31	1.03	8.02	.95	2.71
Classroom Management	5.98	1.22	7.71	1.09	1.73

Note. Scale: "1" = "Nothing," "3" = "Very Little," "5" = "Some Influence," "7" = "Quite A Bit," and "9" = "A Great Deal"

## Summary

It appeared that the semester-long, lesson study assignment impacted teacher self-efficacy positively for all students in the course. Students with former teaching experience had the highest perceived self-efficacy scores on all three constructs (i.e., student engagement, instructional practices, and classroom management) prior to instruction. This finding is consistent with work from Prieto and Altmaier (1994) and Tanner (2012) who found that GTAs who had previous teaching experiences also had higher levels of self-efficacy. In contrast, students who had no prior teaching experience had the highest perceived self-efficacy scores on all three constructs at the end of instruction.

The greatest amount of growth in teacher self-efficacy for both groups was noticed in the area of instructional practices. This is somewhat expected since the class students were enrolled was advanced teaching methods and focused almost solely on instructional practices. The least amount of growth for both groups was in the area of classroom management. This could be explained in two ways: 1) the course did not address classroom management specifically; and 2) perhaps the students being taught in the respective locations were on their best behavior and posed no real classroom management issues. Thus, perhaps students in the course did not have to develop or use any classroom management skills.

In contrast, individuals with no former teaching experience had the highest mean scores in all areas at the end of the semester. Further, students with no teaching experience prior to enrolling in the course had the highest gains in Mean Differences scores when compared to their counterparts who had teaching experience. A potential explanation for this finding is that these students had more room for improvement regarding their efficacy and pedagogical understanding (Roberts and Dyer, 2004). Further, since the content and experiences were likely new and novel to them, perhaps they underestimated their sense of efficacy prior to instruction and overestimated their sense of efficacy at the end of instruction when compared to their counterparts who have been entrenched longer as formal educators.

### Recommendations

Viewed as a pilot study, the results favored the use of LSM to improve self-efficacy related to teaching practices. The study suffered from a small sample size and should be replicated with larger groups to determine the impact that LSM has on teacher self-efficacy. Replicating the study across multiple departments, colleges and states would help determine its utility in preparing graduate students for teaching obligations and future careers.

A question that remains is, did the LSM assignment or the course, writ large, make a lasting impact for these students? Future studies should assess this phenomenon in a more experimental way. For example, the lead teacher and researcher offers two sections of the advanced teaching methods course each spring, simultaneously a face-to-face section and an online section. Students in the face-to-face section are exposed to the LSM. However, students in the online section, who receive course information asynchronously, are not. This is due largely because students in the online course typically span multiple time zones across various geographic regions of the United States, thus, making the use of lesson study (i.e., team building and planning) ineffective. As such, comparisons should be made between these two groups to understand better how the intervention of LSM affects students' self-efficacy toward teaching.

### Discussion

Although LSM is a method that has been used primarily at the primary and secondary levels (Fernandez, 2002), it has implications for improving the teaching self-efficacy of current and aspiring college instructors, which is an important phenomenon to consider (Prieto and Altmaier, 1994). Because universities across America rely on GTAs to help deliver important content to undergraduate students in classroom and laboratory settings, it is important for them to receive proper training and preparation (Prieto and Altmaier, 1994). Numerous institutions have teaching excellence centers that offer training workshops for improving the teaching repertoire and competence of GTAs as instructors. Therefore, college administrators should consider utilizing their centers for teaching excellence, when possible, to help fulfill the preparation necessary for their GTAs, where pedagogies such as LSM can be emphasized.

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