

## **Modified Lesson Study as a Formative Evaluation Approach of the Teaching Practicum of Trainee Special Education Teachers**

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**Abstract:** *This participatory action research study involved a modified version of Lesson Study – originated from Japan (see Fernandez & Yoshida, 2004) – in the Teaching Practicum to get trainee Special Education (SPED) teachers together to study the processes of teaching and learning in classrooms and then devised ways to enhance their teaching (Chia & Kee, 2010, 2012). It was envisaged that Teaching Practicum not only hone the pedagogical skills and content knowledge of trainee SPED teachers, it also improved the knowledge base of the SPED teaching profession. This study reported the processes and challenges using the modified Lesson Study as an overarching framework for teaching Practicum for trainee SPED teachers in Singapore. The study involved two local special schools for children with autism spectrum disorders. Results and feedbacks from 16 trainee SPED teachers were collated by the authors to provide a potential model for understanding the processes and products of using the modified Lesson Study approach as formative evaluation of future Teaching Practicum.*

**Keywords:** *Formative Evaluation, Lesson Study, Special Education, Teaching Practicum*

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### **I. INTRODUCTION**

The landscape of special education in Singapore is changing rapidly since the beginning of the new millennium, when in 2004 Prime Minister Lee Hsien Loong called for greater efforts to integrate people with disabilities into the mainstream community with a vision of Singapore as an inclusive society (Prime Minister's Office, 2004). This announcement was followed with the introduction of special needs officers (later known as allied educators for learning and behavior support or AEDLBS for short) into mainstream primary and secondary schools as well as the establishment of its Special Education Branch by the Singapore Ministry of Education. Moreover, more special education (SPED) schools, which are managed by voluntary welfare organizations (VWOs), have been set up and today, there are 20 of them catering to students with moderate to profound learning and behavioral challenges.

Professional training and further development for teachers working in SPED schools are mainly decided by the respective VWOs that employ these teachers. Untrained SPED teachers are sent to the National Institute of Education at Nanyang Technological University where they do either a one-year full-time or two-year part-time SPED teacher training program leading to the award of one of the following teacher qualifications: Diploma in Special Education (one-year full-time DISE; for those with or without a bachelor's degree), Specialist Diploma in Special Education (two-year part-time SDISE; for those without a bachelor's degree) and Specialist Post-Graduate Diploma in Special Education (two-year part-time SPGDSE; for university graduates).

During the SPED teacher training program, all trainee SPED teachers have to undergo between five weeks (for SDISE and SPGDSE trainee teachers) to ten weeks (for DISE trainee teachers and AEDLBS) of Teaching Practicum in their respective employing SPED schools. Those who are in the DISE program follow the same Teaching Practicum procedure that is for the trainee teachers in the regular general education. However, those trainee teachers in the SDISE and SPGDSE programs follow a different procedure. It uses a modified version of Lesson Study, which originated in Japan, as a result of a concerted effort initiated by a group of dedicated Japanese teachers committed to improving their lessons (Fernandez, 2002).

### **II. LITERATURE REVIEW**

#### **Lesson Study**

Lesson Study is a unique approach involving a team of teachers, who share the same interest in the subject matter, and the approach can be broken down into the following four main phases (Lewis, 2011):

**Phase 1.** Study curriculum and formulate goals.

**Phase 2.** Plan a research lesson based on the formulated goals.

**Phase 3.** Conduct the research lesson by one teaching staff while the others observe and collect data.

**Phase 4.** Reflect, share data and use data to illuminate student learning.

The success of Lesson Study depends on a group of dedicated teachers with a desire to work together to research teaching materials, develop lesson plans and practise teaching lessons. According to Stephens and Isoda (2007), the underlying philosophical precepts of Lesson Study are as follows: First, teachers learn best from each other and improve their practice by observing how other teachers deliver their lessons. Second, teachers acquired tacit pedagogical knowledge and skill in subject matter when they share their experience and expertise with other colleagues. Third, the main focus of Lesson Study is on the teacher-facilitated cultivation of students' interest to learn and on the quality of their learning. In simple terms, Lesson Study caters to students who have yet to grasp the full understanding of subject matter or skill being taught or to be learnt through instructional improvement.

### **III. Modified Lesson Study**

In Singapore, more than 60 per cent of the mainstream primary and secondary schools are already using Lesson Study as the approach to help their teachers to develop professionally and improve their pedagogical knowledge and skills. However, the original Lesson Study approach has been modified to meet the unique needs of SPED schools because their students have moderate to profound learning and behavioral challenges. Chia and Kee (2010; 2011) and Kee and Chia (2011) have designed and proposed their Modified Lesson Study as shown below:

**Phase 1: Examine the case history.** This phase involves establishing a Modified Lesson Study team that oversees cases of students with learning and behavioral challenges in school. The team will evaluate all cases referred by teachers and/or parents. The evaluation process covers the following three main tasks: first, organizing case conference with parents and school personnel involved in the case; second, evaluating the psycho-educational/behavioral assessment reports relevant to each case; and third, reviewing academic achievement test results as well as self-esteem profile results.

There are two key tasks that the team has to perform are: first, to profile the case by doing two things: (a) identification of learning and/or behavioral difficulties; and (b) decision to be made on whether or not any further assessment is required; and second, to set intervention goals(s) collaboratively by doing three things: (a) decision on the lesson focus; and (b) planning of long-term and short-term intervention goals in terms of inputs, operations, outputs and benchmark criteria; and (c) design of the individualized education program/plan.

**Phase 2: Lesson planning.** This phase concerns the design of an appropriate lesson plan according to the objectives stated in the individualized education plan (IEP) of the student concerned. It involves the following five tasks: (a) decide on whether the lesson planning is for withdrawal session or in-class support session (Chia & Kee, 2010); (b) cross-reference the lesson objectives with the IEP objectives to ensure they match what is to be covered; (c) hold a pre-lesson conference among the members of the Modified Lesson Study team who are involved in the case; and (d) draft a lesson plan in collaborative consultation with the coaches, mentors and/or coach-mentors in the Modified Lesson Study team (Chia & Kee, 2010).

**Phase 3: Lesson presentation.** The following tasks are involved during the conduct of the lesson by a selected member of the Modified Lesson Study team while the others observe the lesson: (a) conduct the lesson with a student (individually or in a small group) for withdrawal session or a group of students during the in-class support session (Chia & Kee, 2010); (b) observe the lesson (by the members of the Modified Lesson Study team, i.e., coaches and mentors) and/or an external knowledgeable other (e.g., coach-mentor); and (c) provide feedback by the Modified Lesson Study team with or without an external professional on what has been observed during lesson. This is debriefing or post-lesson conference (Chia & Kee, 2010).

**Phase 4: Lesson revision and re-teaching.** This is an important phase when all the members of the Modified Lesson Study team meet up to discuss the revision to be made to the lesson taught earlier and how best to re-teach it again with the same or another group or class of students. The following tasks are involved in this phase: (a) revise the lesson after post-lesson conference; (b) identify needed changes to the lesson plan; and (c) re-teach the lesson as a form of revision to the same individual student or group of students (either during withdrawal or in-class support session).

**Phase 5: Reflection and sharing of results.** Finally, all the members in the Modified Lesson Study team reflect on the lesson taught and observed and pen down what they have learnt and/or offer new suggestions to improve the lesson. Three tasks are involved in this phase: (a) provide personal reflections from members of the Modified Lesson Study team basing on the lesson taught, recorded or observed; (b) formally evaluate the lesson taught with the focus on student learning; and (c) archive the case/lesson plans to be used for future case conference or reference (Chia & Kee, 2010, 2011; Kee & Chia, 2011).

In this study, the Modified Lesson Study has been used as an approach to formative evaluation of teaching practicum for SDISE and SPGDSE trainee teachers (also known as trainee SPED teachers) from two SPED schools that cater to only students with autism spectrum disorders. The rationale behind the use of the modified Lesson Study "is the idea that teachers can best learn from and improve their practice by seeing other teachers teach" (Isoda, Stephens, Ohara, & Miyakawa, 2007, p.xvi).

#### IV. THE STUDY

##### **Overall Approach and Rationale**

This study aimed to look at the feasibility of implementing the Modified Lesson Study approach (see Chia & Kee, 2010, 2011, for detail) as a formative evaluation approach for the Teaching Practicum of trainee special education (SPED) teachers from two schools that cater to students with autism spectrum disorders. The research methodology selected is participatory action research (Phelps & Hase, 2002) with the authors of this study being observer-researchers and active participants as coach-mentors since the environment, where the trainee SPED teachers would operate, is complex and unpredictable (e.g., school culture, diverse student behavior and needs, diverse supervisor background, strengths and weaknesses).

##### **Statement of Purpose**

The purpose of the research was to investigate the effectiveness of the Modified Lesson Study approach as an educational approach in the formative evaluation of the Teaching Practicum.

##### **Research Questions (RQ)**

RQ1. What was the effectiveness of the Modified Lesson Study approach in improving the lesson planning of the trainee SPED teachers?

RQ2. What was the effectiveness of the Modified Lesson Study approach in improving the lesson presentation of the trainee SPED teachers?

RQ3. How did the mindset of the trainee SPED teachers change in response to the Teaching Practicum in terms of lesson planning?

##### **Participants**

A total of 16 trainee SPED teachers from two SPED schools catering to children and youth with autism spectrum disorders and two coach-mentors were involved in this study. The coach-mentors are academics from the National Institute of Education – an autonomous institution of Nanyang Technological University. The two SPED schools also appointed their own respective coaches, who were either heads of department or senior SPED teachers with an average of at least 5 years' relevant working experience.

##### **Planned Program for 2 Months**

The approach was implemented in two SPED schools over two months in 2013. The deliverables for the trainee SPED teachers are as follows:

- Two case history summaries
- Two individualized lesson plans
- Two lesson plans
- Two revised lesson plans
- Two reflective journal entries

##### **Procedure**

Data were collected from the results graded on set marking rubrics for lesson plan and lesson presentation as well as trainee SPED teachers' entries in their reflective journals. The significance level was set at alpha level of .05 using a paired t-test for each participating trainee SPED teacher. The trainee SPED teachers' reflections were analyzed using an informal approach as used in Seale's (1998) study where the findings served to complement the quantitative findings (Perakyla, 2011).

##### **Assessment Instruments**

Marking rubrics (see National Institute of Education International, 2010, for detail) were used in the course SPDS014 Practicum for trainees with university degrees undertaken by the trainee SPED teachers during their Teaching Practicum to evaluate their lesson plans and lesson presentations and their results were collected for the purpose of data analysis:

- Marking rubrics for first Lesson Plan (1st\_LP);
- Marking rubrics for revised first Lesson Plan (1st\_R\_LP);
- Marking rubrics for first Lesson Presentation (1st\_LPnt);
- Marking rubrics for second Lesson Plan (2nd\_LP);
- Marking rubrics for revised second Lesson Plan (2nd\_R\_LP);
- Marking rubrics for second Lesson Presentation (2nd\_LPnt);

Note: LP = Lesson Plan; R\_LP = Revised Lesson Plan; LPnt = Lesson Presentation

**V. RESULTS AND DISCUSSION**

**Quantitative Data Analysis**

RQ1: What was the effectiveness of the Modified Lesson Study approach in improving the lesson planning of trainee SPED teachers?

RQ2: What was the effectiveness of the Modified Lesson Study approach in improving the lesson presentation of the trainee SPED teachers?

These two research questions were addressed by the following quantitative data analysis.

Table 1 shows the means and standard deviations of the results of assessment of the trainee SPED teachers' lesson plans and presentations: (1) the first lesson plan and the revised first lesson plan; (2) the second lesson plan and the revised second lesson plan; and (3) the first and the second lesson presentations.

Table 1. Means and Standard Deviations of Results of Assessment

	Mean	Standard Deviation	N
1st Lesson Plan	58.59	8.70	16
Revised 1st Lesson Plan	64.97	7.04	16
2nd Lesson Plan	64.25	7.98	16
Revised 2nd Lesson Plan	69.06	6.93	16
1st Lesson Presentation	58.19	9.77	16
2nd Lesson Presentation	64.81	9.33	16

As shown in Table 2, the paired *t*-test between the first lesson plan and the revised first lesson plan assessment scores revealed significant differences ( $p=.000$ ) (see Table 2). Similarly, the paired *t*-test between the second lesson plan and the revised second lesson plan assessment scores also revealed significant differences ( $p=.000$ ).

Table 2. Paired *t*-test

Groups	Paired Differences				<i>t</i>	df	Sig. (2-tailed)	Effect Size ( <i>d</i> )	
	Mean	SD	SEM	95% Confidence Interval of the Difference					
				Lower					Upper
Pair 1 2nd_LPnt-1st_LPnt	6.63	6.55	1.64	3.13	10.12	4.05	15	.001**	.69
Pair 2 1st_R_LP-1st_LP	6.38	4.49	1.12	3.99	8.77	5.69	15	.000**	.81
Pair 3 2nd_R_LP-2nd_LP	4.81	3.75	.94	2.81	6.81	5.13	15	.000**	.64

As shown in Table 3, the correlation between the scores also showed significant correlation implying that trainee SPED teachers did learn from the process of Modified Lesson Study approach ( $\alpha=.859, p=.000$ ). The scores also showed significant correlation implying that the trainee SPED teachers did learn from the process of Modified Lesson Study approach ( $\alpha=.883, p=.000$ ).

Table 3. Paired Correlations

	N	Correlation ( $\alpha$ )	Sig.
Pair 1: 1st_R_LP-1st_LP	16	.859**	.000
Pair 2: 2nd_R_LP-2nd_LP	16	.883**	.000
Pair 3: 2nd_LPnt-1st_LPnt	16	.766**	.001

Note: LP=Lesson Plan; R\_LP=Revised Lesson Plan; LPnt=Lesson Presentation  
\*\* $p < .01$

### **Qualitative Data Analysis**

RQ3. How did the mindset of the trainee SPED teachers change in response to the Teaching Practicum in terms of lesson planning?

From reading the trainee SPED teachers' reflective journals, their daily entries could be categorized under several common themes. These, in turn, according to Atkinson and Rosiek (2009), could be used to represent the voices of trainee SPED teachers. In this study, the Modified Lesson Study as collaborative approach has sensitized the trainee SPED teachers to the practice of teaching and the following three common themes (with randomly selected entries as examples, below) were identified and categorized after going through the trainee SPED teachers' reflective journals:

1. Deepen insights on disconnect between expected and real performance in learning by students;
2. Experience and appreciate the importance of preemptive action; and
3. Appreciate the processes and products involved in learning by students

### **Examples of Trainee SPED Teachers' Reflective Journal Entries**

**First common theme: Deepen insights on disconnect between expected and real performance in learning by students.**

*Example 1.* "While preparing for the lesson, I have misjudged how much students can learn in one lesson. For the students to grasp the concept of tens and ones requires more than a day. To help them understand better, I will break down the objective into smaller parts for them to achieve the final goal."

*Example 2.* "Much of the time was spent on trying to get students to understand what they needed to do for the guided practice. This is tied in with the fact that I had not modeled sufficiently for them (delivery of instructions). I have learnt that modeling for direct teaching is not sufficient; doing so for guided practices is important too."

**Second common theme: Experience and appreciate the importance of preemptive action.**

*Example 1.* "Upon reflection on the warm up and rhythm workout activities, I realize it may be easier for me to work with two pupils who are able to command the situation and able to lead independently should there be any incidents. When I pre-coach the pupils prior to the PE lesson, it helps to refresh their memories of what is the sequence of events and gives them more confidence to command. The turn taking chart will also help to preempt pupils who will be the next PE captain to lead. If the training is done consistently, soon I will have more pupils who can lead independently."

*Example 2.* "As 'Similes' is a very hard topic to grasp, and the usage of similes is not a daily affair, it is difficult for pupils to relate to similes. By using friends' characteristics that the class knows well, it is easier to relate to using similes and it is more fun to use similes to talk about people too."

*Example 3.* "In addition, I could have tasked my support teacher to be the one tracking the number of rounds pupils completed. This way, I can walk around the course. I am more aware of pupils' ability and will be able to alert them accordingly. I will not only be able to monitor their progress, but also their safety while walking round the route."

*Example 4.* "Personally I felt the use of rubrics, clear structure and having total participation made the tasks felt achievable and all. I was able to ensure the safety of pupils when I was closer to the ground and participating in their activities. In addition, it gave pupils an additional motivation of wanting to be involved. By setting the benchmark during the sprint, pupils have an idea how fast a sprint can be, and also pupils will want to attempt to beat the record of the teacher. The use of rubrics and clear structure gives an opportunity for pupils to demonstrate independence and competence in each activity. As a result, less prompting is required and teachers can shift attention to try and help pupils to raise their level of competency."

**Third common theme: Appreciate the processes and products involved in learning by students.**

*Example 1.* "To create a better flow for class discussions, I need to prepare different sub-topics in mind that I want the class to discuss. If students contribute a certain idea, I should align it to the sub-topic we are touching on before moving onto the next. I can guide them by redirecting them to what we are discussing. For instance, if I am asking them about the steps to subtract, and students tell me subtract means take away, I can redirect them by telling them we are talking about the steps to subtract. For the current topic, I will first discuss: (1) what subtract means, (2) the sign for subtraction (3) Steps to subtract, (4) How else to subtract (for summary). The first 3 sub-topics will be covered for recap, while the last will be discussed during summary time. Having a better flow of discussion helps students consolidate their ideas more effectively."

*Example 2.* "To ensure students to have a meaningful learning experience, it will be good to think from the students' perspective as to how the students receive the information presented to them. Changes can then be made to the teaching materials to ensure that the instructions and explanations of the concepts are clear enough for them to understand."

*Example 3.* "When planning the lesson, I tried to cover too many objectives and ended up planning many activities within the lesson. There was pair work, independent work and class learning. With the numerous and

different activities, students are confused in the lapse times between each activity and were not able to focus well especially after the videos were shown. Students were still engaged in the previous activity while I was trying to move the lesson ahead. The lesson ended in a rush as there was not enough time to cover the quiz and the teaching slides on weathering and erosion.”

## VI. CONCLUSION

This is one of the few studies that covers on using a modified version of Lesson Study with trainee SPED teachers in SPED schools. As mentioned at the beginning of this paper, the aim of the study is find out the effectiveness of the Modified Lesson Study for trainee SPED teachers to work collaboratively with their experienced cooperating SPED teachers to develop appropriate lesson plans, teach and observe each other's lesson, collect information on student learning, and use the lesson observations to refine their respective lessons so that their students would benefit from what is taught to them.

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