

Lesson study: Enhancing teacher's language proficiency through collaborative processes

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ABSTRACT

The latest change in the medium of instruction for teaching science and mathematics from the Malay language to English poses great challenges, particularly to the science and mathematics teachers. Despite the intense ETeMS courses tailored to enhance teachers' language proficiency, teachers are left alone to fend for themselves after the courses. Thus some kind of continuous professional support for teachers towards effective teaching is deemed necessary and desirable.

Originating from Japan, Lesson Study is a model of a teachers' professional development programme that engages them collaboratively in planning, implementing, observing and reflecting on the lesson. By being actively involved in the Lesson Study process, teachers are able to improve language proficiency through lesson-plan discussions, observation and reflection on peer teaching. The supportive environment provided by their peers (language teachers included) through collaborative effort is crucial for teachers to develop self-confidence and to attain a higher level of language proficiency. The ongoing process of Lesson Study has been found to support teachers towards a higher level of professionalism. It is gaining popularity in many countries such as United States and Australia.

This presentation aims to propose Lesson Study as a potential professional development programme model for Malaysian mathematics and science teachers towards enhancing their language proficiency and pedagogical content knowledge. I will start with a short introduction of Lesson Study, follow by a brief workshop on the Lesson study process. Finally, the potentials and challenges of adopting Lesson Study into our Malaysian school context will be discussed based on an exploratory study on the Lesson Study of five Malaysian trainee teachers and other countries' related research reports.



Introduction

The latest reform in Malaysian mathematics and science curriculum sees the introduction of using English as a medium of instruction for Primary One, Secondary One and Lower Six mathematics begins 2003. This sudden change in the medium of instruction for teaching science and mathematics from Malay language to English poses great challenges, particularly to the mathematics and science teachers. This is because English is the second or third language of the majority of Malaysian teachers and students. To many teachers who are below the age of 40 years old, they have undergone their primary, secondary and tertiary education with Malay as the medium of instruction. They were trained and have been teaching mathematics and science in Malay language for the past ten to twenty years. Perhaps it is not a surprise to find more than 80% of the 124 mathematics teachers (surveyed by Lim and Wun, 2003) were confident about their Malay language in both oral and written forms. However, less than 40% of them rated confidently in their English language proficiency. Likewise, as reported by Romai Noor bin Rabhu (2003) that a national survey conducted by the Ministry of Education also shows that the English proficiency level of 84% (primary) and 69% (secondary) school mathematics and science teachers were weak. Realizing this problem, the Ministry of Education has launched an enormous training programme, called the English Teaching of Mathematics and Science or better known as the ETeMS course.

Despite the intense ETeMS courses tailored to enhance teachers' language proficiency, teachers are often left alone to defend themselves after these in-service courses. Whether to blame on the tight teaching schedule or the heavy workload of teachers, it is a norm to find our Malaysian teachers tend to work in isolation. Malaysian teachers seldom have time or opportunity to sit down together to discuss about teaching problems, less so the luxury of preparing a lesson collaboratively.

Indeed, every school has set up a committee of mathematics and science teachers (Panitia Matematik dan Sains), which meet at least three times a year. However, the agenda usually covers 'planning annual activities, reviewing and analyzing previous year examination performance, and purchasing of textbooks or workbooks for students' (Lim, Fatimah & Tan, 2003) as well as act as an agent of information transfer from the school administrators to teachers. Hence, many new teachers struggle to prepare both content



and pedagogical knowledge on their own. For some who are lucky, they may get some help from the senior teachers. More often, they work their way through trial and error and their own struggles. Rarely, we see teachers sharing their teaching experiences or content knowledge in the staff room. After all teaching is a private activity and a teacher is the master of the classroom. Whatever that is happening in the classroom is closed and within the teacher and his/her students only. Although many teachers may long to share and discuss their teaching problems, or even to upgrade their own content knowledge with their fellow teachers, they are often shy to make the first move or lack the avenue to do so.

However, in view of the new challenge of teaching mathematics and science in English, while many teachers are still lacking confidence of their English language proficiency, any kind of continuous professional support for these teachers towards developing self confidence and higher level of language proficiency is deemed urgent and necessary now. Perhaps *Lesson study* as an on-going teacher development programme that engages teachers to work collaboratively, involve peer support and reflective practice might be a promising model for us to adopt or adapt in our Malaysian context.

What is *Lesson study*?

The term *Lesson study* was derived from the Japanese word *jugyokenkyuu*, [*jugyo* means *lesson* and *kenkyu* means *study or research*] and was first coined by Makoto Yoshida (1999). It was also translated as '*research lesson*' (as coined by Catherine Lewis (1997)). In fact, this direct translation can be misleading because *Lesson study* is more than the study of lessons, but it is rather a systematic inquiry into teaching practice by examining lessons (Fernandez, 2002).

Originated from Japan, *Lesson study* is a form of teacher professional development programme that engages teachers collaboratively in planning, implementing, observing and reflecting on the lesson. *Lesson study* is a school-based programme that focuses teachers working collaboratively on a small number of study lessons. While preparing the study lessons, the teachers plan, teach, observe and criticize the lessons together. According to Perry, Lewis and Akiba (2002), *Lesson study* is a teacher-led instructional improvement cycle that involves a group of teachers working together to:



1. Formulate goals for student learning and long-term development.
2. Collaboratively plan a “research lesson” designed to bring life to these goals.
3. Conduct the lesson, with one team member teaching and others gathering evidence on student learning and development. **[Peer observation]**
4. Discuss the evidence gathered during the lesson, using it to improve the lesson, the unit, and instruction more generally. **[Reflect, evaluate and refine the lesson]**
5. Teach the revised lesson in another classroom, if desired and improve upon it again.

(p.2)

Thus, the two key features of *Lesson study* are (i) peer observation of classroom teaching which “enhances pedagogical knowledge and skills through peer’s review, critique, and collaboration” (Shimahara, 1998, p.456); and (ii) reflective practice which offers a process for improving teachers’ own instructional strategies (Fernandez and Yoshida, 2001). Through the process of *Lesson study*, teachers can deepen their own mathematics knowledge, adopt effective teaching strategies and become reflective practitioners. For these reasons, *Lesson study* has been viewed as a promising model for teacher professional development that could be adopted by a number of American educators (such as Lewis & Tsuchida, 1998; Stigler & Hiebert 1999; Yoshida, 1999) and Australian educators (see White & Southwest, 2003). Hence, how about adopting it in Malaysia?

Before we discuss the possibility of adopting or adapting *Lesson study* in Malaysian schools, let us review briefly the implementation of *Lesson study* in three countries, namely Japan, US and Australia.

Lesson study in Japan

Lesson study is a professional development programme that was started and practiced widely in Japanese schools since early 1900s (Fernandez, 2002). There are at least three types of research lessons in Japan (Lewis, 2000). The most common type is the “within school research lesson” which take place regularly at ordinary elementary schools throughout Japan. It is highly valued by Japanese teachers. One teacher interviewed by



Lewis (2000) illustrated her view, “*Why do we do research lessons? I don’t think there are any laws [requiring it]. But if we didn’t do research lessons, we won’t be teachers*”(p.6).

This signifies the important role of *Lesson study* in the Japanese culture of teacher development. The second type is the “Public research lessons”, which are opened to teachers from other schools. Educators from the local district, state or even the whole nation may be invited. The third type is “Research lesson as part of national conferences or teachers’ circles”. With these various types of research lessons added together, Japanese teachers have many opportunities to observe others teach. A survey by Yoshida (1999) on 35 schools in Western Hiroshima Prefecture shows that teachers observed a total of about 10 research lessons per year. This scenario reflects how widely practiced is *Lesson study* in Japanese schools and as noted by Stigler and Hiebert (1999) that ‘*Lesson study* is extremely popular and highly valued by Japanese teachers, especially at the elementary school level’ (p.111).

***Lesson study* in American schools**

Lesson study as a form of teacher professional development was first introduced to American schools in late 1990’s by Yoshida (1999) and Lewis (2000). In fact, it was the release of the Third International Mathematics and Science Studies (TIMSS) in 1995 and 1999 that sparked a surge of interest in Japanese model of mathematics and science education. Consequently, the Japanese professional development model of *Lesson study* gained much attention in both mainstream and educational publications (Research for Better Schools [RBS], 2002). In addition, based on the TIMSS video study, Stigler and Hiebert (1999) proposed that *Lesson study* in Japan, which is one of the core programmes of teachers’ professional development might be an essential contributing factor to the Japanese students’ high achievements in international mathematics studies. They believe, *Lesson study* is fully consistent with the key principles for effective professional development of mathematics teachers.

Although *Lesson study* was introduced less than a decade ago, an informal survey of the Internet shows that up to mid 2003, there are at least 3 related websites and 65 *Lesson study* project groups across 28 American States recorded in the *Lesson Study* Research Group web site. Several of these projects (for examples, Fernandez, & Yoshida, 2001;



Perry, Lewis & Akiba, 2002; Stepanek, 2003) have claimed success in improving teachers' instructional practices. *Lesson study* research by Fernandez and Yoshida (2001) at Paterson School 2 disclosed that *Lesson study* process improved teacher's instructions through reflective practices. Likewise, Perry, Lewis and Akiba (2002) collaborated with teachers of a US *Lesson study* site at San Mateo-Foster City School District. Their data suggest that 'teachers' *Lesson study* activities helped them to develop the kind of instructional and subject matter knowledge that are the goals of teacher professional development' (p.1).

Another *Lesson study* research carried out by Stepanek(2003) also revealed that the participating teachers claimed to have gained much more knowledge about teaching and their students after going through the *Lesson study* process. They espoused that they have become more confident and reflective as they spend much time in lively discussions about how to teach a specific topic or concepts of mathematics. Thus, the *Lesson study* process has helped to develop a collaborative relationship that enhances their professional growth as mathematics teachers.

***Lesson study* in Australian schools**

An evaluation report on the *Lesson study* project in New South Wales, Australia by White and Southwell (2003) reveals that the *Lesson study* project was a statewide government secondary schools initiative conducted by the Professional Support and Curriculum Directorate of the New South Wales Department of Education and Training. The project involved three secondary schools in the trial phase, 36 secondary schools in Phase I and 45 secondary schools in Phase II. The evaluation data conclude that,

...the *Lesson study* program was recognized by teachers as a powerful process for guiding them towards new practices and dispositions. The program united an examination of practice with commonly accepted features of quality teaching and learning to create a well-defined and structure process. The core of the *Lesson study* program involves working on focused lessons, a process that was natural, useful and easily sustainable by teachers. The program provided a comfortable forum for teachers to challenge ideas about their practice and the content that they taught. The program provided opportunities for the system to learn from its own experience and fitted comfortably into the secondary school structure. (p.2)



Consequently, the evaluation panel recommends that '*Lesson study* should continue to be offered as a program to fulfill the need for on-going professional development of mathematics teachers and as a process to improve the teaching and learning of classroom mathematics' (p.33).

An exploratory *Lesson study* of five Malaysian trainee teachers

In view of the positive impacts of *Lesson study* as reviewed by the literature, my student and I (Chiew & Lim, 2003) have conducted an exploratory *Lesson study* research on five trainee teachers. The study was aimed to investigate the impact of *Lesson study* on mathematics trainee teachers, specifically (i) its possible improvement on their mathematical content and pedagogical content knowledge and (ii) promoting reflective practices as professional development.

Five trainee teachers who taught mathematics in a secondary school during their teaching practice participated. As part of the teacher education program, every trainee was required to undergo ten weeks of teaching practice. However, this exploratory study was conducted over a period of 5 weeks (4th till 8th week of the teaching practice). Their involvements in the study were voluntary.

Data were collected through classroom observation, interviews, individual reflection and journal writing. Analysis of the data shows that the mathematics trainee teachers' content and pedagogical content knowledge improved during the process of *Lesson study*. They gained more self-confidence and self-reflection through the supporting environment provided by their peers. In particular, the discussions and self-reflections were beneficial to them in their professional development as potential teachers of mathematics.

Benefits or potential impacts of *Lesson study*

Lewis (2000) observed 40 research lessons in more than 30 schools in different regions of Japan and interviewed 75 elementary teachers in one of her research study. She concludes that there are nine ways in which *Lesson study* has contributed to the improvement of Japanese teacher instruction. Some of the ways include:



- a) An effective **individual professional development** where teachers see *Lesson study* as a source of feedback for their own teaching and gaining new ideas from watching others teach;
- b) **Spread of new content and approaches**: *Lesson study* provides teachers the opportunity to ask questions and to make sense collectively about topics or approaches that are newly included in the national curriculum;
- c) **Connect individual teachers' practices to the school goals and broader goals**
- d) **Allow competing views of teaching 'bump' against each other**: During the discussion process of *Lesson study*, teachers may have opposite views about teaching certain concepts. For example, in the discussion following a research lesson, two groups of Japanese teachers debated whether it is more important for students to acquire scientific knowledge or to practice science processes. Thus, *Lesson study* process increases the likelihood that teachers will hear opposing points of view rather than hearing only from like-minded colleagues. This allows clarification of misconception and improves teachers' understanding of a concept or topic.
- e) **Create demand for improvement** as teachers compare their own teaching with their peers.
- f) *Lesson study* may help **shape the national policy**. Ideas pioneered by classroom teachers in *Lesson study* may disseminate to other teachers, and eventually, be made part of the national curriculum;
- g) It **honors the central role of teachers**: *Lesson study* provides a systematic way for teachers to bring new policy to life, thoughtfully and collaboratively in the classroom. *Lesson study* also provides a way for Japanese classroom teachers to be apparent at national stature and become nationally known without the expense of leaving the classroom.

Lesson study: A potential way of enhancing teacher's language proficiency?

Thus far, we have reviewed how *Lesson study* was carried out in the above three countries and the potential benefits of *Lesson study*. Many of these projects claim to show encouraging results particularly on improving teachers' content knowledge and pedagogical skills. So, how about enhancing teachers' language proficiency through *Lesson study* process?



There is yet to have any research study to answer this question. However, I do see a great potential of *Lesson study* as a way to improve teachers' language proficiency. There are four key features of *Lesson study* that encourage teachers to use language to communicate and to share ideas. These are:

a) *Lesson study* is **collaborative in nature**. A group of teachers (ideally 3-5 teachers per group) identify a learning goal and then plan a lesson together. For example, if the broad learning goal is to encourage students to communicate mathematically. Then every teacher in the group will be encouraged to involve actively in the brainstorming session so as to find the best way to achieve the goal. Perhaps this broader goal may then be narrow down into a more achievable objective such as 'explain a particular mathematical concept using the proper mathematical terminology'. Therefore, the active involvement of teachers in discussion will clearly provide a platform for teachers to speak up and to improve their language proficiency.

b) *Lesson study* group **provides peer support**. Every teacher needs support from others. This is especially so when teachers are facing a new challenge, such as teaching mathematics in English. The main focus of *Lesson study* is on the teaching and not on the individual. A lesson produced belongs to a group effort. This encourages teachers to give comments, critiques and suggestions for improvement without fear of personal attack. Again with the active discussion and strong peer support, these teachers will not only gradually enhanced their confidence in teaching but also their confidence in the use of language. Of course, if we aim to improve teachers' English language proficiency, then all teachers must be encouraged to use mainly English to communicate in the *Lesson study* process.

c) *Lesson study* is **an on-going, long-term continuous improvement process**. As we realize, learning takes time, so do improving language competency. To improve our language competency, we need to use the language frequently and to practice it continuously. Thus, *Lesson study* which is always on going, will provide long term support that helps to improve teachers' language competency slowly but continuously.

d) *Lesson study* **encourages reflective practices**. Through observing their peers' teaching or their own teaching (if the observed lesson is video-taped), teachers will be able to reflect on their own teaching and use of instructional language. Indirectly, this provides rooms for improvement on both their teaching strategies and language proficiency.

Potential challenges and supporting conditions for *Lesson study*

In view of the benefits and positive impacts of *Lesson study* on teacher development in various countries, perhaps there exists a positive potential to adopt or adapt *Lesson study* in our Malaysian context. However, as noted by Stigler and Hiebert (1999) that teaching is a cultural activity and introducing *Lesson study* involves a change in school culture. Thus, 'simply recommending *Lesson study* as a useful process is not enough, because the process cannot succeed, on a wide scale, without a supporting context' (p.138). So, what are the supporting conditions needed to implement the *Lesson study* process in schools? What are the potential challenges?

(i) Potential Challenge 1: Time constraint

Lesson study needs teachers to have time for discussion and a flexible time table that allows teachers to observe each other teach. In *Lesson study*, groups of teachers meet regularly over a substantial period of time, ranging from several months to a year, preparing and refining a lesson (Stigler & Hiebert, 1999). As pointed out by Stigler and Hiebert (1999) that *Lesson study* is based on a long-term continuous process of improvement that produces small, incremental improvement in teaching over a long period of time. This demand of time has cast doubt upon its practicality among American teachers. Will this demand pose the same challenge to Malaysian teachers?

The current situation in many Malaysian schools is such that most teachers are loaded with teaching periods of about 24-30 periods a week. Besides that, they have to complete the ever-increasing paper work and marking student exercises. Where are they going to find the time for *Lesson study*?

(ii) Potential Challenge 2: Establishing the culture of sharing and collaboration

Lesson study requires teachers to work collaboratively, to open up their classroom for observation, critical review and discussion with peers. This challenges the common norm of Malaysian teachers which they tend to work independently or in isolation. Thus, promoting *Lesson study* as a teacher professional development model might mean promoting a collaborative culture among teachers. This involves changing the existing school culture. Any changes in culture will not happen overnight. It also requires the full



commitment and willingness of all parties to work towards establishing the sharing and collaborative culture. Are our Malaysian teachers willing to do so?

Supporting condition 1: blessing from the top administration

To ensure a successful implementation of any new programme, we need to have support and blessing from the top management. This is especially so for our Malaysian school system that often follows a top-down hierarchy. Teachers tend to follow what is 'ordered' by the State Department or their school principals. This is not because teachers cannot lead the initiative. The problem is our teachers are seldom given the opportunity to lead.

Thus, I propose that *Lesson study* be introduced as a government initiative or at least a school project, so that teachers can receive the support and resources from the school administrators. For example, teachers need to provide with sufficient time and flexible time table to carry out *Lesson study*. They will need at least two hours per week allocate for them to plan, discuss, critique and review the lesson together. Special arrangement in the teaching timetable will be needed so that teachers in a *Lesson study* group can observe their peer teaching. All these requirements will be easier to achieve if they have the blessing and full support from the top management.

Supporting condition 2: Inclusion of knowledgeable experts

Vygotsky (1978) put forward the notion of Zone of Proximal Development (ZPD) which suggests that the performance level of a learner may increase if he or she is assisted by more capable others. Likewise, in order to stimulate the thinking of the *Lesson study* group to rise beyond their current situation, including an experience or specialist teacher will help to lead the discussions and stimulate more thinking of the group. In fact, the 'Buddy system' introduced as part of the ETeMS training model might coincide with this concept. As we understand, teachers will require continuous support even after they have attended the ETeMS course. Therefore, setting up *Lesson study* groups in schools and with the inclusion of knowledgeable experts such as senior subject teachers and English language teachers might provide specialized help to teacher while preparing the lesson in English.

Conclusion

As with any new proposal of changes, promoting *Lesson study* as an alternative model of teacher professional development is by no means out of issues and challenges. However, if *Lesson study* has proved to have such a positive impact on teachers' teaching knowledge



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and skills, as well as building up their self-confidence, then it is worthwhile to promote this cultural change in our Malaysian context. To ensure the change, we will need support from all particularly the Ministry of Education, school administrators, teachers and parents.

Therefore, I would like to propose to the Ministry of Education, the Curriculum Development Center (CDC), the Teacher Education Division (BPG) or the Educational Planning and Research Division (EPRD) to set up an initiative *Lesson study* project as that of the Ministry of New South Wales. I strongly believe that the cultivation of collaborative culture among teachers will lead to not only teachers having better teaching knowledge and skills, but also better cooperation and higher self-confidence among teachers. By setting the ball rolling, we hope that the ball will roll by itself. I hope that by promoting *Lesson study* as a teacher-lead improvement culture of professional development, teachers will continue to share and help each other to improve.

“The more we share the more we get”

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