Contemporary Global Trends In Instructional Design: The Role Of Lesson Study In Designing Meaningful Lessons Among Teachers

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Abstract
As teachers/lecturers, we have the obligation to teach properly. Meaningful learning happens when students understand or are able to make sense of the lesson taught and meaningful lesson is associated with good instructional design, The change in syllabus to meet the demands of the 21st century learning has resulted in a lot of pressure on teachers and instructors to keep up with the most up-to-date trends. The call to embed a balanced set of knowledge and skills such as thinking, innovation, problem-solving and leadership skills requires careful planning of the lesson so that the reform effort is successful. While teachers are faced with this problems, there has been many initiatives to help them by encouraging them to work together in collaboration such as in instructional coaching and professional learning community (PLC). One of the related trends that is being practiced nationally and globally is lesson study. This paper will look at how lesson study has helped instructors in lesson planning and hence designing meaningful lessons. The paper will touch on some history of lesson study and how it has helped teachers in improving their content and pedagogical content knowledge nationally and globally, which resulted in improved instructional design.

Keywords: Lesson study, instructional design, continuous professional development, meaningful lessons, Contemporary trends.

Introduction

Contemporary education demands teaching professionals to make progressive and active involvement in reviving the methods and approaches to improve their instructional practices in order to ensure that students are getting meaningful lessons. Unlike traditional instructional method, the current education trend is moving towards student-centred instruction which emphasizes the 21st century skills to be embedded as well. The term 21st century skills refers to a broad set of knowledge, skills, work habits, and character traits that are believed by educators, school reformers, college professors, employers, and others to be critically important to success in today's world. 21st century skills can be categorised into three different skills – learning skills, literacy skills and life skills. The learning skills emphasized now include creative and critical thinking, collaborating and communicating. Literacy skills include technology skills and life skills are made up of social skills and leadership skills among others. Being able to embed these skills in their instruction is a challenging feat and requires substantial preparation. In shouldering these challenging and heavy responsibilities, teachers require assistance in meeting new competencies expected of them.

Literatures show that teachers working collaboratively produce greater results in terms of job satisfaction, quality of work and the most importantly, students' achievement (Khalid, Abdullah & Kamoluddeen, 2016; Ronfeldt, Farmer, McQueen, & Grissom, 2015; Goddard, Y., Goddard, R. & Tschannen, 2007). The days of teachers working in isolation can be considered as

something in the past. Consequently, the Ministry of Education, Malaysia had identified Professional Learning Community (PLC) as one of the selected program that improve teacher quality as well as students' achievement (MEB, 2013). Professional Learning Community (PLC) refers to committed educators effort to work collaboratively among themselves in order to improve students' achievement (DuFour, DuFour, Eaker & Many, 2006). Among the strategies in PLC that was in line to support and improve students' achievements is Lesson Study. In fact, if we examine other selected strategies in PLC as identified by the Ministry such as learning walks, peer coaching, teachers sharing sessions and video critiques of teaching moments, it can be propositioned that proper practice of lesson study encompasses all of the listed strategies.
This paper will first define instructional design, followed by a brief introduction of what lesson study is about and how it helps teachers in designing good instructional practice. Later, the effects that lesson study had on various research studies that was undertaken by the writer will be highlighted.

Instructional Design

Instructional design is the design of systems, to help people learn more effectively (Cambridge Dictionary, 2017). It is also a process or systematic approach to developing the various learning courses or programs. An educator may systematically develop instructional specifications using teaching and learning theories to ensure the quality of instruction. In creating the curriculum in a purposeful way, meaningful learning can be achieved. The whole process involves analysis of learning needs and goals and the development of a delivery system to meet those needs, which include 'development of instructional materials and activities; and try-out and evaluation of all instruction and learner activities' (Umich, 1996). There are many commonly used methods such as understanding by design, Bloom taxonomy and the ADDIE model that can be selected to help in the design of instruction. All these are done in order to make learning more appealing, effective and efficient.
Meanwhile, let us look at the characteristics of meaningful learning. Meaningful learning happens when there are interactions between active, constructive, intentional, authentic, and cooperative learning attributes. Whatever method is used to aid in the design of instruction, the effectiveness will only be visible through analysis of intervention studies or action research and one of the best way forward is to employ 'lesson study' as a vehicle to connect theory, research, and practice.

Lesson Study

Lesson study (jugyou kenkyu) is a Japanese teacher-led teaching improvement process where teachers jointly plan a lesson, observe and analyse the implemented lesson, and then reflect, and try to refine or improve the actual classroom lesson until it is satisfactory. Lesson study is believed to be practiced by the Japanese since the 1880s (Isoda, 2011) and is credited as being the possible reason for Japanese students' success in international assessment (Stigler & Hiebert, 1999) such as the "Trends in Mathematics and Science Study" (TIMSS). After the book 'The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom' by James W. Stigler and James Hiebert (1999) was published, lesson study became well-known globally. It was also applied to almost every subject from primary to tertiary levels, in order to improve teachers' content knowledge and pedagogical content knowledge in different subject areas. So, how does lesson study work?

Many researchers divided the stages of the lesson study cycle into three (NTEN, 2013, Inprasitha, 2015), four (Lewis & Hurd, 2011; Posthuma, 2012), five (HEreflections, 2015), six (Dept. for Education, 2009**)** seven (McMahon &Hines, 2008), eight (Rock & Wilson, 2005; Stigler & Hiebert, 1999) or even ten (Norwich, 2014) depending on how they cluster and divide the stages. However, this paper will look at the basic steps in lesson study that divide the cycle into three stages (refer Figure 1), which are:

1) The planning stage
2) The implementation stage
3) The reflection stage

Upon examination of the stages involved, and the cyclical way that the process of lesson study is usually carried out, lesson study can also be classified under the big umbrella of action research where educators develop practical solutions to address them quickly and efficiently. One immense difference between the two would be the presence of the 'knowledgeable other' in lesson study. In all three of the stages of lesson study, the presence of a knowledgeable others who are usually the subject matter and pedagogy expert is considered crucial for the successful implementation of lesson study.

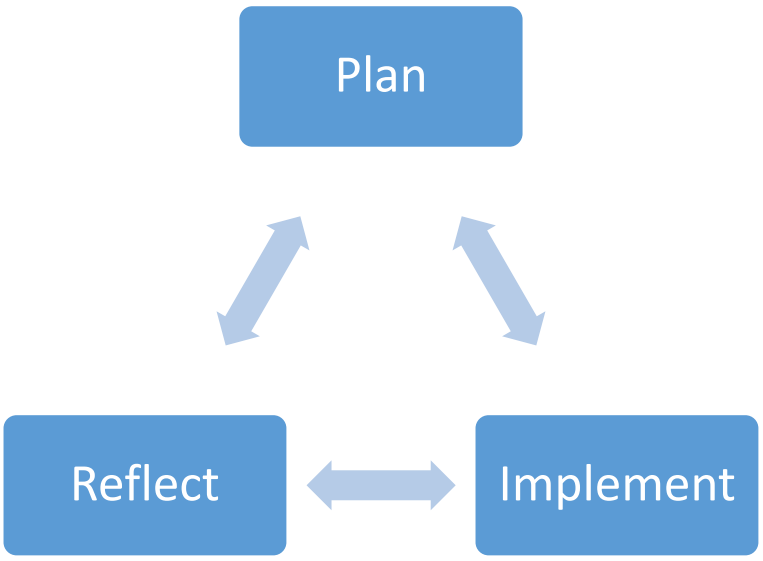


Figure 1: The different stages of Lesson Study cycle

During the planning stage as shown in Figure 1, teachers identify their goals and objectives (also by doing some needs analysis), by studying the curriculum and plan the research lesson as best they can by scrutinizing every detail from related documents. Some researchers would break-up this stage into 2 or more stages. Once a satisfactory lesson is planned (now called the research lesson), it will be tested in one existing real classroom, by one of the teachers in the research

group, while other teachers will observe and take notes. Again, some researchers would break this stage into 2 stages of implementation and observation. Subsequently the teachers would come together again for the reflection stage to discuss the strength and weaknesses of the research lesson. If they are not satisfied with what they observed, the lesson plan will be improved accordingly. Following this, another teacher would then re-teach another class using the improved lesson plan, and the cycle continues until a satisfactory lesson plan is produced. This stage may also include reporting of the research besides the reflection and the rewriting stage. Since every part of the process is a research process, all stages would be documented. The process is carried out with the presence of at least one knowledgeable other, someone who is usually an expert in curriculum and instruction and the subject matter.

The Role of Lesson Study in Improving Teaching and Learning

Numerous articles has been written about the benefits of lesson study in advancing the cause of quality teaching and learning (Cheung & Wong, 2014; Emerling & Graff-Emerling, 2014; Suratno, T, 2012; Aoibhinn, 2016; Suhaili, & Khalid, 2011). Let us now investigate other studies that relates those improvement to teachers' ability to design good lesson plans which then translates to effective classroom instruction because of better understanding of the subject for both students and teachers. We will looks at it stage by stage:

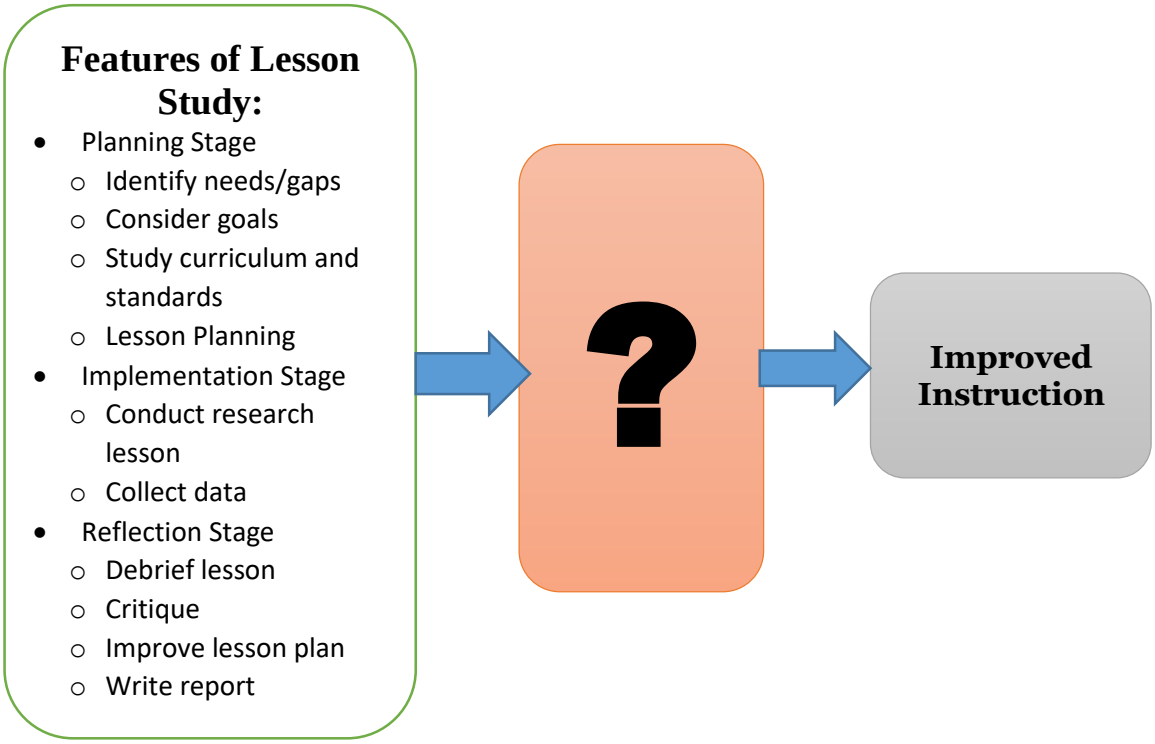


Figure 2: How does lesson study improve instruction?

The best feature of lesson study is its ability to focus on certain themes identified by the research team and what follow is the steps that will be taken to achieve the theme as the aim

and objective of a certain study. Figure 2 depict the process of achieving improved instruction by looking at each stage of lesson study. The middle box will relay what happen during the process of lesson study that makes it possible to improve instruction. It should be reminded here that all the stages executed involve collaboration between teachers, and a knowledgeable other such as a curriculum expert, a university lecturer or an 'excellent' teacher, etc.

Let us take an example. If a school feels that their students' lacks creativity, then an example of a long term lesson study theme would be 'Fostering Creativity'. Therefore the objective that will be emphasized by teachers of any subject in that particular school is to foster creativity and they will have to try to embed this in their lesson. The teachers will examine the curriculum and standards and think of how to do this. In mathematics for example, this may be done via problem solving. Hence the objective for any mathematics lesson will be to "Foster creativity in mathematics through creative problem solving". Then teachers will sit together to write a lesson plan. They will discuss how best to execute this. They can skim books or the internet to look for ideas and discuss the ideas with the team. They will make sure that the problem is both challenging and yet solvable in many different ways so that students will be able to use their creativity in solving the selected problem. How it will be presented and what kind of environment will be provided is also discussed. Hence, improved instruction is possible through the teachers' cooperation and helps of the knowledgeable other in determining a task (in this case a problem) suitable for the level of students and the theme chosen.

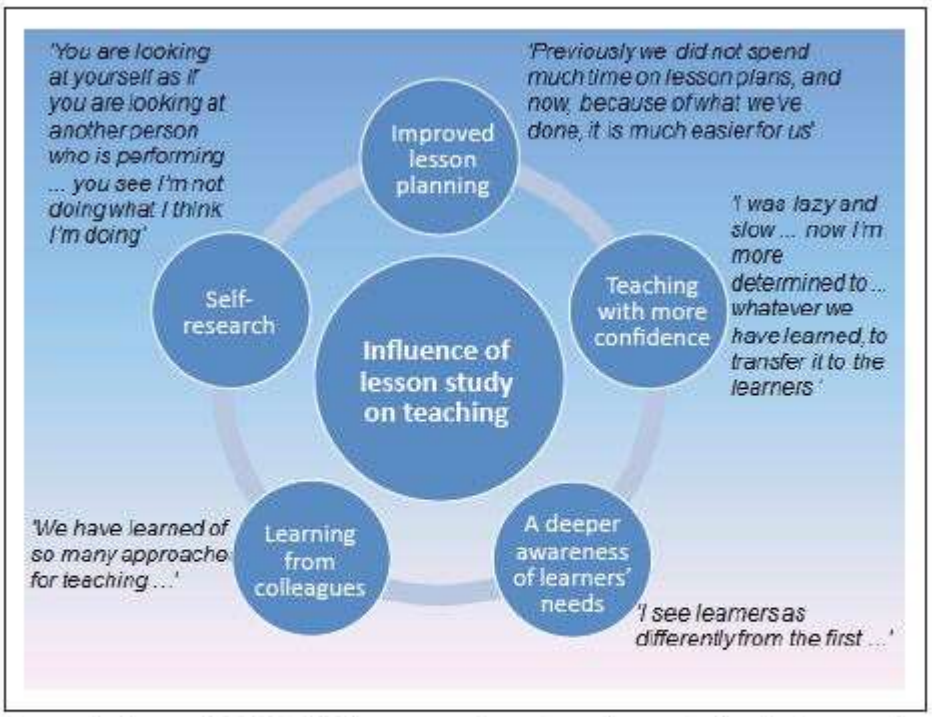
To determine the appropriateness of the lesson plan, it will be tried in a real class and taught by one of the teachers whose class is chosen, while other team members would observe and take notes of what is now called a research lesson. The observers are free to watch and take pictures but are not allowed to interfere in the process of learning. Observers may use a semi-structured checklist to record how the students are learning and whether they use creative ways to solve the problem. The second stage is where all the good ideas in the lesson plan and what was discussed before is being implemented and tested. Other documents such as students' work and their thinking process will be collected and photographed or videotaped. Therefore, this stage is important to determine whether improved instruction happens.

During the third stage, the class teacher is given a chance to reflect upon how the class was conducted, whether he applied what is in the lesson plan and whether he is satisfied or thinks that he has not achieved the learning outcomes of the lesson. The videotaped lesson will be played and other observers are then allowed to comment and give suggestions on how the lesson can be improved. All suggestions are discussed and noted. If the consensus is for another teacher to repeat the lesson, all suggestions for improvement will be included in the next lesson plan and the process repeats its cycle. If the team is satisfied with the lesson, then a report will be written and all lesson plans and recordings will be documented. This whole process may be repeated with different topics in the syllabus. As with the example given before, it can be repeated in various topics of algebra, measurements, geometry, statistics, etc.

Success Stories

The findings of the study by Rock and Wilson (2005) suggest that the lesson study process embodies the core features of professional development experiences identified, i.e. (a)

content knowledge focus; (b) active learning opportunities; and (c) coherence in learning experiences. This has significant positive effects on increased teacher knowledge and skills and changes to instructional practice. Rock and William (2005) also found that lesson study experience which involves the processes of researching, collaborating, active learning, observation, and focused reflection and discussion, led to professional growth and these is believed to have lasting impact on participants/ instructional practices.
Meanwhile, Posthuma (2011) puts her findings of the effects of lesson study on teaching in the figure below. According to her, the improved teaching was due to improved lesson planning, improved confidence, a deeper awareness of learners' needs, learning from colleagues and self-research.



Source: Posthuma, A.B. (2011). *The nature of mathematics teachers' reflective practice*. Unpublished doctoral dissertation. University of Pretoria, Pretoria, South Africa. Available from http://upetd.up.ac.za/thesis/available/etd-04252012-164207/

FIGURE 2: Influence of lesson study on teaching as reported by the participants.

In a study by Suhaili and Khalid (2011) on Bruneian teachers' perception of lesson study as a Continuous Professional Development program, they found that lesson study improve and develop teachers' pedagogical content knowledge and knowledge on students and this help them to adapt innovative and improved teaching practices.

Khalid and Pg. Mohd Ali (2016) researched on 'Inculcating Tsunami Awareness in a Mathematics Lesson: Improving Students' Collaborative Problem Solving via Lesson Study' with teachers in Brunei. Consequently, Lesson Study was found to help enhance teachers' pedagogical content knowledge, and therefore they were able to produce effective lesson plans that incorporated student-centered authentic lessons that also integrated values, use of technology and students' creativity in problem solving.

Huang, Barlow and Haupt (2017) found that teacher participants in their study improved their strategies for teaching for problem solving, in terms of effectively launching tasks, strategically implementing tasks, and productively orchestrating students' solutions to the tasks.

Finally, in the most recent research by the writer on 'Fostering Creativity through Creative Problem Solving in Mathematics' which is funded by the NCDRC grant, it was found that participating teachers were more confident to teach creative problem solving. They attributed this achievement to the lesson study style that the research was being conducted. Students in this study were found to improve in both areas of mathematics problem solving and creativity which was measured using Torrance Test of Creative Thinking.

Conclusion

This paper has established the role of lesson study in helping teachers in their instructional design of effective lesson which benefited both teachers and students. When teachers could better design their lessons in the lesson study atmosphere, their content knowledge and pedagogical content knowledge improved because of the discussion that they had within their team and the help of the knowledgeable other. This leads to better confidence in teaching and it benefits the students especially. Lewis and Hurd (2011) in their book on Lesson study step by step: How teacher learning communities improve instruction, noted that:

> *Unlike one-size-fits-all professional development, Lesson Study allows teachers to bring their own pressing needs to the table. They seek out answers from one another, from outside specialists and research, and from careful study of students during lessons that incorporate teachers' collective knowledge. The result is a shared vision of good instruction.* (pp. 56).

All of these are possible because of the nature of lesson study itself as a professional development model. Taylor et al. (2005) summarized the following benefits of the lesson study professional development model:

- an effective detailed lesson plan achieves the goal of more effective learning by learners
- the lesson study model provides a highly motivated structure for planning and teaching a lesson
- reflecting and thinking in the company of other teachers allow for sharing, interacting questioning assumptions, and reassessing common practices.
- observing a lesson enables a shift in thinking from a teaching focus to a learning focus
- focusing on learner thinking provides opportunities for feedback to support changes in teaching mathematics, and
- lesson study transforms working relationships and conversations between teachers.

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