EDITORIAL REVIEW

Is there really any difference between lesson and learning study? Both focus on neriage

Keith Wood
Institute of Education, Universiti Brunei Darussalam, Bandar Seri Begawan, Brunei Darussalam

Abstract

Purpose – The purpose of this paper is to highlight similarities between Japanese lesson study, Chinese lesson study and learning study.

Design/methodology/approach – This editorial review is intended to stimulate a discussion about a critical aspect of both Lesson and learning studies exemplified by the texts published in issue 6.2 of this journal.

Findings – The author identifies neriage, the comparison and discussion phase of Japanese lesson study, as a critical aspect of both Lesson and learning studies and emphasises that both involve research leading to teachers learning what makes effective lessons possible. Attention is drawn to the importance of being explicit about the theory of learning behind Lesson and learning studies and how its implementation leads to teacher learning.

Originality/value – This editorial review provides a framework for evaluating the quality of lesson and learning studies in educational institutions.

Keywords Lesson study, Learning study, Neriage, Path of learning, Systematic variation

Both Lesson and learning study are intended to bring about improvements in teaching and learning by focusing teachers’ attention on their students’ experience of the object of learning. Both invite teachers to explore the different ways in which they experience teaching and the different ways in which their students experience the object of learning. Protagonists of both types of study would accept that educational objectives are not sufficient for planning teaching and would agree that it is the process of discovering what different students need to learn to achieve those educational objectives that make the study a powerful learning experience for teachers. The emphasis in both Lesson and learning study is on difference, and how the experience of difference leads to learning. With their common focus on difference, there does not appear to be much difference between Lesson and learning study.

Japanese lesson study leads to the development of a lesson design in which Japanese students explore their different solutions to a task with their teachers (Fujii, 2016). The teachers involved in the lesson study focus on the appropriateness of the task. It is designed such that students will arrive at different solutions. The teachers discuss the anticipated student solutions in the preparation of the task. They try to identify which solution is the best and why:

The comparison and discussion (neriage) phase follows the problem solving by the students. This phase in the structured problem-solving lesson is the most difficult for teachers to deal with. Each correct solution has equal value in terms of getting an answer. However, the ideas involved may not have equal value […] The focus of designing the neriage phase of the lesson [is] on deepening students’ understanding and ways of thinking. From the point of view of mathematical value, the lesson should clarify the relative value of the different solutions, generally by contrasting these (Fujii, 2016, p. 421).

In the post-phase the lesson is evaluated based on the students’ responses to it, to see if the task is good for teaching. If contrasting the solutions in the lesson does not reveal to the
students the critical aspects of the object of learning, this may lead to revision of the task. The intended outcome is not a great lesson but an opportunity for teachers to learn what makes such a lesson possible.

This bears a marked resemblance to the development of learning study which arose from the research approach known as phenomenography. In the following example (one of many), researchers (Bowden et al., 1990) explored the different ways in which students solved the problem:

1(i) A motorboat with its engines running at a constant rate travels across a river from dock A to dock B in a straight line, as shown in Figure 1. Comparing the time taken for this journey when the river is flowing and when it is not fully explains your answer.

They found that this task was experienced in the five different but related ways shown in Table I.

It is possible to get this question right for different reasons. The researchers identified answers in the Rd category as the most powerful because they used the distinction between different frames of reference, a way of experiencing displacement and velocity that would have further applications in physics. Bowden et al. (1990) explained:

Category Rd It is only in this category that a distinction is made between two frames of reference – the motorboat relative to the river and relative to the ground. The focus is on the distance relative to the river that the motorboat travels, from the point of view of the distinction between these two frames of reference.

S It’s going to have to effectively go north ah because the river’s flowing downstream […]

I Are you saying it actually has to travel extra distance north?

S Relative to the water but not relative to the docks. Ah so it’s going to travel exactly the same distance but relative to the water […] it will have had to travel further.

![Figure 1. The problem](image)

<table>
<thead>
<tr>
<th>Question</th>
<th>Summary of categories of description</th>
<th>Student focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(i) category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rd</td>
<td>Longer distance relative to river, same speed relative to river, therefore longer time</td>
<td>Distance relative to river, distinguishing frames of reference</td>
</tr>
<tr>
<td>V</td>
<td>Smaller velocity, same distance, therefore longer time</td>
<td>Velocity, combination of velocities</td>
</tr>
<tr>
<td>Dp</td>
<td>Longer distance, therefore longer time</td>
<td>Distance; path travelled – parabolic or discontinuous (speed of boat unaffected by flow of river)</td>
</tr>
<tr>
<td>D</td>
<td>Same distance, therefore same time</td>
<td>Distance (speed of boat unaffected by flow of river)</td>
</tr>
<tr>
<td>F</td>
<td>Less pushing force left, therefore longer time</td>
<td>Force, power, etc. (linear relation to speed and distance (same) taken for granted)</td>
</tr>
</tbody>
</table>

Source: Adapted from Bowden et al. (1990)

Table I. Summary of categories of description and focus of student answers for question 1(i)
Phenomenography took a turn when it addressed the question of what does it take to change an individual’s experience of a phenomenon and placed an emphasis on the experience of variation as a learning activity (Pang, 2003). Learners can discuss their different responses to the question above with their teacher who is able to help them see what is critical for understanding why the boat takes longer to reach dock B when the river is flowing and allow them to understand the importance of focussing on different frames of reference. Relative to the river bed the distance travelled from A to B is invariant, but with the flow of the river varied the distance travelled relative to the river is varied and the time taken for the crossing is varied. The path of learning (Marton, 2015) appears to be that shown in Table II.

According to Huang, Gong and Han (2016), Chinese lesson study also helps teachers to identify learning trajectories along which students may achieve conceptual understanding by engaging with tasks varied systematically to achieve the intended outcome. This also has a focus on neriage. It appears to have much in common with learning study.

When Japanese lesson study and Chinese lesson study and learning study are compared in this way, there does not seem to be much difference. Both focus teachers’ attention on the difference in their students’ experience of the object of learning, and both go to some lengths to uncover these differences and use them to design tasks for effective teaching. Teaching and learning is always teaching and learning something.

We should not be surprised to learn from a study of collaborative work groups from a sociocultural perspective in the USA that those teacher groups where teachers’ attention was drawn by a coach to the different ways students understand ideas, made more progress in developing a more sophisticated approach to teaching than their counterparts who worked without a coach (Horn and Kane, 2015).

We are getting ever closer to identifying the theory that underpins lesson study. In 1996, Stigler et al. suggested that the Japanese approach is constructivist, but to describe it thus misses the detail. After all, we are aware that constructivism only offers general strategies for the design of teaching, and we have known for some time that a close look at what happens in an effective constructivist classroom reveals something akin to the type of teaching theorised in Japanese lesson/learning study. See, for example, Runesson (2005) who provides an analysis of data from what is described as a constructivist classroom encounter to show that the success of the scaffolding that occurs is clearly based on the teacher’s use of systematic variation.

As Lindström (2017) points out in her paper in this issue of the journal, quoting Elliott (2012) in the first volume of IJLLS, being explicit about theory improves the quality of teacher discussions. Stigler and Hiebert (2016) also agree, observing that due to the popularity of lesson study:

[…] Japanese and Chinese researchers have felt compelled to become more explicit about the theory behind lesson study, with respect to both its goals and the methods for achieving them. This is a good thing from our perspective (Stigler and Hiebert, 2016, p. 582).

And these authors are now clear about what lesson study is:

It is a research process, intended to produce learning on the part of teachers that can then be applied to improve their future instruction (Stigler and Hiebert, 2016, p. 582).

<table>
<thead>
<tr>
<th>Distance travelled relative to river bed</th>
<th>Distance travelled relative to river</th>
<th>Time taken</th>
<th>Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invariant</td>
<td>Invariant</td>
<td>Invariant</td>
<td>Repetition</td>
</tr>
<tr>
<td>Invariant</td>
<td>Varied</td>
<td>Varied</td>
<td>Contrast</td>
</tr>
<tr>
<td>Varied</td>
<td>Invariant</td>
<td>Varied</td>
<td>Generalisation</td>
</tr>
<tr>
<td>Varied</td>
<td>Varied</td>
<td>Varied</td>
<td>Fusion</td>
</tr>
</tbody>
</table>

**Table II.** The path of learning

Source: After Marton (2015, pp. 52-54)
Such clarity makes adaptation in different cultures possible without losing the effect of the original. In this light, there does not seem to be much difference between Lesson and learning study. Both involve teachers in research to develop tasks that provide students with the experience of contrast presented systematically to achieve powerful understanding of an object of learning, and both lend themselves to application in new contexts.

In this issue of the journal, there is a lesson study, a learning study, and something which the authors were tempted to call a learning study of lesson study but were persuaded to see as a learning study of teachers’ professional development. In addition, there is a sampling of lesson studies reviewed for their common characteristics, not least their theoretical underpinning.

In this issue of the journal, Goh and Fang (2017) describe an approach to lesson study based on curriculum deliberation (Schwab, 1969) “characterised by the weighing of alternatives and justifying actions of teaching improvement by studying student thinking”. A key finding of this study is that this led to teachers “challenging their shared assumptions and enabling their learning to adopt the students’ lens in improving the research lesson. They provide an example of English language teachers coming to see that their worksheet for Primary 1 students on a character study of a fictional character, Smarty Pants, was unsuccessful. The teachers found that students focussed on the character’s actions which they could see in the text before they could describe his personal qualities. This contrasted with the sequence of questions in the worksheet which asked for character traits first which they could not see and led to a redesign of the lesson.

Also in this issue, Lindström (2017) reports on a learning study. Her teacher group used variation theory which focusses on learning resulting from the experience of difference. The group carried out a study on the teaching and learning of the progressive aspect (PROG) of English grammatical structure. The teachers’ initial assumption that this aspect could be best discerned by contrasting it with the present tense proved false because students could not distinguish between statements such as He plays Hockey (present tense) and He is playing Hockey (PROG) and see the “ongoingness” of the latter. Instead they found that the use of the past tense in the first statement afforded the students’ the opportunity to understand the progressive aspect. This study did not only provide an effective lesson plan, it also led to teacher learning through the discovery of the effect of this difference in tenses on the students’ understanding of the progressive aspect. Prior to the use of the past tense, both statements appeared to the students to be in the present tense and they could not discern the difference. Participation in the learning study challenged teachers’ previously taken-for-granted ways of teaching:

It is a common pedagogical idea among teachers that, when teaching new subject matter, the content should be split up into its constituent parts and presented “one thing at a time”. Likewise, it is often taken for granted that pupil’s learning is promoted if instruction begins with simplified explanations, and only later should more complex examples be introduced […] such traditional ways of teaching the PROG were challenged in this study (Lindström, 2017).

In this study, the theory is explicit. Variation Theory was used to design the lessons and to analyse the enactment of those lessons.

In contrast with the previous study, the Brunei team (Wood et al., 2017) did not introduce the teachers in the lesson study group to any particular theory. Instead, the group members were introduced to a set of rubrics for evaluating the strength of lessons in developing twenty-first century skills. The groups were tasked to redesign lessons to improve their scores on the rubrics. However, the design of the lesson study was influenced by phenomenographic research findings identifying critical aspects of teaching, and the path of learning was designed around systematic variation to bring students’ experience of learning with the new designs to the awareness of the teachers. As in Lindström’s (2017) study, there was an intention to replace traditional, in this case, transmission teaching, with a more
student-centred approach. The interventions by the facilitator were designed to help teachers discern critical features of teaching that were not previously practised by them. These features related to two critical aspects of teaching: put simply, “what” and “how”.

The team discovered that “who” was another critical aspect of the object of learning to teach in the course of what they came to call a learning study. These terms – lesson study and learning study – appear to be interchangeable when we focus on the underlying theory. Akita and Sakamoto (2015) provide support for this observation when they explain that a common principle of lesson study is that:

The variation between teachers and their lessons makes teachers’ understanding of other teachers’ lessons deeper. When teachers from different subjects, grades and cultures speak together, they gain more awareness of their embodied knowledge and verbalise their own implicit theories (Akita and Sakamoto, 2015, p. 32).

All three of the above studies – whether we call them Lesson or learning studies – worked with difference against a background of similarity. Same curriculum, same students but a different design that has a positive effect of students’ learning and provides an opportunity for the teachers to come to see teaching in a different way because they have engaged closely with their students’ experience of learning. The sequence of the original worksheet in the Singapore study did not allow for the students to focus on actions rather than character traits, descriptions of which might follow their observations of the character’s actions. Two tenses were needed to achieve the object of learning in the Swedish study because in the first design both statements appeared to be in the same tense, and without discernment of variation, learning cannot occur. In the Brunei case, it was not enough for the teachers to discern that a new design for teaching would be effective with their students and their curriculum. It was necessary also to keep the design and curriculum invariant but to vary the students in the lesson to help teachers overcome their views about different students’ different capabilities. In all three studies, the conditions necessary for teacher learning appear to be the same.

A fourth paper in this issue of the journal is da Ponte’s (2017) review of research available through Google on the use of lesson studies in initial mathematics teacher education. He considered context and design, theoretical framework and content in what appears to be a mixed bag of studies. Interestingly, in relation to the conduct of the lesson study, some of the 16 cases of the lesson study under review excluded any reference to a theoretical framework (3) and, while some cases included reference to theoretical frameworks, they did not play a very important role (2). Some studies did draw on some theoretical notions such as the mathematical tasks framework (which focusses on the cognitive demand of tasks), self-efficacy, Vygotsky Space and levels of curriculum development (3). Studies with a clear theoretical orientation included reflective practice (2), pedagogical content knowledge (2) and learning community (3). Here we can see very clear differences between Japanese and Chinese lesson study and the studies identified in this search in terms of theoretical underpinning and process. da Ponte identified issues related to definition of aims, working relationships among the participants, problems of scale, and the effect of adaptation and simplification when lesson study is incorporated in initial teacher education; all issues that could distract the participants from the purpose of lesson study.

It is far from clear that giving professional activity the title lesson study or learning study will result in high-quality outcomes. Bringing a group of teachers together will not in itself provide any assurance that teacher learning will result. They may simply share and reconfirm their taken-for-granted ways of teaching. It is essential to tease out the necessary conditions for learning to occur in a teacher group before it can be called a learning community.
References


Corresponding author
Keith Wood can be contacted at: keith.wood@ubd.edu.bn

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