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Describing researchers' ways of seeing a lesson: As the first work of the cross-cultural study on lesson study between Japan and Thailand

Décrire la manière dont les chercheurs voient une leçon: premier travail de l'étude interculturelle sur l'étude des leçons entre le Japon et la Thaïlande

Tatsuya Mizoguchi[1]
Department of Education, Tottori University, Japan
https://orcid.org/0000-0002-4399-8988
Maitree Inprasitha[2]
Faculty of Education, Khon Kaen University, Thailand
https://orcid.org/0000-0003-3379-9552
Narumon Changsri[3]
Faculty of Education, Khon Kaen University, Thailand
https://orcid.org/0000-0002-3499-9946
Yusuke Shinno[4]
Department of Mathematics education, Osaka Kyoiku University, Japan
https://orcid.org/0000-0001-6999-5075

Abstract

This research is the first work of the project of cross-cultural study on lesson study between Japan and Thailand. Lesson study is currently an international topic, and we use "lesson study" as a common word. However, are the meanings of each terminology in diverse languages as same completely? Our initial concern is in this point. For this, we observe lesson on video and make comment-reports on it in each. In analyzing these comments, it is required a meta theory for descriptions. In this research, we describe the researchers ways of seeing a lesson using the Anthropological Theory of the Didactic [ATD or TAD in French and Spanish]. In conclusion, we discuss similarities and discrepancies between researchers' comments of both countries in terms of a) praxis and logos blocks, b) mathematical and didactic organization, and c) the perspective of scale of levels of didactic co-determinacy [LDC].

Keywords: Lesson study; Cross-cultural study; Japan and Thailand

[1] mizoguci@tottori-u.ac.jp
[2] inprasitha_crme@kku.ac.th
[3] Changsri_crme@kku.ac.th
[4] shinno@hiroshima-u.ac.jp

Résumé

Cette recherche est le premier travail du projet d'étude interculturelle sur l'étude de la leçon entre le Japon et la Thaïlande. L'étude de la leçon est actuellement un sujet international, et nous utilisons la « lesson study » comme un mot commun. Cependant, les significations de chaque terminologie dans diverses langues sont-elles identiques? Notre préoccupation initiale concerne ce point. Pour cela, nous observons une leçon sur la vidéo et faisons des commentaires sur chacune d'elles. En analysant ces commentaires, il faut une méta-théorie pour les descriptions. Dans cette recherche, nous décrivons les chercheurs pour voir une leçon en utilisant TAD. En conclusion, nous discutons des similitudes et des divergences entre les commentaires des chercheurs des deux pays en termes de blocs de praxis et logos, b) l'organisation mathématique et didactique, et c) la perspective des niveaux de la codétermination didactique.

Mots-clés: Étude de cours, Étude interculturelle, Japon et Thaïlande.

Resumen

Esta investigación es el primer trabajo del proyecto de estudio intercultural sobre el estudio de la lección entre Japón y Tailandia. El estudio de la lección es actualmente un tema internacional, y usamos el "lesson study" como una palabra común. Sin embargo, ¿los significados de cada terminología en diferentes idiomas son los mismos? Nuestra preocupación inicial es con este punto. Para esto, vemos una lección sobre el video y comentamos sobre cada uno. El análisis de estos comentarios requiere una metateoría para las descripciones. En esta investigación, describimos a los investigadores para ver una lección usando TAD. En conclusión, discutimos las similitudes y discrepancias entre los comentarios de los investigadores de ambos países en términos de bloques de praxis y logos, b) la organización matemática y didáctica, y c) la perspectiva de los niveles de codeterminación didáctica.

Palabras-Clave: Estudio de lecciones, Estudio transcultural, Japón y Tailandia.

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Nowadays, lesson study is spoken about throughout the world. However, our primary research concern is whether the meaning of this terminology is identical in different languages, such as 'lesson study' in English, '授業研究' in Japanese, and 'การศึกษาชั้นเรียน'in Thai, and so on. Hence, the final goal of our project is to construct a theoretical framework for understanding lesson study in various countries or cultures.

However, what are the conditions and constraints on such a theoretical framework? Considering the players of lesson study, there are teachers and an expert advisor, that is, a researcher in most cases. First, we investigate researchers' ways of seeing a lesson and usage of words related to the lesson study. The reason for this is as follows. From our experiences, the expert's advice has a great influence in pre- and post-lesson discussion as the typical practice of lesson study. Therefore, how researchers as expert advisors see a lesson could be important factors for understanding the concept of lesson study in relevant countries or cultures. So, our research question is 'what are the characteristics of Japanese and Thai researchers when they seeing a lesson?'

Although there are some excellent studies which implemented cross-cultural approach of lesson study (Runesson & Gustafsson, 2012; Arani et al., 2014; Arani, 2015; Arani et al., 2017), the subject of research in all cases is lesson itself. In other words, while the above studies are aimed at cross-cultural analysis of lesson, our intention is of lesson study.

The effort in this research is not all of our projects. It is just a case study. In this regard, the research practice has similar aspects of precedents. Nevertheless, the identity of this research is insisted in terms of the following reason. We attempt to describe the researchers' perspectives when they, *we ourselves*[5], see a lesson. To do this, we observed a video lesson

[5] In addition to the authors, the following members are participating the project: Akio Matsuzaki (Saitama University, Japan), Phattaraphong Kunseeda (Nakhon Phanom University, Thailand) and Toru Hayata (Naruto University of Education, Japan).

from the partner country and created a report for each. These reports are the data sources for analysis. A meta-theory for descriptions of analysing them was required. In this research, we described them using ATD (Chevallard, *in press*). Based on the theory, a praxeological model for reference is necessary for analysis originally. However, this research is rather aimed at obtaining basic data for constructing such a model. In this sense, the present work is a preliminary investigation for future research.

There are also excellent precedents using ATD, such as Miyakawa & and Winsløw (2013) and Rasmussen (2016), while these studies refer the lesson study itself. In addition, Clivaz (2015) already presents French Didactique des Mathématiques to the lesson study community by contrasting it with the main features of lesson study. It focuses on a contrastive study between the lesson study and the Theory of Didactical Situations, ATD is only briefly introduced. However, it also states that "the anthropological point of view seems particularly adequate to describe LSs in their institutional context." (p.252) This is the reason why ATD is used for analysis in this research.

Data collection

Nature of lessons and teachers by both countries

Researchers from both countries see the lesson (DVD video with its English script) each other. The aim of this work is not to compare viewpoints toward similar lessons but to characterize how researchers understand a lesson.

The Japanese lesson was related to the expansion of algebraic expression in grade 9. The teacher is over 10 years in career, is in charge of this class ordinary. The lesson was implemented in about 50 minutes that is a regular lesson time in Japan, not specially designed but one of the daily lessons. The number of students in the classroom is standard in Japan, and the style of the lesson is not special.

The Thai lesson was related to addition by carrying digits in grade 1. The teacher is a student intern who works with an in-service teacher. The lesson was implemented in about 50 minutes. A regular lesson time in Thailand is about 40-60 minutes. This is a daily lesson. The style of the lesson is special for Thailand. Such efforts to improve lessons have been incorporated as part of project by CRME, KKU (Kadroon & Inprasitha, 2013). The number of students in the classroom is less than standard in Thailand, the standard is about 30-40.

Making comment-reports

Japanese researchers saw the lesson and made their reports individually, so there are 4 reports. Although Thai researchers also saw the lesson individually, they discussed it among members and made one report. For this reason, Japanese reports reflect personal views respectively, meanwhile Thai report is comprehensive of all researchers' thought. The format of report was not set specific items but open-ended.

Researchers' comments in both countries: outline

Japanese researchers' comments for Thai lesson

At first, all Japanese researchers [JR_n] describe the ecology of mathematical knowledge. There are many points of view on how one lesson is related to other lessons. Especially, JR_3 refers to the influence from the higher LDC.

JR_3(c): Since the students imitated the movements of the teacher's hands in this way, it seems that influence of the teacher's teaching could be strong in this classroom.

Also, JR_1 describes as the following.

JR_1(d): For whether or not students could think of "making 10" learned in 9+4 into the other problem situations in the same way, students only said in unison "making 10" without solving a so-called evaluation problem in this lesson.

In addition, JR_2, JR_3, and JR_4 comment on how "increasing" and "putting together" learned in the previous lessons could be related to this lesson. In particular, JR_3 describes as following.

JR_3(d): I looked at the hand movements of "increasing" and "putting together". When the teacher explained "increasing" and "putting together" at the beginning of the lesson, her movements of the hands were different. However, while explaining the summand decomposition with moving blocks for the problem of this lesson, there was a discrepancy between the movement of blocks and of hands. I think that it is better to unify the operation of blocks as semi-concrete objects and the movement of hands for understanding of addition.

Thai researchers' comments for Japanese lesson

The report by Thai researchers [TRs] is well organised according to the sequences of the lesson. It consists of the following three sections:

1. Review what they learnt in the last period. (5 minutes)
2. Teacher give some questions/tasks, students solve the problem. (25 minutes)
3. Teacher and students discuss how to solve/find the answer and computing processes from students' ideas. (20 minutes)

TRs record those with carefully tracking the teaching and learning process of mathematical knowledge in the form of utterances/interactions of the teacher and the students.

Characterising researchers' eyes of seeing a lesson

TRs' eye corresponds to praxis, JRs' eyes also correspond to logos

All descriptions of TRs carefully track observable facts. It means that they attempt to understand the activities/interactions of teacher and students in the lesson by praxis block. Therefore, it is constituted partial descriptions of mathematical praxeologies [MPs], and also the teacher's didactic praxeologies [DPs] be done as the same. Thus, it is pointed out that the descriptions of TRs are extremely reasonable in terms of understanding the lesson.

On the other hand, the descriptions of JRs are more focused on the mathematical knowledge. It can be pointed out that they attempt to describe students' activities not only in praxis but also in logos (however, only technology here). JR_3 notices technology in MP related to this lesson such as "increasing" and "putting together" with hand movements. By paying attention to the numerical value setting of "9+4", JR_4 focuses on technology related to addend and summand decompositions (techniques). Furthermore, JR_1 is interested in a technology of DP such as whether making 10 learned at "9+4" is available or not for other problem solving, JR_2 also have an interest in what teacher's DP was in terms of the relation between mathematical expression and others. Thus, it can be characterised that the attentions in the descriptions of JRs are directed not only to praxis but also to logos (including their predictions) of MPs and DPs.

TRs' and JRs' ways of understanding of Mathematical Organisation [MO] and Didactic Organisation [DO]

Descriptions of TRs are recognised as a MO with focusing on the progress based on a time series of MPs. It is a precise comprehension about the birth and the growth of techniques for the type of task. On the other hand, the descriptions of JRs focus on the influence of technology on praxis for a MO. In that respect, it is conscious of how such techniques is justified. Therefore, the descriptions of JRs are rather focused on the teacher's DPs.

Discrepancy between JRs and TRs from the perspective of LDC

JRs consider the mathematical knowledge (as MPs) and the didactic activities (as DPs) not only in the lesson itself but also in other lessons (thus, in relation with other mathematical contents). Based on LDC, this is characterised by considering not only on the Subject level where one lesson is targeted but also on other upper levels. On the other hand, it is possible to characterize TRs' as seeing specialized on the Subject level.

Then, what could it cause such discrepancy between JRs and TRs?

JRs more or less implement usually the interventional research practices through the lesson studies in schools. Even in Thailand, researchers are doing same efforts, but the aim is primarily professional development (Kadroon & Inprasitha, 2013). These situations also exist in Japan. However, the feature of lesson studies in Japan is not just the sharing of the didactic practices, but rather the sharing of the didactic technologies and theories. In order to make it possible, the lesson study focused only on the Subject level is inadequate, it is needed to examine the ecology of the related mathematical knowledge and the educational purpose at the upper level.

Final remarks

This research is the first attempt as our project but based on the limited data. It is pointed out that this research is necessary as a precondition for future works of the project.

The implication obtained in this research could provide a practical suggestion for lesson study. However, it is not our current purpose in itself.

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