

# *The Development of the Learning Study Approach in Classroom Research in Hong Kong*

Mun-ling Lo

*Department of Curriculum and Instruction*

*The Hong Kong Institute of Education*

*This paper describes the learning study approach, which has the potential to develop into a classroom research movement in Hong Kong. The author examines how important research projects in the last decade have contributed to the development of this approach in Hong Kong. She then considers the uniqueness, impact, and factors that have led to the success of the approach. The challenges to be resolved for its future development are also discussed. It is hoped that readers will gain insights into how classroom research is supported in Hong Kong, and how strong research teams with a global impact can be nurtured.*

*Key words: learning study, classroom research, variation theory*

---

Correspondence concerning this article should be addressed to Mun-ling Lo, Department of Curriculum and Instruction, The Hong Kong Institute of Education, 10 Lo Ping Road, Tai Po, N.T., Hong Kong. E-mail: mlo@ied.edu.hk

## Introduction

Classroom research is crucial in view of Hiebert's (1993) belief that "unless the results [of educational research] allow us to begin building explanations of superior performance, in terms of relationships between teaching and learning, [...] studies are of limited use" (p. 237), as it is well positioned to unveil the intricacies of classroom practices and thus has great potential to improve teaching and learning. The learning study is a special type of classroom research that originated in Hong Kong, and has developed into an approach that has affected the teaching and learning in hundreds of local schools. However, its impact goes well beyond Hong Kong, as it is now receiving international attention (Elliott & Tsai, 2008; Marsh, 2007).

This article discusses the emergence and development of the learning study approach, its impact, the tensions experienced, and the challenges that lie ahead in its future development. It is hoped that this can provide insights into how classroom research teams can be better supported in Hong Kong so that they can make important contributions to both the local and international research arenas.

## The Context of the Development of the Learning Study Approach

The development of the learning study approach was influenced by the findings of the video study of the Third International Mathematics and Science Study (TIMSS), in which 15 algebra and 15 geometry lessons that had been taught in eighth-grade classrooms in each of three countries, Germany, Japan, and the United States, were analyzed and compared. It was found that only one-fourth of the 90 lessons contained instances of deductive reasoning; these occurred in 62%, 21%, and 0% of Japanese, German, and American classrooms, respectively. The lesson study approach, which originated in Japan (*jogyo kenkyuu*; "lesson study"), is credited with the steady improvement in elementary mathematics and science instruction in that country (Stigler & Hiebert, 1997).

The TIMSS findings led to an upsurge of interest in the use of the lesson study approach to improve classroom mathematics teaching in many other parts of the world. In 2004, at least 32 states, 150 lesson study groups, 335 schools, 125 school districts, 900 lesson study members, and 2,300 teachers were involved in lesson studies in the United States (Lewis, Perry,

& Hurd, 2004). The approach encompasses a large family of instructional improvement strategies, and its practice in Japan varies widely. The only commonly shared feature is the observation of live classroom lessons by a group of teachers who collect data on teaching and learning and collaboratively analyze it. Lewis, Perry, and Murata (2006) noted that despite the widespread adaptation of the lesson study process in the United States, “the whole edifice of U.S. lesson study actually rests on just two examples of full Japanese lesson study cycles” (p. 3); that is, the American process is based more on the perception of an ideal than on the fidelity approach. Therefore, it is not surprising that the practice of lesson study also varies widely within the United States. This process has also been adapted in Cambodia, Egypt, Ghana, Honduras, Indonesia, Kenya, Laos, the Philippines, South Africa, and Thailand, among other countries (Isoda, Stephens, Ohara, & Miyakawa, 2007).

## **The Development of the Learning Study Approach in Hong Kong**

In this section, I trace the emergence and development of the learning study approach as a growing movement in classroom research in Hong Kong.

### **Stage 1: Insights from an Observational and Descriptive Study**

My account begins with a study entitled “The Target Oriented Curriculum [TOC] Evaluation Study.” This was a three-year study of the impact of TOC implementation, which aimed to promote systemic curriculum reform in Hong Kong schools at the policy, school and teacher, and classroom levels. This multilevel, multiperspective project was launched in 1995 by a team of 10 researchers from the University of Hong Kong (HKU), and led by Paul Morris. At the classroom level, about 600 Chinese Language, Mathematics, and English Language lessons were observed in the 14 case-study schools. To provide an overview of the lessons, the team developed and used an observation guide to categorize activities and interaction patterns that the teachers and students engaged in over time. Descriptive accounts of each lesson were also made for interpretative purposes. Thus, by providing both quantitative and qualitative data, this evaluation study offered a glimpse into classroom practices in Hong Kong and made possible

a deeper understanding of the complex nature of educational reform and how a new curriculum is interpreted, developed, and implemented.

One of the study's findings was that TOC implementation had brought about changes in classroom practice, with teachers incorporating many of the elements that this approach encourages, including task-based learning, group work, and new forms of assessment. It was also found that most of the teachers had complied with only the procedural requirements, although some did exhibit real change in their beliefs and practices (Adamson, Kwan, & Chan, 2000). However, an intriguing finding was that some teachers were able to bring about better student learning of specific content despite using traditional methods, in comparison to teachers who had procedurally adopted the progressive teaching strategies advocated by the TOC. This finding is supported by the work of Pong and Morris (2002). Drawing on meta-analyses of studies of student achievement (Hattie, 1999; Wang, Walberg, & Haertel, 1993) and evidence from research into curriculum reform, Pong and Morris (2002) concluded that the appropriateness of teaching arrangements must be judged in terms of their ability to bring about the learning expected, and noted, "One key feature of teaching, how teachers make available the object of learning to their pupils, has been neglected and is a critical influence on pupil learning" (p. 9). The concept of the "object of learning" is derived from Brentano's principle of intentionality (1874), which holds that all mental acts are directed towards an object. Thus, learning is always the learning of something, and one cannot talk about learning by focusing only on what progressive teaching strategies are to be employed but rather must also pay attention to what is being learned, that is, the object of learning.

## **Stage 2: Searching for an Explanatory Framework**

Some of the research team members of the evaluation study continued the investigation of the relationship between teaching and learning, specifically, what kind of teaching will lead to better student learning outcomes, in a subsequent project, "Being Good at Language Teaching." They were joined by Ference Marton, who brought to the project a learning perspective based on his work on phenomenography and variation theory.

Phenomenography is an empirically based approach that aims to identify the qualitatively different ways, which are always limited in number, that people experience, conceptualize, perceive, and understand

various kinds of phenomena (Marton, 1988). According to Marton and Booth (1997),

“A way of experiencing something” is a way of discerning something from, and relating it to, a context. The meaning of something for someone at a particular point in time corresponds to the pattern of parts or aspects that are discerned and are simultaneously objects of focal awareness. (p. 112)

To learn is to become capable of discerning aspects of a phenomenon other than those one has been capable of discerning before. To discern these aspects, one must experience variation in them (Marton & Booth, 1997).

In the project, pairs of lessons on the same topic taught by different teachers to different classes at the same level were compared. The intended object of learning was agreed upon between the teachers whereas the ways of handling it (or the enacted object of learning) varied. Student learning outcome data were obtained by having the students take a diagnostic test that had been constructed based on the intended object of learning. Each student was interviewed individually at the end of the lesson to find out what he or she had learned.

When the research team related the student learning outcomes to the teaching acts, two important findings emerged. First, lesson effectiveness showed no direct relationship with any of the teaching strategies (progressive or traditional, group work, direct teaching, etc.). Second, better student learning outcomes were related to how the teacher structured the content — what was kept invariant and what was varied, that is, the pattern of variation that emerged with respect to the content. The research team was able to explain the student learning outcomes based on variation theory. The findings of this project, which marked the second stage in the development of the learning study approach, formed the basis of two publications (Marton & Morris, 2002; Marton & Tsui, 2004).

### **Stage 3: Testing the Generality of the Relationship Identified**

The “Being Good at Language Teaching” project led to the following observation by the research team.

[In this project,] the lessons were allowed to run their own courses without any input from (or intervention by) the researchers, who simply described what they observed. However, if we really know what is critical for

learning to take place, should we not try to make use of our insights to help shape the lessons for better learning? (Lo, Marton, Pang, & Pong, 2004, p. 189)

This question led to the creation of the “Catering for Individual Difference — Building on Variation” (CID[v]) project, jointly led by Lo, Pong, and Marton. The project team worked closely with two primary schools throughout the study period (2000–2003) to find ways to help teachers improve their ability to deal with student diversity.

Variation theory argues that the way one understands something depends on the critical features on which one focuses. In the education context, the failure of students to learn an object of learning may be explained as their failure to discern all of the critical features required for the particular way of understanding the object of learning intended by the teacher. Therefore, to help students appropriate an object of learning, the teacher must first study that object in depth to tease out its critical features. He or she should then ascertain the limited number of qualitatively different ways in which students may understand it, which will subsequently become a useful resource in lesson planning. The object of learning does not mean just “facts”; rather, it refers to knowledge, a skill, or an attitude that is considered to be worthwhile and relevant for the students to learn. Attention should also be paid to what students should be able to do with the object of learning, and the capability that can be developed as a result of learning it.

In the CID(v) project, to help the teachers put variation theory into practice, the research team adopted the lesson study approach, which is described as follows. In a lesson study, teachers and researchers jointly develop a research lesson for a single- or double-lesson time-slot over a series of meetings. As teachers may have different understanding and ways of handling an object of learning, those teaching the same subject at the same level should work together as a team and share their wisdom and pedagogical content knowledge to better understand and handle that object of learning in the research lesson. Finally, this team should make conscious and systematic use of variation theory when designing the research lesson by focusing on what varies and what remains invariant, to facilitate better learning. For example, if a teacher wishes to teach a student about the color red, then it is not enough to point to a red apple and say “red.” The apple has other features, and the student will not know to which feature the teacher is pointing. The student may understand “red” as meaning “one” (as there is only one apple), or “apple,” or even “one red apple,” and so forth.

Hence, the teacher should show the student other things that are red, such as a red book or red chair. In this way, a pattern of variation is created in which the red color is invariant and the object that is colored varies. This will help the student to discern the meaning of “red.” The teacher should also contrast red with what is not red, for example, by showing the student a green or yellow apple.

Teachers then take turns implementing the planned lesson in several cycles. In each cycle, one teacher teaches while the others observe and take notes. They meet after the lesson to discuss its outcomes and any improvements that need to be made by the teacher in the next cycle. In the project, the research lessons were also videotaped to allow detailed analysis. Student learning outcomes were measured by a pre- and a post-test. At the conclusion of the process, the team evaluated the lesson and suggested further improvements to it.

A total of 27 lesson studies were conducted, and the results showed a remarkable improvement in student learning outcomes. In 25 of these studies, the weaker students showed significantly greater gains (using a two-sample  $t$  test with a significance level of 0.05) than did the higher achievers, which narrowed the achievement gap between the two groups. In 13 studies, both the whole group and different groups made considerable progress. It was also found that those classes that had experienced research lessons over the three years of the project showed a significant increase in their scores on the Hong Kong Attainment Test, a normalized test given annually to all students in Hong Kong at that time. The students with initially lower scores improved even more significantly than did those with higher ones. For example, in one school, for 11 of the 17 students who scored less than 80 in the standardized score in 1999/2000, the gain in standardized scores varied from 5 to 25.7 in 2002/2003. These results gave credence to the team’s belief that the adoption of more systematic methods of planning and carrying out lessons, aided by variation theory, can have a much stronger effect on students who are classified as academically less able, enabling them to learn almost as well as their counterparts who have been classified as more academically able (Kwok & Chik, 2005, p. 121). The team attributed these improved student learning outcomes also to the improvement in the teaching of the teachers. It was found that although each lesson study focused on only one lesson, the teacher learning that resulted went far beyond a single lesson.

It should be noted that whereas lesson studies in Japan and the United States take various forms, the lesson study in Hong Kong followed one

procedure and was underpinned by variation theory. To distinguish the Hong Kong lesson study from the Japanese or American lesson studies, the team decided to call this type of lesson study a “learning study.” Each learning study promotes learning at the student, teacher, and researcher levels. The CID(v) project report formed the basis of the book, *For Each and Everyone* (Lo, Pong, & Chik, 2005).

The project helped the research team to establish and refine a working procedure for the learning study approach, and contributed knowledge on how variation theory can be put into practice in the subjects of Chinese Language, Mathematics, and General Studies. The team was keen to test the approach using other subjects and at different levels of the school curriculum. Two other research and development projects on learning study were subsequently developed: the “Progressive and Innovative Primary Schools” (PIPS) project (2001–2004) and the “Secondary Teaching, Evaluation and Mentoring” (STEM) project (2003–2005). In these projects, the research team was able to work with teacher teams from 40 primary schools and 50 secondary schools, respectively, to develop learning studies. In this way, it was able to test the applicability of variation theory and the learning study framework in most subjects (both academic and cultural) at various levels of the school curriculum. To avoid rote implementation of an innovation, there is the need to explicate the innovation mechanism (Lewis et al., 2006). Therefore, a manual for conducting a learning study (Ko & Kwok, 2006) and a number of case studies were published (e.g., Lo, Chik, & Pang, 2006; Lo, Hung, & Chik, 2007) to explain in detail the mechanism by which a learning study results in instructional improvement. Each learning study can be regarded as a case study. Research lessons are developed, taught, and improved through a number of action research cycles. In each cycle, modifications are made to the research lesson based on Brown’s and Collin’s design experiments (Brown, 1992; Collins, 1992). Thus, although it is impossible to control all aspects of the classroom learning environment, which is complex and dynamic, considerable insights can still be gained into how teaching and learning of the object of learning can be improved through systematic intervention and unbiased observation. Different data sources, including student pre- and post-lesson interviews and tests and lesson videos, were triangulated to explore the relationship between the enacted object of learning and what the students had actually learned. This is illustrated by drawing on the data of one learning study.

A group of Chinese teachers wanted to encourage their Primary 2 students to be creative when writing. They developed a research lesson based on a story called “The Wishing Well.” The story had no ending, and the teachers encouraged the students to use their imagination to provide one. Thus, the intended pattern of variation was shown as in Table 1.

**Table 1 The Intended Pattern of Variation for the Lesson**

What varies	What is invariant	What could be discerned
The ending of the story	The story (without the ending)	There are many ways of writing the ending of a story

At the end of the lesson, a researcher interviewed three students who were perceived by the class teacher to have different levels of performance in the subject. The following is a transcript of part of the post-lesson interview (translated from Cantonese into English):

Researcher: What did you learn from the lesson just now?

Students A, B, and C (together): How ... how to make wishes.

Researcher: Why did the teacher teach you how to make wishes?

Students A, B, and C (They shake their heads and think for a while. Each answers): I don't know.

From the above, we can see that what the students learned differed from the intended object of learning. The videotape of the lesson was studied carefully, and variation theory was employed to analyze what the actual enacted object of learning was. It was found that in the first research lesson, the teacher tried to increase motivation to learn by showing the students a number of ways to make wishes before explaining the passage and pointing out that there was no ending to the story. Because the teacher got carried away with wish-making activities and by the active participation and enthusiasm of the students, she ran out of time and the writing of the ending of the story was made a homework assignment. When variation theory was applied to analyze what was actually taught, it was revealed that the pattern of variation was enacted as shown in Table 2.

**Table 2 The Enacted Pattern of Variation in the First Research Lesson**

What varies	What is invariant	What could be discerned
Ways of making wishes	Making wishes	There are different ways of making wishes

As the teacher brought out very well different methods of making wishes, this was exactly what the students learned! Unfortunately, this was not the intended object of learning, and it was not considered worthwhile for the students to learn different ways of making wishes.

Hence, in the second cycle of teaching, the teacher described briefly making birthday wishes and then looked at the story with the students. The teacher then divided the students into groups to write the ending of the story. Next, each group shared its ending with the whole class. In this way, the story was invariant whereas the endings varied, and students were able to discern that there could be different endings for the same story. After the lesson, a researcher again interviewed three students selected from among the high, average, and low performers as perceived by the teacher of this class. The following is a transcript of part of the post-lesson interview:

Researcher: What did you learn from the lesson just now?

Student A: I learned that there can be different endings for a story.

Researchers: Do you like these stories with different endings?

Students (answer together): Yes.

Researcher: Why?

Student A: Because we can create freely.

In both classes, the students were actively engaged in the activities and very attentive and interested in the tasks; however, the quality of the learning outcomes was very different. What mattered most was whether the students actually experienced the variation in the critical feature to be discerned.

Parallel with and complementary to the abovementioned learning study research at the Hong Kong Institute of Education (HKIEd) were learning studies at HKU, which mostly used control groups in the research design. Pang and Marton (2003) concluded that the use of a learning study that is informed by variation theory is a more effective means of helping students to grasp the intended objects of learning than a lesson study that does not

make use of this theory, as they found that in a lesson study group, fewer than 30% of the students developed a good grasp of the concept, compared to more than 70% in a learning study group. Master of Education dissertations submitted between 2004 and 2006 also examined the use of variation theory in various subject areas and came to similar conclusions (e.g., Choy, 2006; Lam, 2004).

Although the research teams of the two institutions had slightly different foci, methods, and scales, the work of both lends support to the use of variation theory, which posits that for an object of learning to be experienced, an appropriate pattern of variation and invariance must be made explicit to allow discernment of the critical features of that object of learning. In the various projects, the procedure and theoretical framework of the learning study approach were tested through extensive classroom trials.

#### **Stage 4: Knowledge Construction, Theorizing, and Scaling Up**

In 2005, the learning study approach was further developed by the HKIEd research team in the “Variation for the Improvement of Teaching and Learning” (VITAL) project, which involved 120 schools over a three-year period (2005–2008). Each learning study was developed as a case study in its own right, but to make possible cross-case comparisons, the learning study procedure was modified and standardized across cases into what Elliott and Yu (2008) called a tight procedural package, which was introduced to address two issues. First, in anticipation of the problems associated with scaling up, clear guidelines had to be followed by each of the 120 learning study teams, each working with one school, to ensure that the desired effects would be achieved. Each team consisted of one academic with expertise in the subject discipline under study, one member of the learning study research team who was familiar with variation theory and the learning study approach, and teachers in the project school. Second, it was necessary to ensure that important data for triangulation would be collected for the investigation of the relationship between the teaching act and student learning outcomes. The following changes were made to the previous procedure. Pre-lesson student interviews became mandatory for every learning study to ascertain the variation in the prior understanding of students of the topic. A pilot pre-test was introduced to ensure that the test items served to diagnose student difficulties and misconceptions regarding the critical features of the topic. In planning the research lesson, the findings of the interviews and pre-test, previous experience of the teachers, insights

obtained from the literature, and variation theory were all to be taken into account. In the second year of the project, the learning study teams were also required to make explicit the pattern of variation to be employed and to align this with the teaching and learning activities. In some cases, delayed tests were also administered to determine whether there were any long-term effects.

The following are some of the findings of the VITAL project (Lo et al., 2008, pp. 29–34).

- In some cases, classes with initially lower average scores in the pre-test caught up with or even surpassed those with initially higher average scores.
- In more than half of the cases (63 out of 120), classes taught in the last cycle showed the greatest improvement in the post-test, irrespective of the experience level of the teacher.
- Of the 56 learning studies for which statistical analysis of the student pre- and post-test data was possible (the pre- and post-tests were generally intended for diagnostic purposes, rather than statistical analysis), the gap between higher and lower performers narrowed in 49 cases (significance level of 0.05).
- In cases where delayed tests were also administered to the students after several months or a year, it was found that the impacts of the learning studies on some of the students went far beyond a single research lesson.

These findings demonstrate that student learning outcomes depend more on how the object of learning is dealt with than on the perceived abilities of students, which supports the findings of the CID(v) project. Similar positive evidence in two independent projects is unlikely to be the result of coincidence.

An independent evaluation of the process described in the VITAL project found that it had “the power when injected into the system to effect sustainable improvements in the capabilities of teachers to bring about worthwhile curriculum and pedagogical change” (Elliott & Yu, 2008).

The more than 200 learning studies carried out so far also constitute a large data source for collective case studies. The application of patterns of variation to bring out different learning functions, e.g., contrast, separation, generalization and fusion (Lo et al., 2005) is now more clearly understood

and many empirical examples of its use in different subjects have been established. As complementary research continues at HKU (e.g., Marton & Pang, 2006; Pang & Marton, 2005), further theoretical insights and generalizations that advance the contribution of variation theory to teaching and learning can be expected.

## **The Significance of the Learning Study Approach in Hong Kong**

The development of the learning study approach in classroom research in Hong Kong is unique, and significant in a number of ways.

- In contrast to most teaching innovations that focus on the act of teaching, the learning study always takes the object of learning as the point of departure. During the process, opportunities are provided for teachers to learn in a community of practice that aims at trying to help students to learn better a particular object of learning, and in so doing, develop pedagogical content knowledge. This is in line with the argument that teacher learning best takes place in the context of practice, and that for significant and sustainable results, it is necessary to ground teacher learning in improved student performance in particular content areas (Cohen & Ball, 1999, p. 28). Most classroom research projects in Hong Kong focus on either student learning or the professional development of teachers. The learning study process, however, focuses on the learning of both students and teachers, and thus represents a breakthrough in the way that teacher professional development is conceptualized.
- Teachers are often regarded as the object of study in classroom research. However, in a learning study, teachers become researchers who generate knowledge about their own practice. In this way, the theory-practice gap, which has led to the failure of many attempts to change classroom practice, disappears. In addition, more than 100 learning study projects have been presented by teachers at research and public seminars and international conferences. This is important as teachers are given an opportunity to articulate and make explicit their personal practical knowledge.

- A questionnaire was administered to the teachers who took part in the VITAL project, and Table 3 shows the results of some items.

Most classroom research projects have little impact on practice; however, the evaluation reports of all of the learning study projects carried out so far show that they have had a significant impact. Some teachers have continued to engage in learning study on their own after the research team has withdrawn from the school.

The following insights summarize the above discussion.

For a research approach to be widely adopted and sustained, it must be connected to a field of study and developed through good networks among research teams in the same field both locally and globally. It is noted that the learning study approach is not based on mainstream or American theoretical perspectives, which dominate the rhetoric of classroom research in Hong Kong, such as the cognitive constructivist (e.g., Driver et al., 1994), sociocultural (e.g., Brown & Campione, 1994; Lave, 1991) and language-focused (e.g., Green & Dixon, 1993; Halliday, 1978) perspectives; thus, it is not uncontested (e.g., Elliott & Tsai, 2008). However, the research lessons that resulted from the learning studies generally reflect the principle of best practices implied by many of these perspectives, such as active student participation in group work or task-based activities to engage students with the object of learning, despite being based on possibly different rationales. The learning study process has gained popularity among teachers and principals in Hong Kong because of its positive impact on teacher and student learning, and perhaps also because it resonates well with Chinese pedagogy. Elliott and Tsai (2008) argued that lesson and learning studies are Confucian forms of teacher research. After conducting a thorough analysis of Confucian culture and lesson study, learning study, and action research, they concluded:

Ironically, Learning Study in Hong Kong appears to be using a theory developed in the West to strengthen a view of learning (both that of students and teachers) as an aesthetically organized process, which is thoroughly Confucian [...] The explanation for the preference in the Hong Kong context may be straightforward; variation theory simply resonates with conceptions of learning that are deeply embedded in Confucian culture. (Elliott & Tsai, 2008, p. 577).

**Table 3 Result of Teacher Questionnaire of the VITAL Project**

Questionnaire – close-ended section  (Scale: 5-Strongly Agree; 1-Strongly Disagree)	Either Strongly Agree or Disagree		
	Cohort A (2005–06) (Return rate: 31%, 40 respondents from 12 schools)	Cohort B (2006–07) (Return rate : 88%,148 respondents from 36 schools)	Cohort C (2007–08) (Return rate : 80%,146 respondents from 32 schools)
The teachers reflected that:			
My teaching has improved after taking part in the learning study.	80%	89%	94%
I have developed a deeper understanding of the subject matter.	85%	95%	95%
I will apply variation theory in my lesson planning.	60%	84%	90%
I am more focused on the object of learning and its critical aspects in planning a lesson.	95%	98%	100%
I have become more sensitive to students' learning difficulties.	83%	89%	93%
The concepts and procedures of the learning study are sustainable in my school.	60%	76%	80%

As a learning study aims to bring about the learning of students, teachers, and researchers, the scope of research that can be carried out is wide, ranging from contributing to the knowledge base of the teaching of particular topics in specific subject areas to the professional development of teachers during the learning study process, the development of the school into a learning community, and theoretical insights with respect to variation theory. However, for the further development of this approach, clarification of the relationship between variation theory and other learning theories, which should be seen as complementary rather than competitive or mutually exclusive, is needed to resolve the tension between them. As teaching and learning in classrooms is complex and dynamic, all learning theories so far are only able to address and contribute to some necessary but not sufficient conditions for learning to happen, studies to show the interaction between the different theories would be useful.

The learning study approach is closely affiliated with two important research areas — lesson study and action research. This has led researchers in these areas to frequently meet in Hong Kong, and to the founding in 2007 of the World Association of Lesson Studies (WALS), which brings together academics interested in lesson and learning studies. WALS is now in its third year, and has members from more than 16 countries, including China, Malaysia, Singapore, Spain, Sweden, the United Kingdom, the United States, and Vietnam.

## **Conclusion**

Most classroom research projects in Hong Kong are small scale, scattered in focus, and in general do not have a great influence on policy or teaching practice locally or globally. The learning study research shows that it is possible to nurture and develop research teams by supporting them in carrying out longitudinal projects. This enables the building of a critical mass and the development of the research focus in four stages: observation and description, finding an explanatory framework, testing the generality of the relationship found, and finally, knowledge construction, theorizing, and scaling up. This process resonates with the four stages of the development of classroom research proposed by Nuthall and Church (1973): first, observational and descriptive studies; then, studies to identify the relationships between classroom experiences and student learning, informed and closely linked to the first stage; next, studies to verify, through carefully designed classroom trials and experiments, the significance and generality of the relationships identified in the second phase; and finally, the development of explanations to describe, in general terms, how classroom experiences and learning are related to each other (p. 759). To reach the fourth stage, there must be a critical mass of researchers working on the topic for a sustained period of time. This depends on the commitment of the researchers and the availability of funding. The learning study research teams in Hong Kong have been fortunate to be working in a reform context, when funding was relatively abundant because of the government's commitment to fund initiatives to support schools to carry out reforms. The continuous funding made possible the development of a critical mass of experienced researchers in this area (more than 40 academics have been actively involved over the years). As the effectiveness of an innovation can be increased several hundredfold through cycles of refinement and testing

(Linn & Hsi, 2000), continuous funding support is necessary for it to develop into a movement and become sustainable. However, the challenge ahead is that too many researchers and funding bodies are simply interested in supporting “innovations”, that is, the generation and testing of big new ideas, rather than “the intellectual challenges entailed in refining old ideas so that they work in various settings” (Lewis et al., 2006, p. 9). Thus, if Hong Kong wishes to nurture research teams and develop strong research traditions or movements, then research centers or institutes with particular research foci should be set up and supported with start-up and/or recurrent funding, so that later they might be able to generate funding themselves through research and development work.

For a research approach to be developed, collaboration across departments, institutions, and cultures is necessary. Also, for classroom research to have an impact in schools, teachers must become genuine partners. Provisions should be made by the government or schools to enable teachers to be initially supported to engage in the research approach with the aim that they would later continue with it in their practice. They should also be supported in their continuous engagement with it so that a learning community can be established within the school. Opportunities should also be created for these different learning communities to interact between schools and between countries, e.g., in the World Association of Lesson Studies (WAS) Conference in the case of the learning study approach. In addition to involving in-service teachers, the learning study approach has already been incorporated as a core module into the B.Ed programs of the HKIEd and HKU. This approach has the potential to develop into a classroom research movement not only in Hong Kong but also around the world, and is gaining momentum in other countries including Sweden. It should be noted that the learning study approach is not the only successful example in Hong Kong, nevertheless, it is hoped that through the detailed examination of one case, insights can be gained into how to nurture other research teams in Hong Kong and worldwide.

## References

- Adamson, B., Kwan, T., & Chan, K. K. (Eds.). (2000). *Changing the curriculum: The impact of reform on primary schooling in Hong Kong*. Hong Kong: Hong Kong University Press.
- Brentano, F. (1874). *Psychology from an empirical standpoint*. London: Routledge & Kegan Paul.
- Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, 2(2), 141–178.
- Brown, A. L., & Campione, J. C. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 229–270). Cambridge, MA: MIT Press/Bradford Books.
- Choy, C. K. (2006). *The use of variation theory to improve secondary three students' learning of the mathematical concept of slope*. Unpublished master's thesis, University of Hong Kong.
- Cohen, D. K., & Ball, D. L. (1999). *Instruction, capacity, and improvement* (CPRE Research Report Series RR-43). Philadelphia: Consortium for Policy Research in Education, Graduate School of Education, University of Pennsylvania.
- Collins, A. (1992). Towards a design science of education. In E. Scanlon & T. O. Shea (Eds.), *New directions in educational technology*. Berlin: Springer.
- Driver, R., Asoko, H., Leach, J., Mortimar, E., & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, 23(7), 5–12.
- Elliott, J., & Tsai, C. T. (2008). What might Confucius have to say about action research? *Educational Action Research*, 16(4), 569–578.
- Elliott, J., & Yu, C. (2008). *Learning studies as an educational change strategy in Hong Kong. An independent evaluation of the "Variation for the Improvement of Teaching and Learning" (VITAL) project*. Hong Kong: School Partnership and Field Experience Office, The Hong Kong Institute of Education.
- Green, J. U. L., & Dixon, C. N. (1993). Talking knowledge into being: Discursive and social practices in classrooms. *Linguistics and Education*, 5, 231–239.
- Halliday, M. A. K. (1978). *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
- Hattie, J. (1999). *Influences on student learning*. Inaugural lecture: Professor of Education, University of Auckland, August 2.
- Hiebert, J. (1993). Benefits and costs of research that links teaching and learning mathematics. In T. P. Carpenter, E. Fennema, & T. A. Romberg (Eds.), *Rational numbers: An integration of research* (pp. 219–238). Hillsdale, NJ: Erlbaum.
- Isoda, M., Stephens, M., Ohara, Y., & Miyakawa, T. (2007). *Japanese lesson study in mathematics: Its impact, diversity and potential for educational improvement*. Singapore: World Scientific.
- Ko, P. Y., & Kwok, W. Y. (Eds.). (2006). *Learning study manual—Cases for different key learning areas* (「課堂學習研究」實踐手冊——不同學習領域之案例). Hong Kong: The Centre for Learning-study and School Partnership. [in Chinese]

- Kwok, W. Y., & Chik, P. P. M. (2005). The effects of learning studies on student learning outcomes. In M. L. Lo, W. Y. Pong, & P. P. M. Chik (Eds.), *For each and everyone: Catering for individual differences through learning studies* (pp. 117–132). Hong Kong: Hong Kong University Press.
- Lam, S. Y. (2004). *The use of variation theory to improve student understanding of acids and bases*. Unpublished master's thesis, University of Hong Kong.
- Lave, J. (1991). Situated learning in communities of practice. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 63–82). Washington, DC: American Psychological Association.
- Lewis, C., Perry, R., & Hurd, J. (2004). A deeper look at lesson study. *Educational Leadership*, 61(5), 18–22.
- Lewis, C., Perry, R., & Murata, A. (2006). How should research contribute to instructional improvement? The case of lesson study. *Educational Researcher*, 35(3), 3–14.
- Linn, M., & Hsi, S. (2000). *Computers, teachers, peers: Science learning partners*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Lo, M. L., Chik, P. M., & Pang, M. F. (2006). Patterns of variation in teaching the colour of light to primary 3 students. *Instructional Science*, 34(1), 1–19.
- Lo, M. L., Hung, H. H. Y., & Chik, P. P. M. (2007). Improving teaching and learning through a learning study — Using patterns of variation to teach electro-chemical series in Hong Kong. *Curriculum Perspectives*, 27(3), 49–62.
- Lo, M. L., Kwok, W. Y., Pong, W. Y., Ko, P. Y., Wong, C. Y., et al. (2008). *The variation for the improvement of teaching and learning (VITAL) project: Final report*. Hong Kong: The Hong Kong Institute of Education.
- Lo, M. L., Marton, F., Pang, M. F., & Pong, W. Y. (2004). Towards a pedagogy of learning. In F. Marton, A. B. M. Tsui, P. P. M. Chik, M. L. Lo, I. A. C. Mok, D. F. P. Ng, et al., *Classroom discourse and the space of learning* (pp. 189–225). Mahwah, NJ: Lawrence Erlbaum Associates.
- Lo, M. L., Pong, W. Y., & Chik, P. P. M. (Eds.). (2005). *For each and everyone: Catering for individual differences through learning study*. Hong Kong: Hong Kong University Press.
- Marsh, C. J. (2007). *Report on consultancy of PETALS implementation, Singapore, for Mme Julie Tan*. Singapore: Curriculum Policy and Pedagogy, Ministry of Education.
- Marton, F. (1988). Describing and improving learning. In R. R. Schmeck (Ed.), *Learning strategies and learning styles* (pp. 53–82). New York: Plenum Press.
- Marton, F., & Booth, S. (1997). *Learning and awareness*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Marton, F., & Morris, P. (Eds.). (2002). *What matters? Discovering critical conditions of classroom learning*. Gothenburg, Sweden: Acta Universitatis Gothoburgensis.
- Marton, F., & Pang, M. F. (2006). On some necessary conditions of learning. *Journal of the Learning Sciences*, 15, 193–220.
- Marton, F., & Tsui, A. B. M. (2004). *Classroom discourse and the space of learning*. Mahwah, NJ: Lawrence Erlbaum Associates.

- Nuthall, G. A., & Church, R. J. (1973). Experimental studies of teaching behaviour. In G. Chanan (Ed.), *Towards a science of teaching* (pp. 9–25). Slough, Berks, England: National Foundation for Educational Research.
- Pang, M. F., & Marton, F. (2003). Beyond “lesson study” — Comparing two ways of facilitating the grasp of economic concepts. *Instructional Science*, 31(3), 175–194.
- Pang, M. F., & Marton, F. (2005). Learning theory as teaching resource: Another example of radical enhancement of students’ understanding of economic aspects of the world around them. *Instructional Science*, 33(2), 159–191.
- Pong, W. Y., & Morris, P. (2002). Accounting differences in achievement. In F. Marton & P. Morris, (Eds.), *What matters? Discovering critical conditions of classroom learning* (pp. 9–18). Gothenburg, Sweden: Acta Universitatis Gothoburgensis.
- Stigler, J. W., & Hiebert, J. (1997). Understanding and improving classroom mathematics instruction. *Phi Delta Kappan*, 79(1), 14–21.
- Wang, M. C., Walberg, H. J., & Haertel, G. D. (1993). Toward a knowledge base: Why, how, for whom? *Review of Educational Research*, 63(3), 365–376.