

KO04201

Symposium Title: Learning Study and Teacher's Professional
Learning in Hong Kong (SAM04198)

The interface between teacher act and the
improvement of students' learning

KO Po Yuk

Centre for the Development of School Partnership and Field Experience

The Hong Kong Institute of Education

Abstract

Drawing on the empirical data of the Learning Study projects conducted in primary and secondary schools in Hong Kong since 2000, this paper discusses the relationship between teacher act and the improvement of pupils' learning. It argues that how pupils perceive the object of learning depends on how they experience the pattern of variation that is created by the teacher during the teaching act. What varies and what remains invariant matter. Thus teaching should be a conscious structuring act, the teacher should be actively constructing learning experiences for the students so that they can experience appropriate variations in the object of learning to bring about the intended discernment and learning.

Introduction

Learning study is a form of action research which is premised on the Theory of Variation (Lo & Pong, 2004). In practice, teachers teaching the same subject at the same level collaborate with researchers from tertiary institutes to develop research lessons. Each Learning Study begins with a careful consideration of what pupils are supposed to learn (i.e. object of learning) and what is/are critical for them to be able to learn it (i.e. critical features). In due course, a pre-lesson test is used to help the team to collect pupils' prior understandings of the object of learning which may constitute their learning difficulties. Taking into account pupils' different understandings of the object of learning, the team develops ways to structure the research lesson aiming to make possible the learning of the critical features identified for the object of learning. The research lesson is then taught and video-taped in cycles to facilitate the review work afterwards, and to serve as inputs for another round

of study as well. In each cycle, a post-lesson test, which is parallel to the pre-test, and interviews with a sample of pupils are conducted, analysed and triangulated with what happen in the lesson to find out the pupils' learning outcomes and their relationship with teaching acts. Since 2000, more than 100 Learning Studies have been conducted in HK. This paper, draws on the data from these Learning Study project, discusses the relationship between teacher act and the improvement of pupils' learning.

Marton and Morris (2002) argue that the critical condition in classroom learning is related to the ways that teachers handle the object of learning:

The most powerful differences in how the objects of learning are dealt with are: (a) what aspects are focused on, (b) what aspects are varied simultaneously, and (c) what aspects remain invariant or constant (p.133).

Whatever object of learning learners try to appropriate, certain critical features of the object have to be discerned. According to Marton and Booth (1997), learning is a function of discernment which presupposes variation experienced in the critical aspects of the object of learning. In other words, it is what the teacher varies and what s/he keeps invariant during the lesson that determines what pupils are possible to learn. The concept of "variation" does not refer to the teaching arrangements or lesson plans in board terms, e.g. what activities to use, how the groupings are formed, or what objectives to cover. Instead, it is related to the very subtle differences that the teacher employs in handling the object of learning, i.e. how the teacher uses variations and how the teacher structures the content to maximize variation and thus the discernment of the appropriate critical features. Different patterns of variation thus lead to different kinds of learning; where the pattern of variation is modified trying to bring about what is intended for pupils, the improvement in pupils' learning outcomes becomes greater.

In this paper, I will illustrate with two examples how teaching acts can be related to pupil learning outcomes by carefully looking into what pattern of variation is being used and what pupils perceive to have learnt and achieve in different cycles of research lesson. In the first example, two cycles of research lessons in Chinese Language are compared. Although both teachers aimed to teach comprehension of the same text, with an agreed lesson plan and learning objectives, the teachers happened to vary different things in their actual teaching, which resulted in very different pupil learning outcomes. In the second example, a learning study in English Language is analyzed. Again it was observed that the variation being made explicit for the pupils to experience in various cycles corresponded to the pupils' different performances. The first case will be described in detail to

illustrate the whole process of inquiry. For the second one, I shall focus on the analysis of the teacher act and pupils' learning outcome to echo the points made in the first case.

A pair of Chinese lessons

This research lesson was a P1 Chinese Language lesson taught by two teachers in the same primary school in Hong Kong. The teachers, during preparation meetings, pointed out that their pupils were reluctant to express their ideas in writing. Initially, the teachers thought that it might be due to pupils' lack of vocabulary. However, even though they allowed pupils to draw pictures to illustrate their ideas if they did not know the appropriate wordings, pupils still did not like to write. Thus, they felt an urge to find ways to inspire and help their pupils to express their ideas in writing.

The results of the pre-test also seemed to support the teachers' observations. The test required pupils to comprehend a story and then complete two tasks: a. two multiple choice questions which test their understanding of the text, and b. two short questions which require pupils to use their imagination to explore the theme of the story. Most of the pupils in the two classes completed the multiple choice questions. However, only 29% of the pupils in 1A and 20% in 1B attempted the questions in part b. That means more than 70% of the pupils in total have left this part blank. This reflects that pupils had a very low incentive to express their view in writing.

After looking at the pre-test result, the teachers decided to focus the research lesson on finding ways to develop pupils' interests in writing. They found a chapter in the textbook an appropriate material to start with. The text is an open-ended story about "The Wishing Well": a frog lives in a well into which people often threw coins to make a wish. This annoys the frog very much as he finds his living place getting dirtier and smaller. So the frog also makes a wish that people will not throw coins into his well to make wishes. The story does not say whether the frog's wish came true or not, which leaves a lot of room for the readers' imagination. The teachers found the text very interesting and would be realized it suitable material to develop pupils' imagination, through requiring them to create different endings for the story.

The two teachers prepared the lessons together and the research lesson was implemented in two cycles. Lesson observation and post lesson conferences were conducted which resulted in suggested changes to improve the lesson plan for the second cycle. Pupils' learning outcomes were mainly measured by post-lesson test and interviews.

The plan of the lesson

Since the text is about making wishes, teachers designed several activities to help pupils to get a deeper understanding of the act of making wishes. The teachers prepared a lesson plan with the following steps:

1. The teacher will bring out a birthday cake (model) and ask pupils about the wishes that they will make on their birthday.
2. The teacher will explain the custom in a rural village in Hong Kong that people throw wishing paper onto a 'wishing tree' to illustrate the act of making wishes.
3. The teacher will go through the text in the textbook with the pupils.
4. Pupils will be required to think a new ending for the story and share with the whole class.
5. The teacher will prepare a tree-shaped paper cut-out and then pupils will write their own wishes on heart-shaped wishing paper and then stick them on the 'tree' to help pupils to consolidate the theme of the text.

The first lesson was taught according to this plan. It was noticed that pupils actively engaged in the classroom activities. The research lesson was followed by a post-lesson interview with three pupils of different attainment level selected from the group to find out how well the pupils had learned the lesson. In the interview, however, pupils' response revealed that what they had learnt seemed to deviate from what the teachers expected. The following is the transcript of the interview:

(R: Researcher, P: pupil)

R: Pupils, we have just finished a Chinese language lesson. Tell me what you have learnt in the lesson.

P1: I learnt the various methods to make wishes

P2: I learnt where to go to make wishes

P3: I learnt that we can make wishes in our birthday.

R: Then do you know why the teacher taught you all these things about making wishes?

P1: I don't know

P2: I don't know either.

P3: Neither do I.

The first cycle and the recommended changes

The interview suggested that pupils could grasp the theme ‘making wishes’ very well which is related to part of the content of the text. However, they seemed not to be able to make sense of learning this. Although the teacher did take pupils through the text and encouraged them to think of their own endings for the story, she had not implemented any variation on this aspect. Instead, by varying the different methods of making wishes, the teacher had unintentionally directed students focus on how and where to make wishes. Obviously, the teacher, though planned to use the text as a point of departure to develop pupils’ imagination, focused on one aspect of the content of the text and constituted several variations on it, which was deviated from the intended object of learning.

Use of variation in this cycle:

Invariant	Variation	Critical feature to be discerned
Making wishes	Different occasions and methods to make wishes	Various things related to making wishes

In the post-lesson conference, teachers suggested some modifications to the lesson for the next round of teaching:

- The teacher will bring out a birthday cake in order to introduce the theme of the text. However, instead of giving more examples on making wishes, the teacher will immediately spell out the object of learning of the lesson, which is to help pupils understand that a story can have different endings.
- The teacher will go through the text in the textbook with the pupils.
- The pupils will read the story again and then work in groups to create their own endings for the story. Some of them will be invited to share their endings with the whole class.
- The teacher will tell another open-ended story and ask pupils to identify the similarity of the two.

Learning outcome of the second round teaching

Again three pupils were chosen from the class for the interview to see what they have learnt. The following is the transcript of the interview after the second round of teaching, which reflects very different result from the previous one:

R: Do you like the past lesson?

Ps: Yes!

R: Why do you like it?

P1: Because I learnt some knowledge.

R: What kind of knowledge have you learnt?

P1: Ah...

R: How about you?

P2: I have learnt that there might not be any particular answer for something (*a particular problem*).

P3: I have learnt some stories do not have any ending.

R: Do you like this kind of stories?

Ps: Yes...

R: Why?

P3: Because I can create an ending myself.

This post lesson interview reveals that pupils have attended to the intended object of learning since in the second round of teaching, the object of learning was explicitly dealt with and appropriated variations were constituted. In the class, the teacher explicitly emphasized that a story can have different endings and pupils were required to work in groups to create different endings for the story. They were exposed to different endings of the same story created by different groups. Pupils' focal awareness was directed to the point that a story does not necessarily have a definite ending since it is up to people's imagination. Here appropriate variations were used by the teacher to help pupils to focus on the intended object of learning. By keeping the story as an invariant while jointly

constituting variations in the ending, the pupils were helped to focus on the development of different endings of the story using their imagination.

Use of variation in this cycle:

Invariant	Variation	Critical feature to be discerned
The main body of the story	Different endings	There can be different endings for the same story

The pre and post tests comparison

A post-test which was the same as the pre-test was given to the two classes immediately after the research lessons. While both classes showed improvement in term of the percentages of pupils who attempted the multiple choice and short questions, there was a marked difference between the two classes regarding the magnitude of increase in the percentage of pupils who attempted the questions in part b in the post-test (see the table below).

Part b.	% of pupils who provided answers	
	1A	1B
Pre-test	29%	20%
Post-test	38%	58%

More pupils in 1B responded to the short questions in part b of the test which reflects that more pupils in this class were willing to express their ideas in writing. One might be tempted to think that pupils of 1B are of higher ability than those of 1A, but this was not supported by the data in the pre-test. Therefore it is likely that in 1B, the variation constituted has been more successful in directing pupils' attention to the intended object of learning, i.e. be willing to express one's idea in writing.

A Learning Study in English Language

This study aimed to teach the usage of the English indented form in writing a formal letter at P6 level, and the research lesson was taught in four cycles to four classes of P6 pupils in the same school. The lesson plan was set out as follows:

The plan of the lesson

1. Teacher introduces the theme of the lesson: write a letter to Father Christmas to request for a Christmas present.
2. Pupils work in groups to arrange the contents of the 6 segments (recipient's address, date, salutation, greeting, complimentary close and sender's name) of a letter on a letter sheet in correct order and position.
3. Teacher elicits from pupils the correct order and position of each segment on a large letter sheet displayed on the board.
4. Pupils work in pairs to arrange the contents of the 6 segments of another letter pre-cut into 15 sentence strips (including some distracters which are wrong in punctuation) on a letter sheet and then teacher check the answers with the whole class
5. Pupils write their own letters to Father Christmas to request for a Christmas present

In the evaluation meeting, the teachers expressed that they were satisfied with pupils' active participation and joyful learning process in all cycles of the lesson and the pupils' general performance in using the English indented format to write a formal letter in the post-test. However, the teacher in the second cycle noted that her class was particularly weak at conforming to the letter form that concerns indenting the first sentence of each paragraph in the main body, when compared with other classes' performance in this respect. After much deliberation, the teachers found that the possible contrast between the proper and the improper form of the letter form was left unnoticed in the second cycle, and such differences also seemed to be corresponding to the pupils' learning outcomes in the pre- and post-test comparisons (see the table below).

Letter form: the first sentence of each paragraph in the main body should be indented			
Cycle	1 st & 3 rd Cycles	4 th Cycle	2 nd Cycle
Variation used	- Contrast between proper & improper letter form)	- Contrast between proper & improper letter form) - Different representations	- No variation
% of pupils who could conform to the letter form in the post-test	69.84%	82.76%	19.35%

The variation being made explicit for the pupils to experience in various cycles often capitalised on the pupils' different performances (proper or improper) on completing a certain task. Thus, when such variance in pupils' performance was absent in respect to certain critical feature in some of the cycles, the possible contrast between the proper and the improper form of the feature was left unnoticed. Such differences also seemed to be corresponding to the pupils' learning outcomes in the pre- and post-test comparisons.

Conclusion

In conducting Learning Study, the lesson observation and the subsequent effort made to improve the lesson showed that how pupils perceive the object of learning depends on how they experience the pattern of variation that is created by the teacher during the teaching act. What varies and what remains invariant does matter. Thus teaching should be a conscious structuring act, the teacher should be actively constructing learning experiences for the students so that they can experience appropriate variations in the object of learning to bring about the intended discernment and learning.

References:

- Lo, M.L. & Ko, P.Y. (2002). The 'Enacted' Object of Learning. In F. Marton & P. Morris (Eds.) *What Matters? Discovering critical conditions of classroom learning*. Acta Universitatis Gothoburgensis.
- Lo & Pong, 2004. *Final report. Catering for Individual Differences – Building on Variation*. (In press)
- Lo, M.L., Pong, W.Y., Marton, F., Leung, A., Ko, P.Y., Ng, F.P., Pang M.F., Chik, P.M.P., Chan, S.S.F., Tang, N.C.A. (2002). *Catering for Individual Differences Building on Variation (The first findings)*. Hong Kong: INSTEP, Faculty of Education, The University of Hong Kong.
- Lewis, C. (2002). Does Lesson Study have a future in the United States? *Nagoya Journal of Education and Human Development*, 2002, No. 1, p.1-23.
- Marton, F. & Booth, S. (1997). *Learning and Awareness*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Marton, F. & Morris, P. (2002). *What matters? Discovering critical conditions of classroom learning*. Goteborg: Acta Universitatis Gothoburgensis.
- Marton, F. & Tsui, A. B. M. with Chik, P. P. M., Ko, P. Y., Lo, M. L., Mok, I. A. C., Ng, F. P., Pang, M. F., Pong, W. Y. & Runesson, U. (2004). *Classroom discourse and the space of learning*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc., Publishers.