

The Understanding of “Concept Study” in Teachers’ Professional Learning: A Lived Experience of Complexity Inquiry

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Abstract

This paper used narrative to present the author’s understanding process of “concept study” in teachers’ professional learning. The understanding process was advanced by several questions emerging from the preparation of doing “concept study”. Thus, the several questions and their solutions became the threads of the narrative. The narrative provides not only a lived experiences of the author’s understanding the essential meaning of “concept study” in teachers’ professional learning but also a process for the action towards the transforming way of knowing for teachers’ professional learning.

Keywords: concept study, teachers’ professional learning, complexity

1. The Preamble

The word “complexity” came into my mind in September, 2014 when I came to University of Alberta to join a project on teachers’ professional learning. At that time, it seemed that the words of both “complexity” and “complication” made no difference for me. Thus, I was wondering why researches probed the complexity of nature of education in terms that we had already been in the very complicated situations of education. For example, many issues exist in daily teaching practice such as the effectiveness of teachers’ professional learning from daily classroom teaching. As far as the complicated situations concerned, I held the firm belief that researches should think about the issues rather than unpack the complexity nature of education. In view of that, I had set my research orientation in authentic classroom teaching to feature Chinese mathematics teaching as a response to the situation concerning that the features of Chinese mathematics classroom teaching would be a kind of learning resource for teachers’ professional learning because the scholars from the world paid a close attention to Chinese students’ outstanding performance in international mathematics tests (Vanderklippe, 2014). In my interest of research, the featuring process was presumed to reduce the “differences” (Osberg & Biesta, 2008, p. 324) of students’ learning as an “outcome” of teaching (Osberg & Biesta, 2008, p. 315) and identify the “common ground” (Osberg & Biesta, 2008, p. 324) in mathematics teaching. And furthermore, my “conventional logic” (Osberg & Biesta, 2008, p. 324) of sorting out the features was regarded as a “perfect” way by other distinguished Chinese scholars. However, as a matter of fact, I had not come to the realization that I had been on an opposite way to “the logic of emergence” (Osberg & Biesta, 2008, p. 326) which “derived from complexity theory” (Osberg & Biesta, 2008, p. 313). And what’s worse, I took it for granted that complexity idea was so merely considered as a fashionable concept in curriculum that it would not be necessary for me to follow suit and attempt to find out what matters with complexity in curriculum.

My previous thoughts turned out to be naive, and were changed gradually when I attended series of workshops held by a professor of University of Alberta for teachers’ professional learning. This time, I had to begin my access to the idea of complexity in education because I was suggested by the professor to organize a workshop for mathematics teachers to understand and practice the complexity idea by doing “concept study” (Davis & Renert, 2014, p. 56). At the beginning, my strong nervousness pushed me forward to know and understand “what complexity means in mathematics for teaching”. And then, the question “what should I prepare for the concept study?” had been haunting me all the time after the professor gave me the explanation of doing “concept study” on May 5, 2015. With her repeated emphasis in the explanation upon such workshop being not a presentation, I was really in the dark about what I should prepare for it, which had been making me uneasy those days. Due to the fact that I have never organized open discussions or something alike during my studying and teaching in

China's universities, I always feel it very challenging to design certain activities even in a presentation. Accordingly, I felt highly "frustrated" (Osberg & Biesta, 2008, p. 325) about the concept study due to my unknowing how to do from the beginning.

2. The Concerns of Doing Concept Study

2.1 How Did I Prepare for the Concept Study

May I resort to doing literature review for my preparation of the concept study? I thought to myself. That might be the best key to the right of my preparation according to my previous experience with which I always tried to know a research theme starting from doing literature review. On May 12, 2015, I heard a voice from the professor, "Yes, you can start from literature review. But do remember that please do not prepare all the content of the workshop. The more content you will prepare, the less discussion will take place". I was so relieved and encouraged that I could start to think about my concept study because at least I could be prepared for "something" tangible. Certainly, the tangible things imply a form of "planned" (Osberg & Biesta, 2008, p. 315) and "pre-determined" (Osberg & Biesta, 2008, p. 314) knowledge object. In this way, it was evident that "the logic of enculturation" (Osberg & Biesta, 2008, p. 315) was so deeply embedded in my mind that I then happily expected to be enculturated.

2.2 How Much Should I Prepare for the Concept Study

Yes, I could prepare something for my concept study. But how much should I prepare for? Surely enough, with the professor's words, I could not prepare all the content of the concept study, otherwise I would rule out other possibilities for the emergence of the meaning and human subject (Osberg & Biesta, 2008). However, I still desperately expected to know "how much" for it. For me, it appeared that there was a "gap" which I prospected to work on between teachers and learners (Biesta, 2004, as cited by Osberg & Biesta, 2008, p. 323).

2.3 How Would I Facilitate the Concept Study

Yes, I had to leave a "space" (Osberg & Biesta, 2008, p. 323) for open discussion on the concept study in classroom. However, it is surely enough that I could not "control" (Osberg & Biesta, 2008, p. 315) the space. And then, Should I "facilitate" the discussion in that space? This was not a painful question for me. In fact, at that moment, I was feeling a little beaming about it because I thought I had come close to the essential meaning of concept study. "Be careful. Do not facilitate it to somewhere", the professor reminded me of that once again on May 19, 2015. Thus, facilitating was not for directing the discussion, wasn't it? Indeed, I doubted about the "real facilitation" and the possibility to "maintain an emergentist conception of meaning in an educational context" as Osberg and Biesta (2008, p. 314) concerned because I could not find it "empowering" (Davis, 2005).

Still, there remained my confusions and concerns about concept study even I had read several articles on complexity in teachers' mathematics for teaching.

2.4 What Could Teachers Get from the Concept Study

My great concern was "what teachers could get from the concept study". In other words, what was the "goal" (Osberg & Biesta, 2008, p. 315) of my concept study? If I knew about the purpose, I could figure out how to approach it. With regard to this question, I felt more deeply frustrated than ever before and started to cast blame upon my previous learning experiences. More typically, all the knowledge I had obtained was only transferred from the textbook or mind of the teacher (Osberg & Biesta, 2008) and it was authorized as pure truth. No I or me being as a unique "human subject" was in the learning process (Osberg & Biesta, 2008, p. 321). Ironically, my prior mathematics professors in Chinese universities never introduced or lectured fractal geometry to us as students of mathematics major. I had a superficial knowledge of fractal geometry learned by myself when I initiated an advanced mathematics course to the students of chemistry major in a university in China seven years ago. In order to motivate their learning passion, I organized artfully and offered my lectures to the students which related chemistry content to fractal geometry in my class. However, regretfully, I only took fractal geometry as a useful tool to demonstrate the reason why mathematics was very important in chemistry learning. For that matter, I did not have any idea about the influences of fractal geometry on Euclid's geometry and human epistemology including "interrupting and elaborating modern sensibilities and practices" (Davis, 2005, p. 124).

3. The Key Event

On May 26, 2015, the professor brought forward a problem in one workshop. She asked us to create a word problem which was needed to use the expression " $50 \div 40$ " to solve it. Isn't it quite basic? And then I started to calculate the expression of " $50 \div 40$ " and got its answer "13.5". With the correct answer, I attempted to figure out what kind of unit such as "money, people, food, or day, and etc..." could be reasonably corresponded with 13.5.

Frankly speaking, it was not easy at all. Apart from my hard time, what astonished me was plenty of different, truly different, answers provided by my colleagues. For example, the problem created by a primary school teacher was that “a teacher is grouping 540 students into classrooms, each classroom could not accommodate more than 40 students, and how many classrooms does the teacher should prepare at least?” She obtained the answer “14 classrooms” with 13.5 rounding up, for the classroom would not be reasonably divided into 13.5 within our common knowledge. Another problem by a college teacher was that “a pharmacist is allocating 540 pills into 40 boxes equally, and then how many pills are there in a box?” She offered the answer 13 pills with 13.5 rounding down, for it does not make sense of 13.5 pills in a box. The third problem by a university teacher was that “there are \$540 to be distributed to 40 members equally in a club, and how much could each member get?” He gave the answer 13 dollars and 50 cents. And now, my problem was that “if completing a project demands 540 days one person, and then how many days do 40 persons need to finish the project?” I gave out the answer 13.5 days without any rounding off, for 0.5 day could be rationally calculated as half day. Was it surprising that the basic expression “50÷40” did not have a sole answer? Therefore, from the above problems, it could be seen that units mattered with the answers. For the whole workshop, such fact or idea was emerging from the collective contributions including “me” because mine was different from others’ answers. In this case, I thought I was being as a totally unique human subject. I “felt” (Doll, 2012, p. 25) and experienced the emergence of the fact or idea in the classroom. Just then, I came to realize that I was really released from the imprisonment of “educational enculturation” (Osberg & Biesta, 2008, p. 315) and didn’t want to be enculturated any more.

4. The Expectation

So far, a contour of “concept study” has been taken shape at a sudden occurrence. It is just a “space of emergence” where there is not a desired end but a kind of unsettling the doings in order to keep the way open (Osberg & Biesta, 2008, p. 325) and call learners into presence (Osberg & Biesta, 2008, p. 326). The frustration of one’s intentions as I have experienced must be understood as the condition that makes education possible (Biesta, 2006, as cited by Osberg & Biesta, 2008, p. 325).

Learning now occurs, not through direct transmission from expert to novice, or from teacher to student, but in a non-linear manner through all in a class exploring a situation/problem/issue together (and indeed from multiple perspectives) (Doll, 2012, p. 25).

In other words, curriculum is emerging from an ongoing process with participators’ interactions in an open system or network (Doll, 2005). Nevertheless, it is still far from our rooted enculturation in curriculum which is developed from Ramus to Tyler to the present day (Doll, 2012, p. 25) and marked with Euclidean rationale (Davis, 2005). However, the examples “PI _ OW” and “Six Disks” from Doll (2012) are very promising to make us believe the possibilities of maintaining an emergentist concept of meaning in an educational context (Osberg & Biesta, 2008).

Yes, as long as there exists an open system or network, I am 100% sure that teachers could possibly acquire something from it. And now, all the concerns and questions about my concept study do not annoy me any more even though I still have no idea about how my concept study will be ongoing. My only role I will play in the concept study is to plant a “seed” and nursing the “seed” to “eventually pollinate and catalyze other ideas” (Doll, 2012, p. 25).

Yes, this is utterly real learning “as long as students are leaning something” (Osberg & Biesta, 2008, p. 316) that is emergent from their participations in an open process or system.

Now I am very much looking forward to holding my concept study which is scheduled on July 2, 2015. Is it interesting? Absolutely yes.

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