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Self-Study of a Researcher-Facilitator's Experience:

Insights for Implementing Learning Study as a Professional Development Approach

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Abstract

This paper reports understandings emerging from a self-study of a researcher-facilitator's experience of implementing a professional development approach – a learning study – in Singapore. Borrowing Hewson and Hewson's conceptual change (1984) as a framework to derive new understandings, instances of dissonances in the researcher-facilitator's experience, and the differences in how and what the teachers and research-facilitator experienced, were analyzed. The results surfaced issues pertaining to teachers' perceptions of practicality. In underscoring the need to address these perceptions, the paper also advocates pushing the boundaries of teachers' perceived practicality in order to encourage teachers to modify and adapt their learning contexts; to transcend a form of poverty in teacher learning ironically emerging from their participation in PD programs.

Introduction and Purpose

The importance of teacher growth and professional development (PD) in supporting the sustainability efforts of educational reforms (Schneider, Krajcik, & Blumenfeld, 2005) has been well established. In the context of Singapore, several schools have employed Professional Learning Communities (PLCs) (DuFour, DuFour, & Eaket, 2008) and lesson studies (Stigler & Hiebert, 1999) to promote teacher PD and to support new curricular initiatives. Simultaneously,

there is a growing interest in how learning study (LS) (Pang & Marton, 2003; 2005) can be used as an educational reform tool to promote teacher PD (e.g., Lo, 2009) and attention has been directed to its implementation-related challenges. For example, issues pertaining the sustainability of LS have been raised (Elliott, 2012; Holmqvist, 2011; Runesson, Kullberg, & Maunula, 2011), including exploration of the roles and tensions between teachers and researchers (Holmqvist, Gustavsson, & Wernberg, 2007; Walker, 2007). The self-study reported in this paper extends this aspect of the LS literature by exploring how the researcher-facilitator's (author) perspectives differed from the teacher participants, constituting a way of reframing understandings (Loughran, 2007) by moving them closer to the contexts of teachers' classrooms and their daily rhythms of teaching; to promote engagement and reflection on the complex nature of promoting teacher learning and learning about teacher PD. Hence, the question posed: "What are the new understandings that emerged from a self-study of a researcher-facilitator's experience in a learning study in Singapore?" In the context of Singapore, such an inquiry is timely in light of how conceived curriculum by central authority is constantly reviewed in a six-year cycle, and how new curricula such as a new outdoor education curriculum are scheduled to be implemented in Singapore in the near future. It is the belief of central authority that these curricula reforms are best supported by teacher PD programs, such as the lesson and learning study; thus underscoring the role of researcher-facilitators in these PD programs.

It is the belief of the author that a promotion of researcher-facilitator's self-reflexivity is essential for breaking the 'poverty' experienced when teachers engage in PD programs; bringing to attention taken-for-granted aspects that may otherwise impoverish teacher learning opportunities and experiences. This study is premised on how research literature is replete with instances of teachers' resistance (Fullan, 2001; 2011) and ironies of implementing PD programs,

the latter only to result in increasing teachers' workload (Fullan, 2001; Ungerleider, 2003) and cynicism – both of which may threaten teacher learning. In a similar vein, teachers' concern for diminishing professional space (Carlgren & Klette, 2008) due to other professional duties has been noted. These compel an emphatic stance towards teachers' perceptions of the demands of their profession and the frustrations they create. Mindful of the complex ironies of teacher learning when it is weighed against tensions that emerge in their profession, we are compelled to carefully consider the implementation of PD programs less they are carelessly applied or inadequate; an inadequacy that serves to further impoverish and threaten opportunities of teacher learning and meaningful engagements with the teaching profession. This study thus responds by promoting reflection through a researcher-facilitator self-study - a precursory step towards enriching teacher learning and thus breaking the paradoxical poverty often experienced within these teacher development programs.

Learning Study

Often regarded as a variant of the lesson study approach (Stigler & Hiebert, 1999) that incorporates elements of design experiments (Brown, 1992; Collins, 1992, 1999), LS was chosen as the PD approach because of its potential to promote teacher collaboration and learning (Holmqvist, 2011; Runesson et al., 2011), bridge theory to practice (Pang, 2006), and promote practitioner inquiry. It also has a strong theoretical underpinning (theory of variation) (Holmqvist, 2011; Pang & Lo, 2012). The LS implemented was set in the context of helping four Grade 9 to 10 biology teachers in Singapore develop the capacity to enact new molecular genetics content in a newly prescribed curriculum – see Tan and Nashon (2013) for a review of learning study and more details on the study.

Theoretical Framework

Building on Posner, Strike, Hewson, and Gertzog's (1982) conceptual change model, Hewson and Hewson's (1984) conceptual change was employed to frame the study and data analysis because of its potential to *promote new understandings and provide alternative perspectives;* to uncover aspects that might have been taken-for-granted. Popularized by the teaching of science and mathematics, the conceptual change model (Hewson, 1981l Hewson & Hewson, 1984; Posner, et al., 1982) is premised on how learning has the element of cognitive conflict and can be seen as a shift in conceptions. In the context of this study, the model has been adapted into a self-study as a way to frame an inquiry of how a researcher-facilitator's experience can be systematically compared against the research participants'; as a way to surface new understandings that can be closely examined.

In the analysis, instances of conceptual conflict (Hewson & Hewson, 1984) or dissonance experienced by the researcher-facilitator were identified through a careful reading of the researcher-facilitator's own field notes alongside teacher interview transcripts and reflective journal entries. These instances could also have manifested through: the differences in perceptions or experiences between the researcher-facilitator and the teachers that came as a surprise to the researcher-facilitator, or manifested in a constant struggle or challenge the researcher-facilitator faced.

A deeper level of analysis entailed focusing on three conditions necessary for new understandings to emerge (Hewson & Hewson, 1986) (the term "understandings" was chosen over "conception" in this study). In view that the new understanding must be *intelligible,* coherent representations from the perspectives of the participating teachers were searched for; how the participating teachers perceived an aspect of the LS differently from the researcher-

facilitator constituted alternative understandings (Loughran, 2007). Secondly, the new understanding has to be *plausible*, thus there was a necessity for the researcher-facilitator to respect the teachers' perspectives and experiences as being "true". What teachers paid attention to was further probed through the process of looking through the data set: to identify and examine other parts of the data that may clarify or enrich an understanding of the teachers' perceptions. Thirdly, the new understanding has to be *fruitful* enough to support the development of new approaches or ideas, or to solve previously unsolved problems.

Described above is one cycle of reflection that was implemented. With one cycle completed, the researcher-facilitator begun to develop an abstraction of the new insights that have emerged, which subsequently propelled another round of reflection. In this second cycle, other parts of the data formerly not utilized may be examined in light of the new theme. Responses to the new understandings that emerged may also be noted by the researcher-facilitator as part of the self-study.

Research Design and Methods

Participant

The researcher-facilitator played multiple roles (Pedretti, 1996) in the LS. These included the role of a designer who supported teacher learning opportunities, coordinator of weekly meetings, group recorder that summarized and provided notes of the meetings, facilitator of discussions, resource person who introduced theory of variation and provided relevant research literature, critic during the evaluation of teachers' research lessons, and researcher who helped analyze student pre- and post-lesson tests.

Learning Study Implemented

The LS involved four Grade 9 to 10 biology teachers in Singapore. It extended over a period of 22 weeks and comprised 11 meetings, 9 lesson observations and 4 post-lesson conferences. The approach can be summarized as follows (see Tan & Nashon, 2013 for details):

1. *Teacher interviews* to probe their views on good biology teaching and their current teaching practices.

2. *Introduction of theory* of variation. Determination of *object of student learning* (capability students are to develop) and *curricular flow* (mapping and sequencing of the whole genetics unit).

3. Administration and analysis of *student pre-tests* (n=80) for three Grade 10 classes (Chris, Amy and Pam's classes). The tests probed for students' pre-understandings of the new genetics content to be taught in the research lessons.

4. *Planning and implementation* of the research lessons. Teacher *observation of lessons and weekly post-lesson conferences* were held, the latter organized for the purposes of eliciting feedback.

5. Administration and analysis of student *post-lesson test* and the *documentation* of good pedagogical practices.

6. Teacher *reflection* on their own learning (reflective journal entries) and *teacher interviews*, purposed to uncover their experiences in the LS and to probe for clarifications and elaborations.

Data Sources and Analysis

The self-study drew from a variety of data sources (Stake, 1995; Yin, 2003) including the researcher-facilitator's field notes and journal entries, audio-video recordings of meetings and research lessons, written descriptions of the research lessons, and notes and handouts of all meetings. These data sources were constantly compared against teacher interview transcripts, teacher reflective journal entries and student pre- and post-lesson tests.

The simultaneous analysis of the data sources included examination, testing of assertions for reliability, and comparison and recombination of evidence from different data sources (Miles & Huberman, 1994; Yin, 2003). In recognizing that there is more than one way of doing self-study (Pinnegar, 1998), the analysis was premised on how self-studies necessitate the moving beyond oneself, thus an exploration of understandings from alternative perspectives and a reframing of situations (Loughran, 2007; Schön, 1983, 1987). This was aided by framing the analysis using Hewson and Hewson's conceptual change; conceptual change provided the frame to deepen the researcher-facilitator's understanding of the perceptions of the teachers through a systematic way of contrasting their perceptions and experiences with the researcher-facilitator's.

The findings were also shared with a colleague who is a researcher at the same institution as the researcher-facilitator. Although an indirect participant, she acted as a critical friend (Lincoln & Guba, 1985; Walker, 2007) who provided feedback and interaction to continually question and interrogate the understandings explored in this paper – an important methodological feature of self-studies (LaBoskey, 2004; Loughran, 2007).

Results and Discussion

To illustrate how conceptual change was applied to shape the researcher-facilitator's reflection, an insight that emerged from the self-study is focused on in this paper: constantly emerging from the data analysis was the notion of *practicality*, which was perceived by the teachers as pertinent to promoting their own learning. An example of this pertained how the researcher-facilitator was focused on orientating teachers' understandings of student learning towards greater consistency with theory of variation and the epistemological underpinnings of the theory. However, the teachers paid greater attention to the use of theory of variation as a pedagogical tool. What was deemed *intelligible* to the teachers was how the theory could be used together with their "whole arsenal of [pedagogical] skills" (Chris' interview transcript; names used are pseudonyms) to improve teaching practice, and how it could be used to support current teaching practices. In the same vein, in pondering over the *fruitfulness* of this new understanding, it compelled careful deliberation over the role of theories in LS; prompting for greater attention on (1) the degrees of familiarity and thus degree of applicability the teachers deemed the theory to have, and (2) opportunities for teachers to apply the theory into their classroom contexts as a way to test its applicability. In exercising greater discernment, this may reduce the teachers' reservations and skepticism of incorporating the theory into their teaching practices (Excerpt 1).

> **(1) Kate:** …If it's [theory of variation] something that I have been doing and I can almost immediately think of my own example of what I've been doing, that's a better fit. And I mean, if it's something completely foreign, I suspect I will be sitting there and like being very skeptical for the longest time as to whether that thing would work… I probably would be less likely to adopt it.

What is worth mentioning is that the pursuit of understanding teachers' perceived practicality hinted at deeper issues that surfaced even as the data was revisited using the new understandings that have emerged, that is, how teachers' perceptions of practicality were influenced by forces that impacted teachers' daily routines and professional lives. For example, the excerpt below demonstrates teachers' frustrations regarding shrinking PD space, despite top-down initiatives to allocate time for PD.

(2) Interviewer: So what do you like least about participating in this learning study?

Kate: I won't say that it's something that "you like least"… It's just that you have so many other things to do, and your mind is really not in it [LS]… We keep on saying that, "If you could lighten our load"… but I find that nothing is ever without cost. You take away something; they will give you something else…

In underscoring how organizational structures and management strategies need to address practical issues (Fullan, 2001, 2011; Larsen & Samdal, 2008): rather than taking an overly cautious and maybe even "evasive" approach, this paper takes a bold step to make a somewhat antithetical proposition. The skillful negotiation between avoiding potential pitfalls and occasionally *pushing beyond what teachers deemed practical* is advocated. It is premised on its potential to promote teacher learning. In some sense, it calls for a mobilization and trust in the teachers' ability to negotiate tensions for themselves, thus a sharing of the responsibility of making things practical. Such a proposition is supported by instances where the teachers took responsibility for their own learning and made certain aspects of the LS practical to their own contexts. For example, in acknowledging that the student pre-lesson test was difficult to

replicate and analyze, Pam modified and adapted its use in her other classes by condensing it to a "simple worksheet". This constituted her learning of more effective ways of probing students' pre-understandings.

Significance of the Study

The self-study reported in this paper fills a gap in LS literature by exploring the role of researcher-facilitators. How conceptual change, a model formerly used to promote changes in students' understandings towards those that are more consistent with canonical disciplinary knowledge, has been adapted as a potentially meaningful way of reflecting on a researcher-facilitator's experiences. Table 1 summarizes the steps taken to produce the insights discussed in this paper.

Granted the critical role of facilitators and knowledgeable others (Elliott, 2012; Lo, 2009), it is surprising that this aspect of teacher PD is less extensively explored. This paper also underscores the relationship between teachers' perceived practicality and their learning in PD programs. In appreciating that *practicality* actually constitutes teacher learning experiences, and in response to the insights that have emerged, what is advocated is for the pushing of the boundaries of teachers' perceived practicality as a way to encourage teachers to modify and adapt their learning contexts – an aspect that warrants greater attention. Simultaneously, it urges researcher-facilitators to focus on the agenda of promoting teacher learning while taking into account issues of practicality that contribute to the sustainability of PD and reform efforts. In this sense, this paper demonstrates a way in which teacher learning in PD programs can be further promoted through the reflexivity of the researcher-facilitator; helping teachers transcend a form of poverty in teacher learning ironically emerging from their participation in PD programs.

pTable 1: Conceptual change frame adapted for use in a researcher-facilitator's self-study

Conceptual change as a frame to promote new understandings and provide alternative perspectives			
Conceptual Change	**Notes**	**1st cycle of reflection**	**2nd cycle of reflection**
Cognitive dissonance and conflict	This could be manifested in the differences in perceptions or experiences that came as a surprise to the researcher-facilitator (RF), or manifested in a constant struggle or challenge the RF faced	RF's orientation towards promoting teachers' understandings of theory of variation and its epistemological understandings vs. the teachers' focus on theory of variation as a pedagogical tool	
Intelligibility	Search for coherent representations; search for alternative understandings	The employment of theory of variation was dependent on how it can be used with the teacher's repertoire of pedagogical skills	
Plausibility	Teachers' perspectives and experiences recognized to be "true" – disposition taken by the RF; What teachers paid attention to were further probed	The employment of theory of variation was dependent on how it can be readily applied to support current teaching practices	The teachers' frustrations regarding shrinking PD space, despite top-down initiatives to allocate time for PD
Fruitfulness	The new understanding has to support the development of new approaches or ideas, or to solve previously unsolved problems	Careful consideration of the role of theory in learning studies: 1. degrees of familiarity and newness of the theory 2. opportunities for teachers to apply the theory into their classroom contexts as a way to test its applicability	Attention to how teachers' perceptions of practicality were influenced by forces that impacted teachers' daily routines and professional lives
Theme	Abstraction to discover a broader theme/factor	Practicality as an important aspect of teacher PD	
Response to new understandings	Pushing beyond what teachers deemed practical is advocated; an aspect that warrants greater attention.		

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