



Teacher efficacy and pedagogical leadership development through school-university collaboration

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Abstract

This paper examines the development of teacher efficacy and curriculum leadership against the context of differentiated instruction (DI) in mainstream schools through school-university collaboration. A one-year single case-study design was adopted with data collected through pre- and post-project questionnaires, semi-structured interviews and focus group interviews. Research findings showed that both teachers' self-efficacy and curriculum leadership in catering for learner diversity have been enhanced as a result of personal and contextual factors. The results also demonstrated the facilitating role of the university consultants in a cyclic process of DI teacher professional development activities. These findings shed light on DI teacher education by proposing a teacher learning model in the context of catering for learner diversity through school-university collaboration.



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Background

Catering for learner diversity becomes increasingly crucial nowadays. The recent *Global Education Monitoring Report* (UNESCO, 2020) advocates the significance of celebrating diversity and recommends the preparation, empowerment and motivation of teaching force to cater for learner diversity. Teachers should be trained to teach all students and head teachers should be prepared to exercise leadership in coordinating and guiding teacher professional development through cross-sector collaboration. Growing learner diversity calls for appropriate instructional strategies. Differentiated instruction (DI) has been proposed to be effective for accommodating students with diverse needs (Dack, 2018; Suprayogi, Valcke & Godwin, 2017; Wan, 2017). In Hong Kong, Tomlinson's (2001) DI approach has been recommended in the curriculum guide (Education Bureau, 2014). However, DI implementation encounters challenges in pre-service and in-service teacher education (Dack, 2018, 2019; Ruys, Defruyt, Rots & Aelterman, 2013; Wan, 2016, 2017). Teacher efficacy has been reported to be critical in implementing DI (Dixon, Yssel, McConnell & Hardin, 2014; Wan, 2016; Wertheim & Leyser, 2002), but research on teacher efficacy in DI remains scarce in local classrooms (Wan, 2016). This paper reports findings about the development of teacher self-efficacy and curriculum leadership in a mainstream school during a school-university collaboration project.

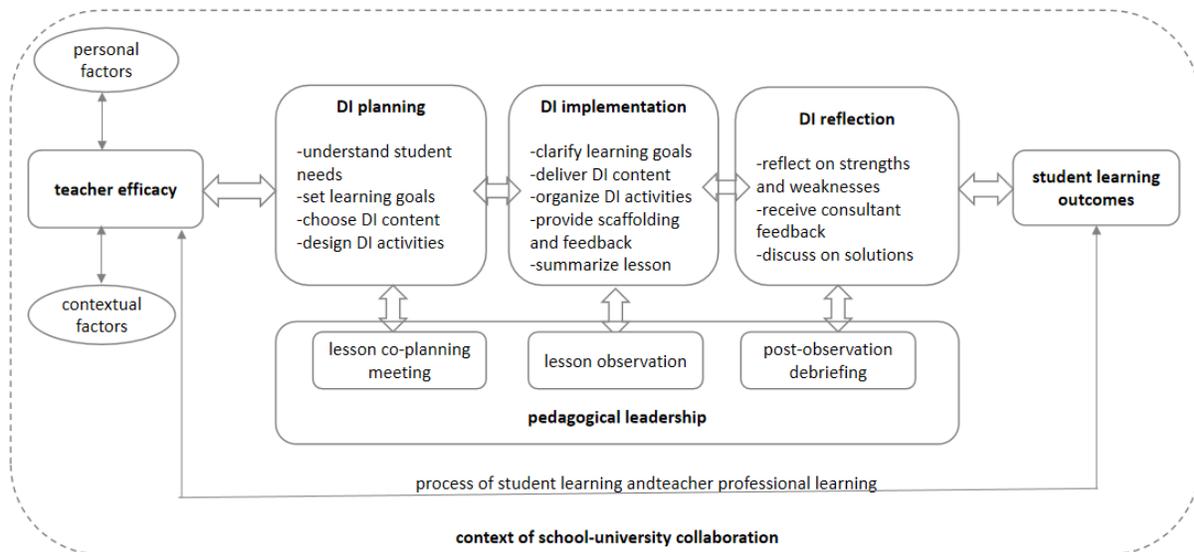
Theoretical framework

Teacher efficacy is generally defined as a teacher's beliefs about his or her capacity to affect students' classroom performances and learning outcomes (Tschannen-Moran & Hoy, 2001; Wheatley, 2005). According to the theoretical models of teacher change, teacher professional learning is a cyclic process in the school context. The teacher's beliefs and practices are shaped by both personal factors and contextual factors, and the interrelationship between these factors affects the teacher's perception about learning and engagement to professional teaching (Lo, 2019; Opfer & Pedder, 2011). Drawing on these theoretical underpinnings, this study conceptualizes teacher



efficacy development as a professional learning process through school-university collaboration whereby the teacher co-plans lessons with a professional team from a university, implements the DI lessons which are observed by the team, and co-reflects on the lessons together in post-observation debriefings. During this professional development process, the teacher's efficacy is constantly shaped by personal factors such as teaching experience, student knowledge and DI beliefs, and contextual factors such as lesson time and school curriculum policies. This complexity shapes the teacher's pedagogical decision during DI implementation which further affects the students' performances and learning outcomes.

Figure 1. Theoretical framework of this study



As the theoretical framework (Figure 1) shows, the teacher's professional learning process is also supported by the pedagogical leadership (Smit & Humpert, 2012) of the curriculum leader who leads, coordinates and encourages professional learning during the DI co-planning, implementation and co-reflection activities. With the development of teacher efficacy and the improvement of student learning outcomes, curriculum leaders also enhance their pedagogical leadership which is essential to effective school-university collaboration (Hargreaves & Braun, 2012).



Grounded in the theoretical framework, this paper attempts to explore the following research questions.

- (1) *How do curriculum leaders of a primary school enhance pedagogical leadership in catering for learner diversity through participating in a school-university teacher professional development project?*
- (2) *How do primary school teachers enhance self-efficacy and understanding of catering for learner diversity through participating in the project?*

Methodology

Context and participants

This single case study was from a three-year longitudinal school-university collaboration project in which six schools obtained professional support to cater for learner diversity. The case selected was a government-aided primary school in Hong Kong. The student population comprised students with special educational needs, non-Chinese speakers, cross-border students and locals. The socioeconomic status of most students' families was low. Faced with diversities in intelligence level, cognition and ethnicity, the teachers found it difficult to engage students in mixed-ability classes. In the recent external school review exercise (a measure by the Hong Kong Education Bureau to evaluate school effectiveness), catering for learner diversity was stated as an area requiring improvement. These challenges prompted the school to participate in the school-university collaboration project "Diversity at Schools", with the aim of enhancing curriculum leaders' leadership and teachers' capacities to cater for learner diversity.

The study participants included the subject team members of Chinese Language, English Language and Mathematics in primary two (equivalent to Grade 7). Each subject team consisted of a curriculum leader and four teachers (i.e., 15 teachers were involved in the study altogether). They were selected as participants because they had taught the same batch of students in the previous academic year, and were familiar with the students' learning styles and difficulties in content and skills acquisition. Prior to joining this project, they catered for learner diversity mainly by providing students with different amount of input. For example, they prepared tiered worksheets (one version for more capable students and another for average and less capable ones). However,



some less capable students felt stigmatized after realizing that they were given a tailor-made worksheet. It was also challenging for teachers to monitor students' performance when tiered worksheets were used. Hence, they expected to receive more professional on-site support to learn about pedagogical designs and strategies to address diverse learner needs.

School-university collaboration

The school-university collaboration involved on-site pedagogical support from the School Improvement Unit of a local public university to the school throughout the academic year of 2019-20. Three curriculum consultants (one for each subject) were assigned to aid the participants to cater for learner diversity. These consultants possessed substantial teaching experience and a good understanding of the education system in Hong Kong. Table 1 below lists some of the school support provided to each subject team.

Table 1. On-site Support from Curriculum Consultants

Type of support	Purpose	Frequency
Lesson co-planning meetings	<ul style="list-style-type: none">- Advised the team in the development of unit plans and pedagogical materials- Provided pedagogical guidance in content delivery	Once biweekly (conducted via Zoom between February and May 2020 due to COVID-19 outbreak)
Lesson observations and post-observation debriefing	<ul style="list-style-type: none">- Provided feedback on the try-out of the unit plans and materials- Facilitated teachers' reflections on pedagogical effectiveness	<ul style="list-style-type: none">- One observation for each teacher in each semester- One debriefing session with all subject teachers in each semester



Data collection and analysis

Three research instruments were adopted to explore the professional development trajectory of the participants. First, the curriculum leaders and the teachers completed a pre-project questionnaire at the beginning of the academic year and a post-project questionnaire at the end of the year. In both questionnaires, the participants indicated their level of agreement to 12 statements on a five-point Likert scale. These statements cover their understanding, beliefs, attitudes and practices regarding catering for learner diversity. The questionnaire for curriculum leaders, while covering similar aspects, geared towards the participants' leadership skills (e.g., leading curriculum design, facilitating pedagogical discussion). By comparing the mean scores of each statement, we could trace any changes in the participants' efficacy. Second, curriculum leaders were interviewed individually at the outset and the end of the year, while the teachers of each subject team attended two focus group interviews (one at the beginning and another the year end). During these interviews, the participants were prompted to share their understanding, beliefs and practices of catering for learner diversity. In the second interview, they were particularly asked to reflect on any changes or development throughout the school-university collaboration project. All interviews were recorded and transcribed for analysis. Thematic analysis approach was utilized to identify open codes from interview transcripts, and similar codes were combined into themes to shed light on the participants' trajectory.

Findings

The project was useful in enhancing the curriculum leaders' pedagogical leadership. As shown in Table 2 below, the leaders rated themselves more highly in diversified curriculum development and facilitating pedagogical discussion (statements 1 and 2). They also perceived themselves more active in encouraging teachers' reflection and collegial sharing of pedagogical ideas (statements 3 and 4).



Table 2. Curriculum Leaders' response to pre- and post-project questionnaires

Statement	Curriculum Leaders (N=3)	
	Pre	Post
1. I lead teachers to develop a diversified curriculum.	3.67	4.0
2. I co-ordinate discussion on diversified pedagogical designs with teachers.	3.67	4.0
3. I seldom encourage teachers to evaluate and reflect on their pedagogical practice.	2.67	1.67
4. I seldom encourage sharing of pedagogical practice among teachers.	2.33	1.33

Remark: On the 5-point scale, 5 stands for 'strongly agree' and 1 for 'strongly disagree'.

These changes could be explained with reference to the interview data. When asked about how the project developed their leadership, the curriculum leaders highlighted the following in the post-project interviews:

Before co-planning meetings, our team identified the topics we found hard to teach. During the meeting, we discussed our difficulties and showed the curriculum consultant our prepared materials. The useful moments were the consultant commented on our materials and showed us the materials prepared by other schools. From the comments and reference materials, I realized the importance of reminding teachers to structure our materials around a lesson framework. (Chinese Curriculum Leader)

Our team could not decide how many versions of a tiered worksheet should be developed. Instead of giving us the answer, the consultant asked us to discuss the pros and cons of two or three versions respectively. From this discussion, I know our decision should be based on our instructional objective. (English Curriculum Leader)



The consultant suggested an E-learning app to us, but upon reflection I found it unsuitable to our students as they had little experience of using i-Pad in class. So I guided teachers to consider its appropriateness in our teaching context. (Mathematics Curriculum Leader)

The interview quotes above showed that the project, especially the professional consultant, facilitated the development of pedagogical leadership in three respects: (i) providing comments and reference materials to stimulate leaders' reflection; (ii) using rational discussion to tease out principles for materials design; (iii) judging the appropriateness of the consultant's advice in view of the school context.

As for teachers, the comparison of pre- and post-project questionnaire data in Table 3 indicated that teachers in different subject groups improved their self-efficacy of catering for learner diversity differently. For example, Chinese teachers were more confident in selecting teaching content to meet diverse learners' needs. Mathematics teachers believed they performed better in setting diversified learning goals, choosing suitable content and designing appropriate tasks. Although the teachers did not perceive themselves making improvement in some aspects, this may be due to their heightened expectations of their own abilities upon joining the project. In the post-project interviews, they stated what they gained from the project.



Table 3. Teachers' response to pre- and post-project questionnaires

Statement	Chinese (N=4)		English (N=4)		Mathematics (N=4)	
	Pre	Post	Pre	Post	Pre	Post
5. I understand the diverse learning needs of students.	4.0	4.0	3.5	4.5	3.5	3.5
6. I can set diversified learning goals according to students' abilities.	4.0	4.0	3.75	3.75	3.25	3.50
7. I can choose instructional content according to students' needs.	4	4.25	3.75	3.50	3.50	3.75
8. I can design pedagogical activities according to students' needs.	3.75	3.75	4	3.75	3.50	3.75

Remark: On the 5-point scale, 5 stands for 'strongly agree' and 1 for 'strongly disagree'.

I realized that increasing student participation should be the first step in catering for learner diversity. To do this, we had to sequence unit content systematically so that less capable students possessed vocabulary and skills to participate in the task. (Chinese Teacher 2)

From the co-planning discussion, I learnt that we needed to be very clear about the goals we wished students of different abilities could achieve before designing tiered worksheets. (English Teacher 1)

In the post-observation debriefing, the consultant suggested breaking down the skills of doing division into sub-skills for less capable students. However, this strategy did not work well in class as one sub-skill was linked with another sub-skill in calculation. We need another strategy to teach division to more and less capable students. (Mathematics Teacher 4)



From the interview quotes, we inferred that the co-planning discussion and the post-observation debriefing increased teachers' understanding of how to cater for learner diversity. Critical reflections on the professional support was essential to develop their understanding.

Discussion and Significance

Faced with increasing learner diversity in mainstream classrooms, there is an urgent need to equip teachers with the knowledge and strategies to differentiate their instruction. This paper examines whether school-university collaboration could facilitate curriculum leaders' leadership and teachers' capacity to cater for learner diversity. Our preliminary findings demonstrated different patterns in the changes of teachers' efficacy. Some teachers seemed to be more receptive of the suggestions provided by professional consultants, while others were more critical and reflective of their subject nature and students' needs. These echo the observation of previous studies that teacher learning and professional development is a cyclic process, affected by personal and contextual factors (Lo, 2019; Opfer & Pedder, 2011). We would argue that these factors may play an even more important role when it comes to teacher learning in catering for learner diversity, since effective DI should be context- and student-based. At the same time, we observed more consistent changes among curriculum leaders, particularly regarding their enhanced pedagogical leadership. This is probably resulted from their "shadowing" of the university professional consultants during co-planning and debriefing meetings. We believe enhanced leadership of the curriculum leaders would sustain and expand the impact of the school-university collaboration project (Hargreaves & Braun, 2012), since the curriculum leaders could play the role of the professional consultants and provide continuous support to teachers. This study hence illuminates teacher learning model in the context of catering for learner diversity.



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