



Nguyen, D. and Ng, D. (2020) Teacher collaboration for change: sharing, improving and spreading. *Professional Development in Education*, 46(4), pp. 638-651.

(doi: [10.1080/19415257.2020.1787206](https://doi.org/10.1080/19415257.2020.1787206))

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Deposited on: 28 May 2020

## **Teacher Collaboration for Change: *Sharing, Improving and Spreading***

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### **Abstract**

Teacher professional learning has been recognised as a critical contributor to improving teaching quality and securing student learning. Leadership at different levels is important for professional learning in schools. Job-embedded teacher professional learning occurs in collaborative activities that include co-teaching, action research, and initiation and implementation of curricular and instructional change. The current article conceptualises a non-linear, iterative and recursive process of teachers leading initiatives collaboratively in schools. This conceptualisation was based on an analysis of 38 interviews with teachers and school leaders, field notes from 50 visits to four Singapore primary schools, and email exchanges. The process has three stages – *sharing*, *improving*, and *spreading*. In this process, affective support is central in providing social reinforcement to keep the team motivated to revise and move a change initiative forwards. The article enhances understanding the process of teacher collaboration for change in schools, through which teacher leadership for professional learning is evidenced.

**Keywords:** *Grounded theory, leading change, professional learning, professional collaboration, teacher leadership.*

## **1. Introduction**

Professional learning has been recognised as a critical contributor to improving teaching quality and student learning (e.g. Campbell *et al.* 2016; Shirrel *et al.* 2019). Teacher professional learning includes forms of formal learning such as attending professional development workshops and courses (Garet *et al.* 2001) and those of job-embedded learning such as peer observation and mentoring (Parise and Spillane, 2010). Research has suggested that both formal and job-embedded professional learning contribute to teachers' instructional change (e.g. Garet *et al.* 2001; Parise and Spillane, 2010; Shirrel *et al.* 2019).

This current article focuses on job-embedded or on-the-job teacher professional learning that can be defined as “a socially constructed process of learning and development that is largely embedded in activities that occur inside of schools” (Hallinger and Kulophas 2019, p. 4). The roles of principal leadership (e.g. Robinson *et al.* 2008), middle leadership (e.g. Authors 2019c; Bryant *et al.* 2020) and teacher leadership (e.g. Stoll *et al.* 2006) in supporting teacher professional learning in schools have been well-documented in the literature. Hallinger and Kulophas (2019) identify three major overlapping research streams around this topic, namely principal leadership for teacher learning, shared leadership for teacher learning, and teacher leadership for professional learning.

Leading and implementing change is a complicated process with distinguishable albeit inter-connected stages (Fullan 1982, Kotter 1995). There may be (sub-)processes nested within each stage per se. For example, the widely cited model of Kotter (1995) suggests that forming a coalition is one of the first and critical steps in the process of leading change and this step is a (sub-)process. In school contexts, teachers are key actors in the process of implementing change for improvement in, for example, pedagogy and assessment. This process involves professional interactions and collaborations that potentially offer a crucial setting for professional learning. There are a few frameworks conceptualising processes of teacher collaboration in schools in the extant literature (e.g. Little 1990, Smith 2009). These frameworks elaborate on the stages from

short conversations in the staffroom to teamwork or working together on specific tasks. Built on these frameworks or models of leading change (Fullan, 1982, Kotter, 1995) and collaboration (Little 1990, Smith 2009), the current article aims for conceptual specification of a three-stage process of teachers working together in small groups to implement change in Singapore primary schools. The article discusses the two central research questions:

- What is the process of teacher collaboration to implement change in schools like?
- What are the conditions for job-embedded professional learning in the context of collaboration for implementation of change?

The article contributes to an enhanced understanding of the process of teacher collaboration to implement an initiative in a small group prior to spreading the initiative schoolwide. The article sits squarely in the literature of the research line of teacher leadership for professional learning.

## **2. Conceptual Framework and Literature Review**

This section presents relevant literature that informs the current article. The article is built on the two main lines of research literature: teachers leading change and professional collaboration.

### **2.1 Teachers leading change**

Research has evidenced multiple leadership roles and enactment of teachers across stages of their professional career (e.g. [Nguyen et al. 2019](#), [Muij et al. 2013](#)). A wealth of research has evidenced the roles of teacher leadership in initiating and implementing change at departmental and school levels (see review of [Authors 2019a](#)). A change initiative, specifically in this current article, is defined as an innovative idea (e.g. program, pedagogical method or strategy) that seeks to enhance the quality of instruction and student learning. Teacher-led changes include improving teacher instructional practices ([Cooper et al. 2016](#)), implementing curricular reforms ([Lai and Cheung 2015](#)), and using data to improve professional practices ([Nicholson et al. 2017](#)).

There are several models of leading change in organisational settings. Lewin (1947) proposed a model of change for organizations that distinguishes three phases, namely *unfreezing*, *freezing*, and *refreezing*. The *unfreezing* stage involves communication with the targets about the need for change. The *freezing* stage refers to the transitioning to actual implementation of change where the people involved learn and employ new behaviours, processes and perspectives. The *refreezing* stage refers to the consolidation and stabilisation of change status, which is critical in transforming the change into an institutional practice or process in the organisation.

Fullan (1982) developed a model incorporating three overlapping stages in school settings: *initiation*, *implementation*, and *institutionalisation*, which shares similar logic with Lewin (1947). Kotter (1995) condensed change process into a more detailed eight-stage model, as an outcome of his 10-year research in industries. The first two stages involve rationalising change and engaging a group of catalysts in supporting the change. The next three stages focus on visioning the change, communicating that vision with the group of catalysts, and supporting the others to act on the vision. The next two stages involve implementing changes, celebrating early successes, and continuing to implement more changes. The final stage is to institutionalise new practices that result from those changes. This model has been used as a conceptual framework in the research on change and innovation in educational settings (e.g. Cooper *et al.* 2016, Dawson *et al.* 2010).

These three popular models flag the importance of forming a small group of individuals who support the proposed change and that of these early catalysts collaborating to develop an initial vision and take initial steps to implement the vision. The subsequent part of this section presents the relevant literature around collaboration process.

## **2.2 Collaboration process**

The concept of collaboration has been open to an array of definitions in the literature of educational sciences (e.g., McClellan 2016, Vangrieken *et al.* 2015). However, these definitions share four hallmarks of collaboration. Firstly, collaboration consists of joint activities of two or more parties (e.g., individuals or departments) towards a shared goal (Vangrieken *et al.* 2015). The second

hallmark of collaboration is the interdependence of the parties involved in the implementation process of a task (Kelchtermans 2006). Individuals assist one another based on their expertise, skills, and qualifications to complete a shared task. Thirdly, collaboration is based on co-equality and willingness (Welch, 1998). Genuine collaboration involves equal voice and contributions in three aspects: means to reach a shared goal, collective decision about which individual to perform which function, and collective accountability for the final outcome (McClellan 2016). Fourthly, effective collaboration requires sustained interactions and occurs during interactive activities (Welch 1998).

In the current article, collaboration refers to *teachers' voluntary joint planning, implementation, improvement and promotion of an educational initiative*. Teacher collaboration occurs in various forms - from hierarchically (e.g. formal mentoring) to more horizontally (e.g. team teaching, collaborative action research) (Hargreaves and O'Connor 2018). These forms of collaboration differ in terms of degree of interdependence.

Little (1990) proposed four forms of collaboration that can be presented in a continuum reflecting varying degrees of interdependence. '*Storytelling and scanning for ideas*' reflects the least interdependence in the continuum whereby an individual teacher deliberately seeks for colleagues' ideas for her / his own professional practices. The form of '*aid and assistance*' involves teachers' mutual assistance or help. Similar to '*storytelling and scanning for ideas*', this form is individually driven whereby teachers learn from one another by asking questions. However, teachers tend to establish the boundary between consultation and interference in peers' business. This form has a typical connotation of *help* and risks judgement on the advice seeker's competences. '*Sharing*' involves exchanging views, materials and practices amongst teachers. This activity has a slightly higher degree of interdependence than the first form. '*Joint work*' refers to actively working together, which has the highest degree of interdependence in this continuum. '*Joint work*' emerges from the "intellectual, social and emotional demands" of profession. This collectively driven activity requires individual and collective contributions that inform the

practices of individuals and the whole team. The factors influencing joint work include time and resources (Vangrieken *et al.* 2015).

Inspired by Little's (1990) framework, Smith (2009) developed a continuum of five growing levels of interdependence, starting from *storytelling and scanning for ideas, aid and assistance, sharing, joint work*, to *teamwork*. *Teamwork* occupies at the end of this continuum, with the highest level of interdependence. This framework was developed from a qualitative study in Australia.

Havnes (2009) conceptualised interactions among group members as a process of four patterns of varying degree of interdependence. These range from *preserving individualism* – renegotiating individual teacher responsibility and autonomy, to *coordination* of responsibilities and tasks, to *cooperation* – establishing a ground for shared instructional materials and practices, and finally *sharing* – elaborating on, rationalising, and sharing instructional practices. The conceptualisation of Havnes (2009) was based on an analysis of qualitative data collected from Norwegian schools.

In short, these three frameworks suggest that teacher collaboration is a process that incorporates stages from short and spontaneous conversations in the staffroom to more focused teamwork or working together on a goal. Expanding these frameworks, this article aims to specify the process of teachers working collaboratively in small groups to work towards a change initiative.

### **3. Overview of teacher professional learning in Singapore**

Singapore is a small city-state located in Southeast Asia. The country has a population of approximately 5.3 million, highly densely inhabited in an area of 660 sq km (Singapore country profile, [bbc.co.uk](http://bbc.co.uk)). There were a total of 185 state (government or government-aided) primary schools in Singapore (Ministry of Education Singapore, 2016) at the time of this research. Continuing professional development for teachers has been a priority in the educational vision of the country (Bautista *et al.* 2015). Each teacher is encouraged to complete up to 100 hours of

professional learning per year (Bautista *et al.* 2015). Teachers have opportunities to attend a variety of professional development activities through formal workshops, professional courses in higher institutes of education, and job-embedded workplace learning. The main providers of professional development for in-service teachers in the country are National Institute of Education, Academy of Singapore Teachers, and six Centers of Excellence. These organisations provide professional courses and workshops for primary and secondary teachers.

To promote job-embedded teacher professional learning, Singapore has developed a Professional Learning Communities (PLCs) model in all state schools. PLCs involve groups of people “sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, and growth-promoting way” (Hairon and Tan 2017, p. 92). The Ministry of Education Singapore (MOE) first indicated interest in PLCs as the way to improve teacher quality and professionalism (Hairon and Dimmock 2012). PLCs were envisioned to improve pedagogical practices, and to create a culture of professional excellence in schools and across the system (Academy of Singapore Teachers, n.d.). The pilot phase of Singapore’s PLC journey commenced in 2009 with 51 pilot schools. The implementation phase gathered momentum from 2010 to 2015, which saw to the implementation and adoption of PLCs in schools using a phased approach. A review was conducted from 2016 to 2018, where the MOE partnered with schools to understand their PLC practices. Tools were also developed for schools to review PLCs during this period. The aim for the next stage – year 2018 onwards is to sustain learning by leveraging on the strengths of PLCs (Academy of Singapore Teachers, n.d.).

A PLC in Singapore schools is made up of many Professional Learning Teams (PLTs), who work towards the reification of articulated PLC goals, expressed in the “3 Big Ideas”, “4 Critical Questions” and “5 Dimensions for Effective PLCs”. The “3 Big Ideas” are: Ensuring Students Learn, Building a Culture of Collaboration, and Focusing on Student Outcomes. The “4 Critical Questions” are: What is it we expect students to learn? How will we know when they have learned it? How will we respond when they haven’t learned? How will we respond when they



already know it? The “5 Dimensions for Effective PLCs” are: Shared and Supportive Leadership, Shared Values and Vision, Collective Learning and Application, Supportive Conditions and Shared Personal Practice. The participants in this current study were part of these professional learning teams.

#### **4. Methodology**

The current article presents the findings which were part of a larger qualitative study on teacher leadership in Singapore state primary schools. This study adopted a grounded theory methodology (GTM) (Charmaz 2014, Glaser and Strauss 1967) to conceptualise the issues and processes around teacher leadership in schools. GTM is well-suited to theorising complex processes (Charmaz, 2014; Urquhart, 2013) like initiating, leading, and implementing collaborative professional learning and change.

**Method of sampling.** The study employed a theoretical sampling method that is a critical feature of GTM (Urquhart, 2013). Unlike statistical sampling that seeks a high representativeness of population to enhance generalisability of findings, theoretical sampling focuses on conceptual and theoretical development of the analysis (Charmaz, 2014). This sampling method involves collecting further data to elaborate or challenge the categories that emerged from earlier stages of data collection and to develop further emergent categories. In this study, the first author analysed data in each stage and then adapted tools for data collection (e.g., interview protocol and questions) prior to gathering data in the subsequent stage.

**Sources of data.** On the whole, the sources of data comprised 38 individual interviews with 24 teachers and school leaders, field notes from 50 days of participant observation in four Singapore primary schools (i.e., School A, School B, School C, and School D)<sup>1</sup>, and email exchanges. These teachers were recommended by their schools based on their willingness to participate in this research and proactivity in leading and implementing initiatives in their departments and/or

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<sup>1</sup> All names of schools and participants in this article are pseudonyms.

schools. All interviews were recorded, transcribed verbatim and then transformed into texts for analysis. Each interview lasted between 50 and 80 minutes. Fieldnotes and email exchanges were organised into texts for analysis.

**Process of data collection and analysis.** The overall five-stage process of data collection and analysis in this study is briefly outlined, followed by more details on the method of analysis used.

**Stage 1.** The author collected data in School A in May 2015. The data included seven formal interviews with the school principal and six teachers and fieldnotes from 15 visits to School A. During these visits, the author conducted observational activities such as doing walkabouts, observing classes, sitting in departmental meetings, and having informal talks with teachers. Analysis of these data was conducted as described in the next part of this section. The findings in Stage 1 informed preparation (e.g. revisited interview and observation protocols) for data collection of Stage 2.

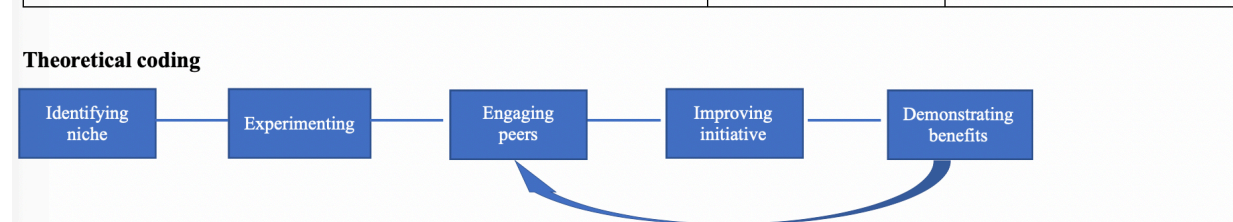
**Stage 2.** The author gathered data in School B and School C from October 2015 to December 2015. In School B, the author conducted seven formal interviews with the school principal and six teachers. The researcher paid 15 visits to School B. In School C, three educators from the Department of English were available and willing to participate in this study. The author had three formal interviews with the vice-principal (English teacher) and two teachers. The researcher paid five visits to School C to observe the activities of these three educators. The observational activities in this stage included walkabouts, observing classes, and having informal talks with these teachers. The process of analysing data in this stage was similar to that in Stage 1. The findings in Stage 2 informed preparation for data collection of Stage 3.

**Stage 3.** The author conducted seven formal interviews with the school principal and six teachers in School D in early 2016. The author paid 15 visits to School B. During these visits, the author participated in eight team meetings, conducted walkabouts and informal talks with teachers, and observed one mentor-mentee meeting. The process of analysing data in this stage was similar to that in the previous stages.

**Stage 4.** Thirteen participants in School A, School B, School C and School D agreed to go for a second round of individual interviews. Based on the initial findings in the previous stages, the researcher developed a revised interview protocol for the interviews in this stage. The purpose of these interviews was two-fold: firstly to verify the findings in the previous stages; and secondly to collect additional data to further develop these findings. This stage was part of the member checking process that involved “taking ideas back to research participants for their confirmation” (Charmaz, 2014, p. 210).

**Stage 5.** The author emailed the participants in School A, School B, School C and School D to further clarify details and comment on key findings. Six participants responded to the emails with their comments. This stage was also part of the member checking process. The key findings needed for further clarification were written in non-specialised language in the Microsoft word format so that the participants could insert their responses.

<i>In this interview excerpt, the interviewee was explaining the process of developing an initiative to support teaching Mathematics in his school.</i>	<b>Initial/Open Codes</b>	<b>Focused Codes</b>
<p><b>Peter (minute 13:20):</b> I noticed that the kids are not very confident in solving problems. So I tried to come up with an initiative to teach pupils some strategies to how to solve problems. We started out with more on the resources first. We started with the heuristic worksheets and I just got the teachers to contribute more questions. I then combined those questions in the worksheet. Every year we tried to do a little bit; we tried to change a little bit. Then slowly we started to think of an approach to solve the work problem. So that’s why in the end we come up with this ABCD [name of this initiative is changed to ensure anonymity of the participant]. You can see behind you [Peter showed the researcher the visualisation (map) of this initiative]. The choice of this acronym was done in a department meeting. We were discussing “is there an acronym” to help them to come up with to help the pupils to understand the processes. In the end we managed to come up with this together. And after that we started to move into creating more specific worksheets to target the work problem skills like how to draw models, how to read a model. Actually I had to do most of the work at the beginning. I had to do the worksheet for teachers. And then I asked them to try out to see how it was and then to get their feedback and then subsequently tried to fix the worksheet a little bit. It took a few years actually before we actually finished the whole package we aiming for. The teachers have tried it thought that it was quite useful. So I think that is good in the sense because it convinced them in the sense that it is good way to teach pupils how to solve a problem.</p>	<ul style="list-style-type: none"> <li>(1.1) Identifying niche</li> <li>(1.2) Initiating idea</li> <li>(1.3) Preparing resources</li> <li>(1.3) Inviting contributions</li> <li>(1.4) Building up resources together</li> <li>(1.5) Improving initiative</li> <li>(1.6) Visualising initiative</li> <li>(1.7) Labelling initiative</li> <li>(1.8) Justifying benefits</li> <li>(1.9) Collective efforts</li> <li>(1.10) Starting individually</li> <li>(1.11) Engaging peers</li> <li>(1.12) Experimenting</li> <li>(1.13) Development</li> <li>(1.14) Positive feedback</li> <li>(1.15) Positive results -&gt; persuasion</li> </ul>	<ul style="list-style-type: none"> <li>(2.1) Identifying niche</li> <li>(2.2) Engaging peers</li> <li>(2.3) Experimenting</li> <li>(2.4) Improving initiative</li> <li>(2.5) Demonstrating benefits</li> </ul>



**Figure 1. An example of the coding process**

**Method of analysis.** Analysis of those above qualitative data involved a coding process of three iterative stages – *initial / open coding*, *focused coding* and *theoretical coding* (Charmaz, 2014). The first author used NVivo software to aid the storage and analysis process of data. During this process, the first author jotted down memos to record his emergent descriptive and analytical ideas.

In the initial coding stage, the first author flexibly used a variety of open coding strategies suggested by Saldaña (2013). Examples of these strategies included “process coding”, “descriptive coding”, and “causation coding”. Initial / Open coding involves analysis of short segments of data recorded in the form of texts and needs to “stick closely to the data” (Charmaz, 2014, p. 116). Figure 1 provides an example of coding strategies used in this study. The author constructed fifteen open/initial codes from an analysis of the provided interview excerpt. Three coding strategies used to analyse this excerpt were process coding (e.g., preparing resources), descriptive coding (e.g., collective efforts), and causation coding (e.g., positive results → persuasion). Most of the codes in this excerpt were ‘process codes’ since the interviewee was talking about the process of initiating an idea. Process coding using gerund is useful in identifying processes (Charmaz, 2014). Codes should be tentative and open to revisions during the entire analysis process (Charmaz, 2014; Urquhart, 2013).

The focused coding stage involved selecting central codes from and (re)coding the initial codes generated in the previous stage. Focused coding helps to expedite the analytical work, but still reserves the details contained in the data and initial codes (Charmaz, 2014). From the 15 open codes, the author selected five central codes, namely “identifying niche”, “engaging peers”, “experimenting”, improving initiative”, and “demonstrating benefits”. These five codes were selected because the author felt that they had analytical power and condensed the central information of the interview excerpt. For example, the code of “engaging peers” could label the other open codes such as (1.3) inviting contributions”, (1.4) “building resources together”, and (1.11) “engaging peers” (see Figure 1).

The theoretical coding stage involved relating ‘high-level’ focused codes to one another. To aid this theoretical coding stage, the author flexibly referred to the methodological texts such as Spradley’s (1979) universal semantic relationships, Glaser’s (1978) 18 coding families, and Glaser’s (2005) 23 coding families. In addition, the author constantly reviewed initial codes because some of these might present relationships and could be used as theoretical codes (Urquhart, 2013). In Figure 1, the author referred to the family coding “process” suggested by Glaser (1978, 2005). The five focused codes were related together by single lines linking possible inter-related stages together. Each focused code represented one stage. The code “demonstrating benefits” was linked with the code “engaging peers” by an arrow to describe the influence of “demonstrating benefits” on “engaging peers”. In the previous instances of data, the author noted in his memos that teachers said they could persuade colleagues to join their initiatives if they could show their initial successes. The process in Figure 1 was tentative at that time and the author constantly compared with the other sources and instances of data and rounds of member checking in Stage 4 and Stage 5 above to finalise the process presented in Figure 2. When coding the interview excerpt in Figure 1, the author got inspired by his own analyses of the previous instances of data in the same interview and other interviews in this same study, as part of the process of constant comparison used in GTM. The next section of the current article presents findings drawn from this analysis process.

## **5. Findings**

The current section provides four accounts of teachers leading change and presents the process of teacher collaboration for implementation of change initiatives.

### **5.1. Teachers leading initiatives**

The current study identified a number of teacher initiatives that were typically proposed by an individual teacher or a group of teachers. These initiatives tended to emerge from the teachers’ desire to improve instruction and student learning and their own experiences and observations. Alternatively, teacher initiatives might emerge from the process of implementing national

initiatives. During the process, a teacher or a group of teachers proposed strategies or smaller-scale initiatives to enact a national initiative in their schools. The following vignettes present four accounts of teachers leading and implementing initiatives.

**Vignette 1.** Peter was a teacher of Mathematics. He had approximately seven years of teaching experience at the time of this research in 2015. Upon working for two years as a beginning teacher, he had been appointed as Subject Head for Mathematics. Afterwards, recognising his expertise and leadership potential, the school leaders encouraged him to try a higher position. He was appointed as a Head of Department in 2012. From his early time as a beginning teacher, he observed that his students were struggling with problem solving. He found it important to develop a “problem-solving package” of strategies to teach students to solve problems effectively. Peter said, *“I notice kids are not very confident in solving problems. They are struggling in that area, so I think one of the ideas is to come up with a “lesson package” to teach pupils some strategies on how to solve problems”*. He decided to proactively explore an innovative method of problem-solving teaching by creating worksheets in the first instance, with the encouragement of the principal, in 2011. Afterwards, he started to share the idea with some colleagues informally. After a period, the idea was formally introduced to other teachers in a school meeting. At the time of research in 2015, this method was institutionalised in his school after years of collective implementation and revisions.

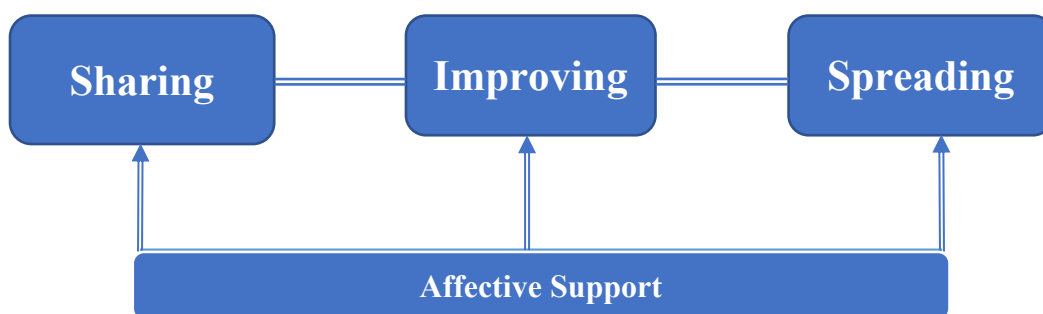
**Vignette 2.** Jonathan had almost five years of teaching experience. After his first three years of teaching, he had been appointed as a Subject Head of English Language. Inspired by a colleague about the use of iPads in the classroom as a tool to better engage students, Jonathan experimented using iPads in music lessons in 2013. He shared this idea with a coordinator of Art subject. With the support of the senior school leaders, Johnathan and two other teachers frequently used iPads more for English lessons. They were delighted to see their increased student engagement in iPad-supported lessons. They felt that using iPads could assist teachers in organising teaching activities more efficiently. Demonstrating the initial successful results to the other teachers, his team was able to attract more teachers across subjects to implement this initiative. He said, *“We are seeing an increase in the use of iPads in the classroom among teachers, especially younger teachers”*. At the time of research, this initiative continued to be improved in his school to resolve emerging technical issues in the implementation process. This initiative was in alignment with Singapore’s national vision of promoting information communications technology in schools (see Authors, 2017).

**Vignette 3.** Fiona had four years of teaching experience. Through observations of school events, Fiona realised that student facilitators had difficulty leading student activities in the occasions such as school Open House and carnivals. She thought that these student facilitators needed appropriate training for facilitation skills so that they could feel more confident and perform better. She proposed this idea to her direct senior leader and other colleagues in the same department. She explained to them about the benefits of the idea for the students. Supported by her senior leader and other teachers, the idea was being piloted with a group of students. Fiona took an active role in coordinating with allied educators to teach these students leadership skills.

**Vignette 4.** Janet had been working as a teacher for fifteen years. She recalled an incident in her previous school when she was a novice teacher. She commented on the professional relationship with her mentor: *“My previous mentor was trying to guide me, but at the same time she was restricting me. When I proposed something, her first reaction would be “no” and then she would list down problems I would face if I enacted the idea”*. Janet proposed an idea to support students with lived experiences. However, her formal mentor was hesitant in supporting the idea. The initiative was delayed until her head of department heard about it and encouraged her to proceed with implementation. The school principal endorsed her proposal. Janet’s colleagues helped to promote the idea with their students and to organise learning trips (part of this initiative) and the initiative was finally commenced with students’ interests.

The analysis process of the data relevant to teachers initiating and implementing innovative ideas in this study highlighted a typical process. This process has three stages that are (i) sharing resources, (ii) improving an initiative, and (iii) spreading an initiative. The next part of this section presents each stage in greater detail.

## 5.2 Process of teacher collaboration for implementation of change



**Figure 2.** Process of Teacher Collaboration for Implementation of Change

## *Sharing*

Teachers tended to start collaboration by sharing resources, practices or strategies to implement initiatives. These forms of sharing involved cognitive support amongst the teachers who were involved in implementing an initiative. Teachers highlighted sharing resources and practices as a quick and comfortable way for peer learning. In Vignette 1, Peter recalled how he had started an initiative on Mathematics teaching by sharing instructional materials with his colleagues:

*We started out with more on the resources. We started with the heuristic worksheets. I provided a heuristic worksheet, and I got the teachers to contribute more questions. I combined these questions and put them in the worksheet.*

In a project using iPads (see Vignette 2) to support English language lessons, Jonathan shared tools with his colleagues. He said: *“I shared different tools with other teachers. I could just say: eh I used it and it is better”*.

The motives for sharing could be pragmatic and intrinsic. Pragmatically, sharing resources and practices was a way to save teachers’ time for preparation. Initial sharing would also stimulate further discussion to optimise resources and practices. Intrinsically, the teachers in this study tended to consider sharing small resources or practices as an effective way to build relationships and to exert influence on colleagues. As one teacher said: *“Sharing information will help you develop relationships”*.

Sharing in this stage occurred in informal settings such as short talks during breaks or in a staff room. This sharing tended to be undertaken in a spontaneous and opportunistic way. One teacher said about peer sharing in her team:

*When teachers have created something, they will just tell others: ‘eh I have done this worksheet. If anyone wants it, I can print it for you’. That resource sharing can be also a stepping stone for future discussion on, for example, how to use that worksheet and how it helps teachers and students.*



Peer learning happened when teachers shared effective practices or strategies. However, some teachers emphatically stated importance of openness in sharing failed practices so that their colleagues can draw upon these experiences. As one teacher said:

*It could be a fruitful sharing of the challenges we faced and how we overcame them. Our failure can inform others' actions. Sometimes we only wanted to share successful things, but we did not see that actually we can share things that did not work and tell teachers why it did not work. It is also a form of learning for others. I think we should see from different perspectives, and not be so focussed on success but also accept failure and then pick up from there.*

Teachers would expect a safe environment to share their failed trials and challenges. Assurance from their seniors would be helpful in encouraging teachers to voice out their struggles. As one head of department reflected:

*I try to let teachers understand that sharing their challenges and struggles is fine. It will only show how ineffective you are if you did not do anything. If they tell me that 'my class didn't pass'. Then I will ask: "what did you do?" If they tell me that they did not do anything, then it is really a problem. It will be very open discussion.*

Sharing resources and practices in the early stage of implementation paved the way for the next stage that focused on addressing challenges and improving the initiative.

### ***Improving***

In this stage, team members progressed further with implementation of an initiative. They reviewed the implementation process and revised aspects of the initiative. This further development of the initiative was not confined to the remit of the initiator but dispersed amongst team members. The instances of shared responsibilities to improve an initiative included *contributing constructive feedback, brainstorming collectively solutions to emergent issues, and trialling alternative implementation methods.*

Upon an initial period of implementation, teachers started to review implementation and talked about an initiative more openly and critically. They jointly held the responsibility for further developing the initiative. As Peter in Vignette 1 described:

*We had our department reviews at the end of the year. That is where teachers feedback on how the initiative is going on and what problems they have encountered. Teachers talk about the results and about: ‘Whether this strategy useful? Does it work?’ From the feedback, we got an idea of what problems were. In the department meetings, we discuss “are there any suggestions to solve these problems?”.*

Through collective contributions, the team gradually resolved emergent issues to improve the effectiveness of an initiative. One teacher involved in the initiative in Vignette 1 described:

*We have been proactive in sharing suggestions in improving the initiative. We have been making tweaks to the resources and method yearly. For example, we realised that one of the problems students encounter is the drawing of model. While drawing of model is a strategy taught in the initiative, the teachers felt that students could not draw the correct model. This prompted the department to go into the basics of drawing models and to teach the skills explicitly. We incorporated this into our lessons and resources.*

These teachers worked together on the yearly basis to review the initiative and improve it. The improvements included developing further resources and redesigning or adding aspects of the initiative. The teachers discussed and decided to incorporate one more practice into the initiative to make it more effective.

### ***Spreading***

The next stage of collaboration is to spread an initiative to more teachers. The teachers who had been involved in implementing an initiative started sharing it with their colleagues. For example, the initiative of ‘using iPad-based applications to support English lessons’ (see Vignette 2) started with only three teachers of English. These teachers had gradually trialled different functions and collectively decided to use the iTunes U function. Despite challenges, this small group of teachers

achieved some successes in promoting student engagement in English lessons. Subsequently, these early-involved teachers shared the initiative with their peers and more teachers across subjects started designing iPad-supported lessons. Two teachers described how this initiative gradually received greater receptivity across departments in their school:

*My team and I proceeded to design iPad-supported lessons and taught pupils. We were surprised at how engaged the pupils were during the lessons with the iPads and how we could plan activities that we might not have thought of previously. After sharing our results with the staff, we felt we were able to get a greater buy-in into using iPads. We first started with teaching English, but it slowly moved on to other subjects.*

*From what I have observed, the initiative has gotten slightly more extensive. Even Primary 1 teachers are using it for peer assessment for presentation tasks. They use it to record a presentation and have the class comment on how the presentation can be improved.*

This example shows the importance of teachers' sustained collaboration to level up a teacher-led initiative.

### ***Affective support***

Early catalysts for teacher initiatives could face unexpected challenges emerging in the process of implementation. Many teachers in this study reported that implementation of initiatives increased their workload and that they occasionally felt discouraged when they failed to see positive results in the early stages. Several participants occasionally felt isolated because they were among few teachers enacting an initiative. Supporting peers emotionally in all stages in the collaboration process would help the team to stay motivated. The data suggested ways of mutual support such as *mutual verbal encouragement* and *highlighting potential benefits of an initiative*. One teacher recalled:

*We all started an initiative together, but then over time, it was challenging to keep up with the flow of the lesson. There were three members actually, but one of us said: "maybe it is*

*not workable". She started thinking negatively about the initiative. I had to redirect her again of the purpose and the main focus why we were doing this and then told her that "the time spent on it is worth it, if you can see results in the end". We had a trusting relationship, which helped to persuade her and to keep her going. We actually went through hardship together.*

In this incident, a group of three teachers were implementing an initiative and experienced challenges that made one member feel dispirited. One of these three teachers reminded this upset teacher of the significance of the initiative and encouraged her to sustain implementation. In the end, these members could overcome challenges and continue the initiative.

The next section focuses on discussing the interconnectedness of the three stages of sharing, improving, and spreading, the centrality of affective support over stages, and the implications from this process of teacher collaboration for implementation of change.

## **6. Discussion and Conclusion**

The current article supports the premise that teachers develop their various competences such as pedagogical knowledge and skills, subject-specific knowledge, and leadership skills through job-embedded collaborative activities (e.g. Collinson 2012, Hunzicker 2012). Teachers in this study learned about innovative practices of teaching Mathematics (see Vignette 1), and using iPads to support teaching of English language and music (see Vignette 2). Teachers learned how to exercise informal leadership through persuading and establishing collaboration with colleagues (see Vignette 1 & Vignette 2) and the coordination of tasks (see Vignette 3). This study highlights collaborative implementation of teacher-led initiatives as an important form or setting for professional learning in schools. Research has shown that effective professional learning should be collaborative (Campbell *et al.* 2016, Garet *et al.* 2001) and be aimed at positively impacting instruction and learning (Harris and Jones 2019). Teachers in this study participated in implementing initiatives that were focused on student learning and these initiatives were collaboratively implemented by groups of teachers. Teacher leaders played a critical role in

initiating activities of professional learning and engaging their colleagues in this learning process. These teacher leaders proposed initiatives and involved colleagues in collaboratively refining, improving and implementing those initiatives. There are two contextual factors that should be taken into consideration at this point. Singapore's small size and centralised system enables the nation to formally adopt a nation-wide PLC: each school is a PLC that is made of PLTs (Hairon and Tan, 2017). Teachers' contributions to professional learning of each PLT are discussed in the reviews of their yearly performance, as reported by the participants.

This leads to further discussion on the process and conditions of teacher leadership for collaborative professional learning in these Singapore primary schools. The current article supports an argument that teacher professional learning requires a catalyst or a small group of catalysts to initiate an activity constructed to promote learning. An activity of teacher professional learning, to a certain extent, tends to occur in a sequence and to be considered as a "socially constructed process" (Hallinger and Kulophas 2019, p. 4). The three stages of the collaboration process outlined in the current article represent varying levels of interdependence, interactions, and ownership of the involved. The first stage labelled as '*sharing*' focuses on sharing resources and strategies related to an initiative. The second stage – '*improving*' involves reviewing early implementation of an initiative and refining or improving aspects of that initiative, which suggests the evolving involvement and ownership of these teachers. In the '*spreading*' stage, a group of catalysts spread the initiative to a wider professional community in their schools. This conceptualisation of three stages implies the deepening of professional interactions and evolving ownership when the group of catalysts progress with the implementation process of an initiative.

The findings of this study enable us to assert the centrality of both cognitive and affective peer support in effective professional learning activities. The study underscores the significance of cognitive and affective support for a collaborative process. These two modes of support are complementary in moving the team forwards. Cognitive support involves peer sharing of resources and strategies to overcome obstacles in the process of implementing an initiative. The second

mode, labelled as ‘affective support’, refers to members providing social reinforcement to one another to stay motivated for collaboration. The affective support includes verbal encouragement, recognition of each other’s efforts, or consolidation of the primary goals and benefits of an initiative. Such sources of affective support are emotionally and collegially helpful as teachers face isolation, stress, and tensions when enacting change (Datnow 2018, Nicholson *et al.* 2017). Cognitive support helps to keep the collaborative implementation of an initiative ongoing and efficient, while affective support would foster interpersonal relationships and therefore promote the collegiality of the team.

The current article emphasises the critical roles of teacher leaders in initiating and leading activities of teacher professional learning in Singapore primary schools. Research across contexts has reported the aspirations, willingness and potential capabilities of teachers in exercising informal leadership in various settings that include professional learning and development of colleagues (e.g. King *et al.* 2019; Nguyen *et al.* 2019, Muijs *et al.* 2013). Indeed, the current study identified that these Singapore teachers who had proposed initiatives were in their different career stages, from beginning to experienced teachers, as described in the vignettes of the Findings section. However, these necessary aspirations, determination and expertise of teachers alone offer no guarantee to effectively initiate and sustain leadership of professional learning of the department or school.

This article corroborates a wealth of empirical literature asserting the need for school leadership support for teachers exercising informal leadership roles (see review of Authors 2019a). This article provides further empirical evidence in the literature to maintain that support of principal leadership (Nguyen 2017) and middle leadership (Harris *et al.* 2019; Bryant *et al.* 2020) is a critical condition for teachers leading professional learning in schools. The vignettes of the previous section highlight the centrality of leadership support. The initiative in Vignette 4 was delayed as a result of the lack of support of the teacher’s mentor. Equally important, leading teacher professional learning is a process over which teacher leaders would need to influence peers

to achieve their peer support and trust. Teacher leaders influence their colleagues by sharing innovative ideas and resources (Collinson 2012), modelling new practices (e.g. Fairman and Mackenzie 2015) and encouraging colleagues (e.g. Nicholson *et al.* 2017). While trust on the feasibility and benefits of an initiative may grow along the process of effective collaboration, trusting relationships with colleagues need to be built and nurtured in the daily interactions at workplace (Nguyen *et al.* 2019).

In conclusion, the article highlights collaborative implementation of teacher-led initiatives as an important setting or form of job-embedded professional in schools. This collaborative implementation tended to occur in a three-stage process of *sharing, improving* and *spreading*. Mutual support among the group of early catalysts, affectively and cognitively, was critical in keeping the initiative going on. Leadership and peer support were important conditions for teachers leading professional learning. The article advances understanding of the process of teacher collaboration to implement an initiative in a small group prior to spreading the initiative to the entire school. This conceptualisation should be utilised as a referential framework, rather than a prescription. Theorisation or conceptualisation is an ongoing process that involves multiple studies across time and contexts (Charmaz, 2014; Urquhart, 2013). The degree of theoretical generalisability of the current process model could be further enhanced and its scope could be expanded. More specifically, future research on this topic could sample more teachers in more primary schools in Singapore and other societies to increase the theoretical generalisability of this process model of teacher collaboration for change. To broaden its scope, more relevant studies could be undertaken beyond primary school level, for example, in secondary schools and colleges. Looking forwards, the field would also benefit from more robust empirical research across school levels and national cultures that conceptualises and verifies various processes and practices of teacher professional learning and teachers leading change and their impacts on teacher competences and student learning.

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