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ARTICLE

Cultivating sustained teachers’ professional learning within a centralised education system

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ABSTRACT
This study investigates how sustained professional learning for teachers within a centralised system was cultivated. Specifically, the sustained professional learning was initiated by officers from the headquarters (HQ) and involved interested teachers across schools in Singapore. Qualitative instruments were used to collect and analyse the data in examining the partnerships perceived by the participants. The enablers responsible to bring about sustained professional learning are proposed. A contribution of this study is to clarify how resources in the HQ and its schools can be bridged. Deliberate bridging of resources is critical particularly at the initial stage of the partnerships. This bridging is made possible through dedicated appointed champions. The appointed champions are passionate about the educational innovations and are willing to invest their time to understand the teachers’ needs. This paper argues that the enablers can offer opportunities for lateral networks to be forged within a hierarchical system.

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KEYWORDS
Learning partnerships; appointed champions; deliberate bridging; lateral networks; productive tensions

Introduction

As schools focus on 21st century competencies and literacies, there is a corresponding increase in demand for sustained teachers’ professional learning through partnerships to address multifaceted dimensions of students’ development. This is because schools may not have the necessary resources to do so if they operate on their own (A. Hargreaves & Shirley, 2009). “Sustained“ here refers to the abilities of educators from central offices and their schools to remain connected (Lieberman & Wood, 2002) and work together through numerous learning activities to address the teachers’ concerns in their local contexts. Central offices can assist in these sustainable aspects through design linkages that afford connections between busy teachers in schools and the central staff.

Muijs, West, and Ainscow (2010) suggest that the design dimensions of how partnerships can occur should be considered. Although successful partnerships are typical in decentralised education systems, there are fewer studies on such learning partnerships in centralised education systems (Lim-Fei, Kwan, & Poh, 2017; Shaari & Hung, 2013; Shaari & Osman, 2015). Many related studies in the decentralised systems have been conducted on the basis that

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the partnerships for sustained professional learning have already been formed (e.g., Partnership for 21st Century Skills [P21CS], 2009; Sanders, 2012).

This study explores how partnerships for sustained professional learning are developed in a centralised education system where there is a higher likelihood for lateral networks. As part of sustained professional learning, the partnerships also aim to scale up educational technology innovations across schools in the system. These learning partnerships are unique in that they are led by officers from the headquarters (HQ) and involve teachers across schools in Singapore. Such collaborations, where partners have specified joint rights and responsibilities, would morph into a specific type of lateral networks for sustained professional learning within a centralised educational system. A centralised education system, such as in Singapore, is commonly associated with affordances through the efficient distribution of resources from the nucleus (i.e., HQ) to its subsidiaries (schools).

This paper is part of a larger study that explores how lateral networks may form (and possibly sustain) in such a system. The findings offer a baseline to delve into exploring partnerships for professional learning in their more mature form. They can also inform practitioners on feasible strategies to cultivate meaningful and effective learning partnerships for sustained professional learning within a centralised system. Two new ideas are introduced in this paper, namely, deliberate bridging and appointed champions.

The next section of this paper discusses the literature concerning partnerships for sustained professional learning in schools and highlights the different dimensions and their implications. This is followed by the methodology of the study, which describes the context of study, data collection, and analysis. The case study is discussed with key findings presented in the next section. This is followed by a discussion on how this study has extended the literature. The final section concludes with practical implications and the study's limitations.

**Literature review**

**Dimensions of partnerships for professional learning**

Several benefits of carefully planned partnerships for professional learning have been documented (Annenberg Institute for School Reform, 2009). For example, they can address limitations in teaching and learning practices by harnessing collaborative and complementary resources (P21CS, 2009). An advantage of partnerships vis-à-vis other types of school improvement programmes is that they enable schools to co-design improvement collectively. Nonetheless, it is noted that the approach has to be customised around individual schools’ needs rather than using “off-the-shelf” approaches that may not be properly contextualised (Datnow, Hubbard, & Mehan, 2002). The following review is on the dimensions of partnerships for professional learning, where the cultivation of links between the central agency and their schools in decentralised systems is discussed.

In the literature, proponents have provided guiding principles regarding how we can develop partnerships for professional learning (e.g., Lasky, 2004). First, we consider Johnson and Chrispeels’s (2010) partnership dimensions: (a) shared values and what constitutes best practices; (b) trust systems; (c) communication tools; (d) policies,
designed arrangements, and organizational tenets; as well as (e) physical and human resource infrastructures. Table 1 lists relevant literature that outlines and elaborates on these dimensions.

Johnson and Chrispeels’s (2010) framework emphasises the importance of designed resource partnerships in which central offices and schools can share resources to create a change strategy that is mutually beneficial for them. This includes accountabilities through professional development of the principals, teachers, and school leadership teams. Johnson and Chrispeels believe that the structural arrangements, such as curriculum calendars and assessment data, can provide information on the constraints and supporting mechanisms that link central offices and their schools in converging to specific goals to provide clear directives and opportunities for these professional developments.

These dimensions suggest inseparable and mutually constitutive elements of partnerships for professional learning. They are interlinked and can drive partnerships between the central offices and their schools to success. For example, shared values and organisational tenets, such as trust, are essential for enhancing partnerships that value high-level commitment and organisational learning (Bryk & Schneider, 2002). To build trust, Johnson and Chrispeels (2010) suggest that communication that is open and consistent is favoured, especially with a focus on teaching and learning. Notwithstanding the differing beliefs that could still exist between central offices and schools, Johnson and Chrispeels (2010) further suggest to appropriate multiple communication tools for different communication purposes so as to address the different perspectives effectively.

The dimensions described above offer a broad overview of the complex nature of partnerships in decentralised systems. First, the dimensions appear to afford adaptive and interactive learning experiences for the agents within the partnerships. For instance, significant research shows that when schools develop cultures that support well-designed partnerships in terms of designed arrangement and programme (Epstein, 2001), they can minimise the idiosyncratic effects of an individual’s attributes (Hoover-Dempsey, Walker, & Sandler, 2005).

Second, there are common factors in partnerships that are useful for effective business organisations (see Orton & Weick, 1990). However, for the success factors to be useful in schools, provisions for activities that are unique to schools are critical. In partnerships to scale school reforms, the social and relational underpinning of scaling

<table>
<thead>
<tr>
<th>Dimensions of Partnerships</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared values and what constitutes best practices</td>
<td>Argyris (1993); Chrispeels, Burke, Johnson, and Daly (2008); Datnow, Lasky, Stringfield, and Teddile (2006); Elmore and Fuhrman (2001); Leithwood, Louis, Anderson, &amp; Wahlstrom (2004); O’Day (2002).</td>
</tr>
<tr>
<td>Trust Systems</td>
<td>Bryk and Schneider (2002); Datnow et al. (2006); Hightower (2002); Hubbard, Mehan, and Stein (2006); Lasky (2004).</td>
</tr>
<tr>
<td>Communication Tools</td>
<td>Hightower (2002); Hubbard et al. (2006); Snipes, Doolittle, and Herlihy (2002); Spillane and Thompson (1997); Togneri and Anderson (2003).</td>
</tr>
<tr>
<td>Policies, designed arrangements, and organisational tenets</td>
<td>Chrispeels and González (2006); Darling-Hammond et al. (2006); Elmore and Burney (1997); Hightower (2002); Massell and Goertz (2002); McLaughlin and Talbert (2003); Skrla, Scheurich, and Johnson (2000); Snipes et al. (2002); Thompson, Sykes, and Skrla (2008); Weick (1976).</td>
</tr>
<tr>
<td>Physical and human resource infrastructures</td>
<td>Chrispeels et al. (2008); Datnow et al. (2006); Knapp, Copeland, and Talbert (2003); Lasky et al. (2005); Morris (2009); Ruggles (2009); Spillane and Thompson (1997).</td>
</tr>
</tbody>
</table>
is central to facilitating the successful initiation, development, and implementation of the educational innovations. This is because educational reform is more of a social and cultural process than a science with mechanistic procedures (A. Hargreaves & Shirley, 2009). Similarly, we believe partnerships for sustained professional learning for teachers constitute social processes that are inherently complex in nature (Lim-Fei et al., in press).

Third, a key to the social process of educational reform is the reification of collective experiences through shared resources within partnerships (Shilling, 1992). The shared resources can act as focal points for discussions in deviating attention from affective conflicts (Hinds & Bailey, 2003). Hence, these shared resources offer an abridged representation of the messy, convoluted partnerships’ work processes. Although shared resources may reify partnership experiences, motivation can be undermined if they promote prescriptive and narrow work approaches, where productive discourse is impeded (Hinds & Bailey, 2003). Unfortunately, we know little of how shared resources can act as key facilitative agents in nurturing partnerships particularly between the HQ and its schools. Nonetheless, we know that partnerships can enable the sharing of scarce resources amongst partners and contribute to the diffusion of educational technology innovations in schools.

The centralised nature of the Singapore education system

The Ministry of Education (MOE) is the central agency that manages the development and administration of state schools receiving government funding. The Singapore education system is a relatively small one. As of 2017, there are about 359 schools in Singapore, with a combined enrolment of about 500,000 students. Pang, Lim, Choe, Peters, and Chua (2015) note that “the Singapore education system today is highly centralised and regulated following three decades of reorganisation, rationalisation, consolidation and reformation. Nevertheless, this highly centralised and highly efficient education system is a relatively recent development” (p. 108). The curriculum is centrally planned and developed by MOE, thus allowing for a strong alignment of the curriculum, instruction in schools, and assessment. This centralization allows MOE to maintain system coherence and quality across all schools nationwide (Chua, 2014). MOE also articulates explicit student learning outcomes and continues to provide guidance as well as professional development to teachers and school leaders. However, in the implementation of the curriculum, schools are given the autonomy to adopt and adapt a variety of approaches that cater to their students’ profiles and best meet their learning needs. This centralised planning and coordination at MOE, with school-based autonomy in the approach of implementation, known as “Decentralised-Centralism”, is distinctive of the relationship between MOE and schools in Singapore. It allows Singapore to reap the benefits associated with strong central authority, while simultaneously allowing innovation in individual schools (Tan & Ng, 2007).

Teachers are trained to teach in class sizes of an average of 35 students, and schools develop a “clockwork” of efficient processes to prepare students for the examinations. Up to more recent times, pedagogy in classrooms has been mostly teacher led. The Programme for International Student Assessment (PISA) and other international benchmarks suggest students to be quite good with problem solving and among one of the highest in standards internationally. The curricular resources from MOE are guided by
sound principles of conceptual understandings to develop procedural fluencies in students.

Another aspect that could have influenced the cultivation of partnerships between MOE and the schools is the recent emphasis on the development of 21st century competencies (21CC). The Singapore education system has broadened beyond its strong focus on academic achievement to include the use of ICT (information and communications technology) in teaching and learning. 21CC are competencies which MOE identified as necessary for our students to face challenges and opportunities in the future. Anchored on values, the 21CC are Civic Literacy, Global Awareness, and Cross-Cultural Skills; Critical and Inventive Thinking; as well as Communication, Collaboration, and Information Skills. There is also a concerted effort to harness ICT to improve teaching and learning. The ICT in the Education Masterplan aims to nurture Future-ready and Responsible Digital Learners. While the vision is articulated from MOE, schools are supported by MOE through professional development programmes and resources to integrate ICT in teaching and learning. For example, teachers are equipped with the competencies to use ICT productively in designing learning experiences and environments. The use of ICT enables teachers to develop a wider repertoire of teaching strategies to meet the different learning needs of students in their classes.

As MOE began to recognize the need to be progressive towards 21st century forms of learning, teachers are encouraged towards instructional design and other forms of learning inquiry pedagogies and practices. Professional learning communities (PLCs) and networked learning communities (NLCs) have been initiated into the system, and over the last 5 years, research evidence suggests that teachers are being guided and mentored into these practices increasingly (Salleh, 2016). With increased interactions across schools, and with budgets and funds being limited, alternative solutions to normative views such as increased teacher numbers have to be sought. Partnerships among teachers with a view to optimizing their resources and time are thus attractive solutions. The sharing of expertise and experiences among teachers in co-developing pedagogical solutions to address classroom teaching and learning challenges is also observed to be increasingly common (Heng & Marsh, 2009).

**Sharing of resources in partnerships**

Schools in Singapore are employing more initiatives to form partnerships for school reform and improvement. As such, schools may partner with external agencies to strengthen their teachers’ capacities. This paper argues that partnerships for sustained professional learning can be achieved, in part, through the sharing of resources. For instance, in working towards school reform, resources such as willing teachers and niche programmes are harnessed. These resources appeared to exert more influence on their social and political surroundings than individual agencies (Toh, Jamaludin, Hung, & Chua, 2014). This observation is consistent with D.H. Hargreaves’s (2004) argument that innovations that are spread through resource sharing are more open to change than top-down strategies. This is because the sharing can assist in facilitating the synchronization between the schools’ immediate needs and their long-term plans (D.H. Hargreaves, 2004).

The benefits brought about by the sharing of resources can be viewed from two aspects: collective and individual. Collective benefits can be perceived as social goods. On the other
hand, allowing for extreme individual benefits may encourage individualism and create mistrust. It also discourages the collective development of partnerships for sustained professional learning. For instance, a teacher may invest time and effort to increase their pedagogical content knowledge and may be recognized as a thought leader in the area. This sense of leadership creates value and may initiate other learning partnerships. However, if there is too much emphasis on individual gains, other partners may lose motivation to contribute because they perceive their efforts are not equally recognized.

Therefore, recognising that the sharing of resources is both an individual and collective effort is an important part of understanding the dynamics of partnerships for sustained professional learning. Obscuring one aspect in favour of another undermines the collective efforts inherent to learning partnerships. This raises the concern on how agents in learning partnerships invest and mobilise resources for collective returns that are acceptable to all members in the partnerships. This will be discussed later in the paper.

Method

To address the research question, Yin’s (2003) case study design is adapted to offer a qualitative strategy of inquiry design. This approach allows for an in-depth understanding of the partnership for sustained professional learning between HQ and schools.

Study context – LCs@M

One form of partnership for sustained professional learning are the learning communities (LCs@M, pseudonym) developed in the HQ to scale up educational technology innovations across schools in the system. These learning communities are led by officers from the HQ and involve teachers across schools in the system. Over time, we believe the unique nature of these partnerships has created the impetus for lateral network formations within a centralised system.

The learning partnerships in the LCs@M were formed based on educational technology innovations that have been developed through various innovation programmes. The innovations focus on students’ learning needs and create approaches for the seamless and pervasive integration of ICT into classrooms (Ministry of Education & Infocomm Development Authority, 2012). As part of the effort to share the educational technology innovations’ design principles and to encourage the adoption of these innovations by more teachers across schools in the system, the HQ formed the LCs@M in 2013. The aim was to address teachers’ needs by enabling them to acquire the innovations’ principles for enactment in their classrooms, take ownership of the innovations to enhance their teaching, and introduce the innovations to their peers. The HQ hopes that the innovations will be spread to more teachers through the learning communities across informal lateral networks as part of sustained professional learning.

Structure of LCs@M

The LCs@M comprises officers and managers from the HQ as well as teachers from schools that are interested in the innovations. The officers are teachers who have been seconded to the HQ for a stint that lasts between two to three years. The teachers’
number of years in the teaching profession and proficiency in using ICT tools are some of the selection criteria for them to be identified for a posting to the unit at the HQ that leads the LCs@M. Most of the officers are either heads of departments or subject heads. The managers are also former teachers and school leaders who have taken on administrative and management responsibilities in the HQ. The LCs@M offers us an opportunity to witness the coming together of individual and collective resources from the HQ and schools in the formation of partnership for sustained professional learning.

Participation in the LCs@M is not centrally assigned. Individuals volunteered based on their interest in the innovations (Ministry of Education [MOE], n.d.-a, n.d.-b, 2014). Typically, the teachers have different levels of teaching experience. They may have heard about the LCs@M and their innovations from the grapevine, road shows, publications, and from fellow teachers. The teachers are aware that the innovations are ICT based, and the LCs@M supported the teachers with one-to-one coaching during the co-designing of lessons. The interested teachers who participated in LCs@M activities comprise heads of departments, senior teachers, beginning teachers, and teachers who are interested in the ICT components of the innovations. The teachers are also free to join and leave the learning community in the LCs@M without judgment. As part of professional learning, HQ officers support participating teachers in their adaptation and appropriation of the innovations to address the specific profile and needs of students in their schools. The partnerships are kept informed with up-to-date information and are able to execute activities, such as co-designing lesson plans and conducting workshops, collaboratively. The central office offers administrative support, and suggests ways to further the efforts by connecting the LCs@M with schools, and identifying experts, such as researchers from the universities, to guide them.

Data sources and collection

To explore how the LCs@M functions, we employed a qualitative strategy of inquiry using a case study design (Yin, 2003). Data sources from interviews, observations, and artefacts were included. The data offered descriptions of the activities as instantiation of the learning partnerships in the LCs@M. Additionally, the data offered insight into how participants interpreted the outcomes of the learning partnerships forged in the LCs@M project as well as how well the innovations addressed teachers’ needs. Table 2 presents the major data sources and their descriptions.

The purpose of using multiple data sources was to create a new and richer dataset, and to allow for a more complex analysis. The data sources were complementary, such as the interviews and observations, where the field notes were used to supplement the transcripts. In addition, a particular data source can be used to validate the findings. For example, in-depth interviews were used in validating out-dated documents that were reviewed. Together, the multiple data sources have assisted in developing narratives to address the research question.

Data analysis

The data were subjected to open, axial, and selective coding (Neuman, 2006). Open coding encompassed the identification of meaning from the raw data in relation to the
research question. The focus was on wording, phrasing, context, and specificity of comments. The segments of the transcripts and field notes were marked and labelled to describe key points. Axial coding entailed reviewing the initial codes identified in open coding in examining them for categorisation. The purpose was to organise in terms of coherence in relation to the contexts. Consequently, thoughts and underpinning motivations of the categories were noted. Finally, selective coding involved scanning all the codes that were identified for comparison and contrast to link with the research topic. The purpose was to discover central themes that might occur which connect the major categories found in axial coding.

The interview transcripts were divided into smaller paragraphs to make them more manageable. The paragraphs were read while reflecting on the reviewed literature and research questions. Keywords were labelled to represent ideas from the paragraphs. The labels were analysed for similarities and clustered into sub-themes (see Table 3). For example, the “availability to fund innovations …” (see F_1 of Table 3) and “provision to purchase …” (see F_2 of Table 3) labels were put into a sub-theme called “Monetary
Funding” because both were about monetary support to assist the LCs@M in promoting innovations.

In axial coding, sub-themes were clustered and analysed, based on similarities in the descriptions (see Table 4). Literature on dyadic relationships (e.g., Rowley, 1997) and networks (e.g., Johnson & Chrispeels, 2010) provided the initial focus. For example, Johnson and Chrispeels’s (2010) conception of partnership dimensions was used to identify patterns underlying the sub-themes by determining if they supported or contradicted the dimensions. Subsequently, we observed emergent themes and analysed them by perusing concepts from the literature related to networks (e.g., Muijs et al., 2010) and other relevant studies, such as our review of the literature on partnership dimensions. This step was particularly useful to systematically unpack overlapping and conflicting themes that could drive the learning partnerships in LCs@M. For instance, clustered labels such as C_1, C_2, C_3, and N_1, N_2, N_3, and Su_1, Su_2, Su_3 appeared to be about multiple roles performed by the officers (see Rows 4, 5, and 6 of Table 4).

### Table 3. Example of key points and codes.

<table>
<thead>
<tr>
<th>ID</th>
<th>Key Point</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>S_1</td>
<td>Booth in ExcelFest, road shows, marketing plan</td>
<td>Outreach as supporting structure</td>
</tr>
<tr>
<td>S_2</td>
<td>Brochures to publicise learning communities, benefits of innovations</td>
<td>Marketing dimension in the structural mechanism</td>
</tr>
<tr>
<td>S_3</td>
<td>Connect to teachers in conference and through individual social capital</td>
<td>Connecting to stakeholder in enhancing the structure</td>
</tr>
<tr>
<td>F_1</td>
<td>Availability to fund innovations through research grants &amp; collaborations</td>
<td>Element of funding</td>
</tr>
<tr>
<td>F_2</td>
<td>Provision to purchase hardware, engage consultant, etc.</td>
<td>Monetary support</td>
</tr>
<tr>
<td>I_1</td>
<td>Apps development made available through word of mouth and downloadable</td>
<td>Infrastructural support</td>
</tr>
<tr>
<td>I_2</td>
<td>Facilitating sharing both face-to-face at designated locations and</td>
<td>Design infrastructure for interacting</td>
</tr>
<tr>
<td></td>
<td>through online apps</td>
<td></td>
</tr>
<tr>
<td>MR_1</td>
<td>Judge the situation in order to act fast, to go slow, or to test the water</td>
<td>Multiple roles</td>
</tr>
<tr>
<td></td>
<td>with the teachers</td>
<td></td>
</tr>
<tr>
<td>C_1</td>
<td>Managing how information flows with the teachers and stakeholders</td>
<td>In-charge of information</td>
</tr>
<tr>
<td>C_2</td>
<td>Influencing behaviour expectations of the septic</td>
<td>Behaviour modifier</td>
</tr>
<tr>
<td>C_3</td>
<td>Encouraging stakeholder to give it a go</td>
<td>Effective salesman</td>
</tr>
<tr>
<td>MR_2</td>
<td>A mix of commandeering, negotiating, and subordinating</td>
<td>Differing roles</td>
</tr>
<tr>
<td>N_1</td>
<td>Building a trusting relationship with teachers and stakeholders</td>
<td>Negotiating for trust</td>
</tr>
<tr>
<td>N_2</td>
<td>Working on the innovation with the teacher to customise to the classroom</td>
<td>Working together</td>
</tr>
<tr>
<td>N_3</td>
<td>Able to reduce the ambiguity</td>
<td>Working to reduce problems</td>
</tr>
<tr>
<td>N_4</td>
<td>Reaching an agreement by negotiating</td>
<td>Consensus</td>
</tr>
<tr>
<td>Su_1</td>
<td>Putting oneself in a vulnerable position</td>
<td>Subordinate</td>
</tr>
<tr>
<td>Su_2</td>
<td>Ceding positions to get the agreement</td>
<td>Take orders</td>
</tr>
<tr>
<td>Su_3</td>
<td>Dominant partner in the negotiation</td>
<td>Superior</td>
</tr>
<tr>
<td>P_1</td>
<td>Believe the efforts as worthy cause</td>
<td>Worth it</td>
</tr>
<tr>
<td>P_2</td>
<td>Would continue to pursue</td>
<td>Passionate</td>
</tr>
<tr>
<td>P_3</td>
<td>Believe in the value of the proven innovations</td>
<td>Faith in the innovations</td>
</tr>
<tr>
<td>P_4</td>
<td>Telling stories about propagating successful innovation</td>
<td>Stories to tell</td>
</tr>
<tr>
<td>Sk_1</td>
<td>Knew other similar Head of Departments (HODs), easier for him to</td>
<td>Social capital</td>
</tr>
<tr>
<td></td>
<td>propagate the envisaged practice</td>
<td></td>
</tr>
<tr>
<td>Sk_2</td>
<td>Being a former teacher, helped to push up credibility</td>
<td>Credibility</td>
</tr>
<tr>
<td>Sk_3</td>
<td>Able to use their teachers’ contacts to invite</td>
<td>Social capital</td>
</tr>
<tr>
<td>Sk_4</td>
<td>Useful skill sets</td>
<td>Skill set</td>
</tr>
<tr>
<td>Sk_5</td>
<td>Capacity to build the community by drawing resources from the schools</td>
<td>Community builder</td>
</tr>
<tr>
<td></td>
<td>to put the practice into the classrooms</td>
<td></td>
</tr>
<tr>
<td>T_1</td>
<td>Accountability with regard to their direct supervision versus allowing</td>
<td>Tension to spread</td>
</tr>
<tr>
<td></td>
<td>for adaptation beyond their supervision</td>
<td></td>
</tr>
<tr>
<td>T_2</td>
<td>Strong beliefs in innovation versus being assigned to manage LCs</td>
<td>Balancing act</td>
</tr>
</tbody>
</table>
Finally, selective coding was performed by analysing how different clustered labels were linked. This step was taken with the view to validate the themes discovered to date. Here, Hevner, March Park, and Ram’s (2004) descriptive approach of the design science evaluation method was appropriated. This approach involved the use of information from the knowledge base to build a convincing argument for the themes and construct detailed descriptions of the themes. Consistent with behavioural science theory, Hevner et al. argue that evaluation of the findings requires gathering and analysing of appropriate feedback. The information from participants “as knowledge base to build a convincing argument” (p. 86) for the themes is important. We agree with Hevner et al. that the evaluation phase could provide essential feedback on the quality of the themes and overall framework under development. Meetings with the participants were conducted. In the meetings, the themes were presented by the researchers, and a discussion on how the themes were generated would follow. Subsequently, the participants were asked to discuss analytically about the themes to enable them to reflect deeper on the themes. Next, in reaching agreement, the participants would present their thoughts (about the themes) iteratively, and the session was moderated by a senior researcher. Table 5 summarises the major themes and the supporting sub-themes.

Findings and discussion

The findings that emerged provided a perspective of the importance of shared resources and the nature of such resources in the developing of learning partnerships, in the form of a lateral network across schools. The findings also provided insights on how partnerships for sustained professional learning within a centralised system could be intentionally designed.

Arising from the discourse analysis are two key themes which we describe under the broad notions of “Deliberate Bridging” and “Appointed Champions”. These conceptions

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Table 4. Emergence of concepts from the codes.

| Structures or supporting mechanisms that assist to cultivate the partnerships (S_1; S_2; S_3) |
| Funding initiatives that promote learning through the innovation (F_1; F_2) |
| Designed infrastructure that facilitates linkages (I_1; I_2) |
| Commandeering disposition that can assist bonding (C_1; C_2; C_3) |
| Negotiating for win-win (N_1; N_2; N_3; N_4) |
| Subordinating has the potential to make things work (Su_1; Su_2; Su_3) |
| Passion for the innovation (P_1; P_2; P_3; P_4) |
| Skill sets that are preferred (Sk_1; Sk_2; Sk_3; Sk_4; Sk_5) |

Table 5. Emergence of categories from the concepts.

| Deliberate bridging processes that link resources |
| Structures or supporting mechanisms that assist to cultivate the partnerships (S_1; S_2; S_3) |
| Funding initiatives that promote learning through the innovation (F_1; F_2) |
| Designed infrastructure that facilitates linkages (I_1; I_2) |
| Appointed champions that facilitate deliberate bridging |
| Multiple Roles (Commander (C_1; C_2; C_3); Negotiator (N_1; N_2; N_3; N_4); Subordinate (Su_1; Su_2; Su_3)) |
| Passion for the innovation (P_1; P_2; P_3; P_4) |
| Skill sets that are preferred (Sk_1; Sk_2; Sk_3; Sk_4; Sk_5) |
are factors contributing to the success of the LCs@M project. Specifically, they organise the resources from two different social contexts: central offices and schools.

The lessons learnt and a tentative conceptual model of partnerships for sustained professional learning reflecting the role of Deliberate Bridging and Appointed Champions are proposed. We also discuss the findings in relation to the partnership dimensions. We conclude by discussing the practical implications and limitations of the study.

**Deliberate bridging processes that link resources**

Deliberate bridging harnesses shared resources in the formation of partnerships for sustained professional learning. This contributes to the diffusion of educational technology innovations in schools. Resources include material, technological, and human capital brought together into school systems (Lasky, 2004) to improve capacity building in content and pedagogy (Datnow et al., 2006). Our study extends the literature by describing processes that bring resources together in a centralised education system through the process of deliberate bridging. Specifically, the processes in deliberate bridging in the LCs@M project are examined.

The partnerships for sustained professional learning in the LCs@M projects are set up to propagate six educational technology innovations to schools across the system (MOE, n.d.-b). The innovations spanned across various domains of learning, specifically in (a) assessment for learning with automated marking tools, (b) collaborative inquiry in science, (c) collaborative mathematics learning, (d) digital game-based learning, (e) multimodal literacy, and (f) mobilised learning (MOE, n.d.-b). Although some of the educational technology innovations are focused on particular subjects, such as English, Mathematics, or Science, others, such as mobile learning and digital game-based learning, can be applied across subjects taught in schools, as described from the artefacts obtained (MOE, n.d.-a, n.d.-b, 2014).

The partnerships for sustained professional learning in the LCs@M project are focused on generating awareness of the educational technology innovations at the ground level amongst teachers. Workshops and road shows are conducted to showcase and promote these innovations. For example, we observed that the partnerships reached out to schools and teachers via exhibitions, where the potential benefits of the innovative practices were demonstrated. The officers also addressed the needs of teachers from different schools by identifying gaps that the educational technology innovations could address. These learning partnerships served as linkages between schools and HQ. The common terms used to describe the “Deliberate Bridging” (by leaders of LCs@M) included “connecting the dots”, “cross-sharing”, “building relationships”, “grouped according to topics”, and “convened for interest”.

The deliberate bridging processes in LCs@M ranged from broad to customised work processes. In the following scenarios, we see the different phases of work processes, combining resources from different social contexts with the intent to develop and strengthen the learning partnerships through deliberate bridging. From our field notes and interview data, the four phases of deliberate bridging are described below:

- **Phase I: Reaching out.** The officers in the LCs@M project planned, operated, and managed innovation-related programmes for teachers and held exhibits during conferences to draw the interest of potential partners to innovative pedagogies.
The officers also contacted their peers within their personal networks to get teachers to learn about these educational technology innovations. LCs@M participated in exhibitions and road shows to promote the innovations. These exhibitions could be held in public places and schools (e.g., Kranji Secondary School, 2014; SCHOOLBAG [https://www.schoolbag.sg/]).

- **Phase II: Establishing links.** The officers contacted the teachers through emails and phone calls to develop the teachers’ interest. A date was also arranged with the teachers to meet them in their schools. The officer in the LCs@M would then make a presentation on the innovation to the teachers in a department. Heads of Department, subject heads for academic and non-academic subjects, and IT staff would also be regularly involved in this phase. The interview data suggest that the officers contacted teachers they had met in the exhibitions. They also contacted teachers who were their friends. To operationalise the relationship further, LCs@M leaders would propose to connect with the teachers’ principals.

- **Phase III: Working together.** The officers in the LCs@M project would work together with interested teachers to co-design a set of lesson plans after the presentation. This set of lesson plans would infuse the innovative practices into the relevant teaching subjects the teachers were teaching. The teachers would then implement the designed lesson plans with the officers observing and providing the necessary scaffolding on the side. Wee’s (2014) blog illustrates examples of LCs@M co-design efforts of working together.

- **Phase IV: Sharing resources.** Teachers who had employed the resources afforded through the partnership resources were subsequently invited to share the newly crafted lesson packages. In this phase, teachers would upload the lesson packages to a shared teachers’ online portal before sharing their experiences of using these educational technology innovations in their classrooms at workshops. The sharing sessions at the workshop are often co-conducted with the officers. The sharing sessions demonstrated in the workshops were to encourage the teachers to connect further with those who might be interested.

As the different phases depict, it appeared that “deep sharing” of resources that included the innovations, experiences, and know-how were encouraged progressively. The teachers were becoming partners and were partaking in the discourse to improve their pedagogical content knowledge. The teachers also developed further resources and took on the responsibility of directing the activities (e.g., leading and sharing sessions). The learning partnerships were initiated at the individual level, through deliberate bridging, before moving towards leveraging collective interests and efforts to strengthen and expand the learning partnerships. Our study also suggests that deliberate bridging was made possible by dedicated people whom we term as “appointed champions”.

**Appointed champions that facilitate deliberate bridging**

Our next findings are consistent with Lin’s (1999) argument that resource investment may be seen as constituting both collective contributions and the efforts rendered by individual partners with the view to obtain specific returns. D.H. Hargreaves (2004) also agreed that resource investment can bind partnerships for reform, whereas combined
strategic resources can create opportunities that promote new learning within partnerships (Coleman, 1988). The learning partnerships invested time and effort into enabling wide access to collective resources. This was evident in the deliberate bridging processes to cultivate learning partnerships in the LCs@M project.

We extend the literature by discussing combined resources in deliberate bridging through the notion of “Appointed Champions”. The appointed champions drive the learning partnerships in the LCs@M project and exercise autonomy on the nature of these learning partnerships. In the LCs@M project, the appointed champions are the officers from the HQ assigned to the role of scaling up the respective educational technology innovations. For example, the officers perform crucial roles at the inception of the learning partnerships. They initiate, organise, and participate in spreading the innovations by championing the learning partnerships’ cause through various outreach activities. More importantly, these appointed champions believe in their efforts, as reflected in the following sample of a joint reflection piece by a group of three officers. Such reflections typify the LCs@M work ethics (see Figure 1).

While passion and strong belief are important (as described in Figure 1), our study also suggests that the appointed champions had to juggle multiple roles in working with schools, including being the “commander”, “negotiator”, and “subordinate”, as they worked to convince each school to adopt the educational technology innovations that they were propagating.

As commanders, the appointed champions influenced the behaviour of stakeholders by managing the flow of information (Oliver, 1991). For example, the officers reflected that they needed to determine how to respond in situations – “to act fast, to test the water first, or perhaps to go slow with the teachers” – with regard to the degree of information sharing with the teachers in order to persuade them to work together. In deciding on such issues, the appointed champions need to be decisive and to adapt accordingly.

As negotiators, the appointed champions negotiated in balancing results (Pfeffer & Salancik, 1978). It was agreed amongst the managers and officers that the process of “give and take” to get full support from the schools was imperative. For example, although the lesson plans were designed together by both officers and teachers, the teachers had to be comfortable and take ownership over the plans as they were the ones implementing the lessons.

The appointed champions were mostly able to manage the two roles. However, there were situations in which they were constrained to do so. In such situations, they acted as subordinates, took a “hands-off” approach, and quickly acknowledged that in some circumstances they were not influential enough to modify the teachers’ existing practices. This was partly so because “the nature of learning in the LCs@M partnerships was not formalized through the school’s management”.

In performing these roles, the officers from the HQ were functioning as appointed champions who facilitated the deliberate bridging to forge learning partnerships with teachers in schools. The officers in the LCs@M project displayed passion to meet teachers’ needs. They had the advantages as pedagogues, were former teachers, and had the required social capital to link together with schools’ leaders. They also had the negotiation and brokering skills and possessed the dispositions of community builders. These were skills needed to foster learning partnerships with teachers in schools. The appointed champions were also concerned over the sustainability of the learning partnerships and emphasised the importance of having “core teachers who [were]
already good in the innovative pedagogy to also mentor other teachers in the same school”.

The appointed champions played an instrumental role in cultivating learning partnership for lateral networks within a centralised educational system. They facilitated a sense of communalism, built connections for individuals who share the same interests in the educational technology innovations, and set the tone for the nature of relationships, in this case informal, amongst the participants.

**Learning partnerships between the HQ office and its schools**

The partnerships within the LCs@M project were driven by a strong sense of belief in sharing successful educational technology innovations. The appointed champions had
taken the initial steps towards establishing lateral networks for teachers through deliberate bridging. For example, efforts were made to meet teachers’ articulated teaching and learning needs and to integrate learning processes in the teachers’ daily functioning through the partnerships (e.g., see N_1 & N_2 in Table 3). These efforts are crucial to acculturate a sense of ownership in developing a common identity, which is core to network formation (Muijs et al., 2010).

We observed incidents of reflective discourse generated in the learning partnerships. When a teacher asked whether the principles underpinning an innovation were transferable across subjects, it stimulated a discussion of how these principles were applied across different subjects (e.g., see P_4 in Table 3). This, in turn, led to the actual co-design of lesson plans. The deep conversations to optimise resources from one context to another and to eventually develop concrete teaching and learning artefacts were characteristics of the learning.

In partnerships for sustained professional learning, our findings suggest that shared values are not necessarily given or did not exist from the start (Datnow et al., 2006; Leithwood et al., 2004); rather, they need to be cultivated and nurtured. A design by LCs@M to nurture shared values was through workshops, which offered provisions to discuss shared values with the teachers’ participants including the sceptics (see C_2 in Table 3).

We posit that learning partnerships can constitute dimensions that are dynamic and interrelated (see the Literature review section). In the findings, we have discussed how resources in the HQ and schools can be bridged.

This study explores learning partnerships from the resource perspective and highlights the potential value of shared resources within the dimensions. It points to the importance of appointed champions in cultivating learning partnerships in a centralised education system. We conjecture that appointed champions can also be represented by teachers who have had the experience of adapting educational technology innovations and implementing them in the classrooms. They may leverage their “street credentials” to lead and inspire teachers from other schools. In such cases, teachers may drive the process as they localize the innovations. In our study, the initial focus on the innovations produced productive tension related to how the innovations can solve individual teachers’ problems (see Figure 2).

Consistent with Muijs et al.’s (2010) work, we have chosen to characterise the nature of learning partnerships in the LCs@M project as emerging from dyadic relationships. We extend their work by arguing that this process manifests productive tensions that leverage embedded resources across partnership dimensions. For example, there was tension between accountabilities with regard to the extent of adaptation and mutation of the educational technology innovations which may occur beyond the involvement of the officers as appointed champions (see T_1 & T_2 in Table 3). There was evidence from the data of discussions on how much the educational technology innovations could be localized while not compromising the innovations’ principles and resulting in lethal mutation (Dede, 2000).

Other productive tensions were between having a strong belief in the educational technology innovation and the lack of a similar conviction in the officers who were assigned to cultivate the learning partnerships. This arose because the officers may be new and may not be sufficiently familiar with the effectiveness of the educational technology innovation.
Another tension we noted was between the spread of educational technology innovations and the meeting of teachers’ needs. For instance, although the innovation was about pedagogy, teachers’ needs were often related to classroom management (see T_1 in Table 3). There were also sceptical views on the usefulness of the educational technology innovations in improving teaching and learning (see C_2 in Table 3). The term “no buy-in” was used by the partnerships in describing this phenomenon. Therefore, there could be “structural holes” (Burt, 1992, p. 18) initially, where specific pedagogical training or information was lacking. Potentially, the value of networking can be realised by partnerships if they attempt to span across these holes through collaborating, sharing strategies, and addressing challenges together. For example, when asked how the participants benefited individually, the officers mentioned a portal where partners could easily download and adapt lesson plans that were developed collectively.

**Conclusion**

This study affirms the findings of previous research where partnership dimensions enable connections across organisations and subunits (Johnson & Chrispeels, 2010; Lasky, 2004). We add to the literature by proposing the role of “Appointed Champions” in “Deliberate Bridging” to cultivate learning partnerships in a centralised educational system.
Practical implications

- The HQ and schools can make more concerted efforts in addressing the interplay of the partnership dimensions by bridging their resources deliberately, particularly in the formative stage of the partnerships.
- Appointed champions play important roles in initiating the learning partnerships processes. Leaders can develop teachers who are embedded within school’s hierarchy but have the desire to form lateral networks. One way is through expanding partnerships that are spearheaded by a cluster of schools where a group of teachers can act as the appointed champions.
- Leaders can encourage the partnerships to embark on extended projects to address teachers’ needs. The projects can extend horizontally from one class’s lesson plan to two classes’ lesson plan to the whole-level curriculum and across subjects. The projects can also extend vertically to include systematic feedback mechanisms, enhancement packages, and versioning, as the innovations mature overtime.

Limitations

Creating lateral networks in centralised systems is a complex endeavour, one in which tensions between centralised agencies’ affordances and grassroots’ prerogatives persistently exist. The interactions between the appointed champions and teachers require further study. Learning partnerships can start with manageable dyadic relationships and move towards laterality in time. We are just beginning to understand enablers of laterality in centralised systems and their educational potential. If we are going to move from dyadic relationships to lateral networks, we may need to provide more central support that facilitates laterality across schools and, by extension, provide more grounded accounts of how this phenomenon might look in practice.

The case of the LCs@M project is an example of a partnership for sustained professional learning, initiated by Appointed Champions through Deliberate Bridging at the HQ and enacted at the school level. The dyadic relationship includes close collaborations between two partners, the HQ and schools. The central unit offered pedagogical expertise to schools, whereas the schools provided opportunities to realize innovative practices in authentic settings. It is not our intention to suggest that the findings are generalized across emerging partnerships. Rather, we aim to create awareness of the possibilities of designing lateral networks in centralised education systems.

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