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Leadership for Collective Learning: A Distributed Perspective

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Abstract

Over the last decade or so, distributed leadership has gained increasing attention in education. It has been claimed that distributed leadership, in its different patterns of distribution, have valued-added effects on school effectiveness, remains to be intuitively attractive, compelling and positive, and is endorsed by many as good practice. Its prominence is due to educational contexts that are increasingly getting complex insofar as the changes accompanying educational reforms are characterized by increasing intensity, rapidity, fluidity and uncertainty. Schools are now expected to deliver diverse curricular experiences towards a wider set of learning outcomes to satisfy broader school stakeholders' needs. School leadership, which has traditionally been within the realm of the school principal and her management team (usually, department and level heads), is placed under great strain, especially that which pertains to maintaining practices to support teaching and learning. This most likely explains why over time practices on instructional leadership has been delegated, shared or distributed to teachers not in the management team. The close links between distributed and instructional leadership is therefore understandable – the result of which is the rise of teacher leadership. This paper presents a theoretical frame on collective learning for teacher leadership which can cut across different contexts within the school organization. The central argument is for teacher leadership to support collective learning for instruction. The conclusion highlights four research gaps pertaining to this central argument.

Keywords:

distributed leadership, instructional leadership, teacher leadership, professional learning communities, collective learning

INTRODUCTION

The inception of the 'Thinking Schools, Learning Nation' (TSLN) policy initiative in 1997 was a precursor to a myriad of rapid, wide-ranging, deep-changing education reforms in Singapore. This was predominantly motivated by globalization forces in economic and social terms. This policy initiative received a further boost with the introduction of another major policy initiative coined as 'Teach Less, Learn More' (TLLM) in 2005, which saw further comprehensive reforms in education. By 2013, the education ministry further casts their attention to values education. The policy reforms that took place since 1997 essentially require key education stakeholders to consider school outcomes beyond academic achievements (e.g., 21st century competencies) due to the changing economic, social and political contexts surrounding education. The apparent upshot to these reforms is not only the increase in the demands placed on schooling, but also the increase in the complexity of the demands placed on schooling. Based on the authors' observations, educational contexts are increasingly getting complex insofar as the changes accompanying educational reforms are characterized by intensity, rapidity, fluidity and uncertainty.

In this regard, schools are therefore expected to satisfy the needs of multiple school stakeholders namely policymakers, parents and community members – needs that are increasingly getting more demanding and complex. Also, school leaders and teachers are to

provide appropriate educational curricula that satisfy these needs. However, the real challenge is on school leaders to mobilize and optimize physical and human resources towards shared organizational goals in increasingly complex educational contexts – within and outside schools. One reason for this rising complexity is due to the general weakening of classifications in social relationships and boundaries, and a moving away from organized social structure to network culture (Hartley, 2007). The former example is the general rise in parental expectation and intrusion into teachers' professional practice. The latter example is the general rise in partnerships between schools and external organizations. Furthermore, contemporary reforms in the public service has been observed to demand greater 'joined-up' or 'network' regime of governance – a societal culture wherein (i) all categories and classifications are weakened and rendered increasingly permeable (a flexible 'liquid modern' view of space and time) and (ii) the new work order consistent with the knowledge economy (where individuals work and learn beyond bureaucratic enclosures using their loose spatial and temporal codes) (Hartley, 2007).

It is therefore understandable that contemporary school leaders use up more time and energy in managing these increasingly fluid and cross-boundary relationships. It is also not surprising that school leaders resort to distributed leadership where leadership decisions are delegated and shared to other staff members beyond the purview of school principals. In the Singapore context, delegation or sharing of leadership decisions to middle managers such as department heads (HODs) or subject heads (SHs) has been a common place for more than two decades, especially that pertaining to instruction. In this sense, distributed leadership is closely tied to instructional leadership insofar as the former allows instructional leadership practices to be delegated or shared to other staff members beyond school principals or vice-principals. The link between instructional leadership and distributed leadership has been observed (Lieberman and Miller, 2011; Spillane and Louis, 2002; Timperley, 2005). In this sense, instructional leadership practices become more dispersed across the school organization, making it more effective to bring about enhancements in teaching and learning.

However, over the last decade, leadership decisions pertaining to instruction have been delegated and shared to teachers who are considered informal leaders, or teacher leaders, in response to the intensity, rapidity, fluidity and uncertainty forces of education reforms. This is a result of the growing demands placed on schools so much so that administrative decisions have to be passed on from senior to middle leaders, which result to middle leaders delegating or sharing their decisions on instructional matters to teacher leaders. These teacher leaders include Senior or Lead Teachers (STs and LTs), Subject and Level Reps, and Professional Learning Community Team Leaders – all of which are involved in making leadership decisions on instruction. The effectiveness of distributed leadership to enhance instruction is therefore dependent on how well instructional leadership is distributed through teacher leadership, and thus the development of both distributed leadership and teacher leadership. However, while delegating or sharing decisions on instruction from senior to middle leaders has been formally established for some time, the distribution of instructional leadership from middle leaders to teacher leaders is not. Furthermore, distributed leadership is not merely to do with delegating, relinquishing or sharing decisions on instruction from senior to middle leaders, or from senior and middle leaders to teacher leaders. It involves developing leadership in staff members, shared decisions, and collective engagement among staff members. The following four dimensions on distributed leadership were generated from our leadership study (Hairon and Goh, forthcoming): bounded empowerment, developing leadership, shared decisions, and collective engagement. Hence, how teacher leaders are developed resulting from distributed leadership practices is still unexplored. Also, what teacher leaders do to improve instruction is also still unexplored. Although our PLC study

generated three dimensions of teacher leadership – building collegial and collaborative relations, promoting teacher learning and development, enabling change in teachers' teaching practice (Hairon, 2014; Hairon, Goh & Chua, forthcoming), more confirmatory empirical work is still needed.

The problems raised above describing realities at the ground level are also reflected in the distributed leadership and teacher leadership literature. The constructs on distributed leadership and teacher leadership are still not yet fully developed. Both lack agreement on definitional, conceptual and operationalization terms. Although distributed leadership, in its different patterns of leadership distribution, is claimed to have valued-added effects on school effectiveness (Leithwood et al., 2006), more empirical studies are still needed to explore the potentially wide array of different leadership patterns using a more nuanced understanding of the anatomy of distributed leadership (Leithwood et al., 2009). Teacher leadership likewise faced the same anatomical challenge in definitional, conceptual and operational terms (Leonard, Petta & Porter, 2012), which perhaps explain the weak empirical base supporting the claims on its effects (York-Barr & Duke, 2004).The hypothesis is that the effects of teacher leadership on teaching and learning are mediated by teacher learning across the organization, termed as 'collective learning'. The link between leadership and collective learning has been closely related to the idea of 'leadership for learning' (MacBeath et al., 2008), specifically the importance of leadership in creating and sustaining a school-wide focus on learning (Hallinger & Heck, 2010). The development of teacher leadership will then impact on the development of collective learning, leading to the development of teacher competency which then impacts on improvements in student learning.

This paper shall attempt to coherently connect the three main concepts of distributed leadership, teacher leadership and collective learning. In doing so, the paper will establish the theoretical framework for future research studies that establish the links between distributed leadership, teacher leadership and collective learning, which could then be linked to teaching and learning.

CONNECTIONS: DISTRIBUTED LEADERSHIP, TEACHER LEADERSHIP AND COLLECTIVE LEARNING

Distributed leadership

The concept of Distributed Leadership (DL hereafter) has recently gained much attention in the educational leadership discourse (Gronn, 2000; Harris, 2004; Harris & Spillane, 2008). Hartley (2007, 2009) observed that the rise to prominence in DL can be attributed to contemporary reforms in the public service that demands greater 'joined-up' or 'network' regime of governance – a societal culture wherein (i) all categories and classifications are weakened and rendered increasingly permeable (a flexible 'liquid modern' view of space and time) and (ii) the new work order consistent with the knowledge economy (where individuals work and learn beyond bureaucratic enclosures using their loose spatial and temporal codes). These changing work contexts are consistent with the three kinds of roles emerging within changing policy environment, that is – enhanced line roles, project roles, and networking roles (Simkins, 2005). Specifically, DLs' attraction in education lies in its potential to bring about school improvement (Harris, 2007, 2011, 2012; Spillane & Healey, 2010). Claims have also been made on DL's potential impact on instructional aspects of leadership (Elmore, 2000; Lieberman & Miller, 1999, 2011; Smylie, Conley & Marks, 2002; Spillane & Louis, 2002), and leveraging on instructional improvement (Murphy & Datnow, 2003; McBeth, 2008; Timperley, 2005). DL, along with transformational leadership,

has also been claimed to supersede transactional leadership in influencing school climate and environment, and enhancing the instructional capacities of teachers (Jones et al., 2012; Spillane, Halverson and Diamond, 2003). Although the literature remains agnostic about its impact on student achievement because of insufficient empirical data (Bennett et al., 2003), its potential to do so remains intuitively attractive, compelling and positive (Gronn, 2008; Leithwood et al., 2006). As such it is not surprising that DL is endorsed by many as good practice (Hopkins, 2001).

While DL continues to be considered the most favored normative model of leadership (Bush & Crawford, 2012) and that the understanding of DL can be considered elusive due to conceptual-operational, measurement and contextual issues (Hairon & Goh, 2014), it is argued that DL can be defined as the enactment of influence that is distributed, dispersed or shared across multiple organizational staff members as opposed to residing in one or a few limited persons within the organization. First and foremost, the core essence of leadership is influence – that is, "a process of influence in achieving shared goals" (Bush & Glover, 2003, p. 8). Secondly, DL is consistent with Gronn's notion of "emergent work-related influence" (cited in Bennett et al., 2003, p. 15). Gronn (2000) asserted that leadership potential is present "in the flow of activities in which a set of organization members find themselves enmeshed" (p. 331), is considered "fluid, emergent, rather than a fixed phenomenon" (p. 324), and is "a flow of influence in organizations which disentangles it from any presumed connection with headship" (p. 334). This is consistent with Spillane's (2004) assertion that "a distributed perspective on leadership argues that school leadership practice is distributed in the interactions of school leaders, followers, and their situation" (p. 2), and that "leadership practice (thinking and activity) emerges in and through the interaction of leaders, followers, and situations" (Spillane, Halverson & Diamond, 2001, p. 27). Thirdly, it is argued that DL is a multi-dimensional construct consisting of four dimensions: 1) Bounded empowerment, 2) Developing leaders, 3) Shared decision, and 4) Collective engagement. The proposition for these four dimensions was based on an exploratory factor analysis of Rasch residuals drawn from data on school leaders in Singapore (Hairon & Goh, 2014). 'Bounded Empowerment' is to do with relinquishing a certain degree of authority for decision-making to subordinates, albeit within specific scope or boundary in order to allow the emergent of influence that is enactment across the organization and in the interaction between leaders, followers and situations. 'Developing Leaders' is to do with the development of leadership competency in staff members in order to enable the relinquishing of decision-making power to others. 'Shared Decisions' is to do with leadership practices that promote decisions that are shared as opposed to residing within one or a few persons in the organization. 'Collective Engagement' is to do with leadership practices that promote interactive relations among staff members in the organization.

Teacher leadership

As argued in the earlier segment, DL is a multidimensional construct consisting of four dimensions – bounded empowerment, developing leaders, shared decisions, and collective engagement. It is argued that these four dimensions lend itself well to teacher leadership. When a school principal relinquishes decision-making power to teachers, she would have to develop leadership competencies in teachers so as to develop teacher leaders. However, the decision-making power that is relinquished to teachers differs to that of the school principal's insofar as the decision-making process is more shared or multi-lateral than unilateral. For example, teacher leaders' decision-making process has the tendency to be more collective in nature. This is why collective engagement as a dimension of DL is proposed as this provides the interactive base for teachers to make decisions.

The term teacher leadership (TL hereafter) is not a new concept and has been around for more than two decades emanating from the professionalization discourse in the USA in the 1980s and 1990s (Frost 2012). Since then it has gained a footing in the educational reform discourse in varying extent but predominantly in Western Anglophone countries. Notwithstanding the lack of agreement on the definition and conceptualisation of the term for the last 20 years (Leonard, Petta & Porter 2012), the definition given by York-Barr and Duke (2004) seems to be most compelling – that is, "the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement" (p. 287–288). This conceptualization was derived from their empirical literature review on TL resulting in an overarching conceptual framework. The framework consists of seven components: 1) characteristics of teacher leaders, 2) type of leadership work engaged in teacher leaders, 3) conditions that support the work of teacher leaders, 4) means by which teachers lead, 5) targets of their leadership influence, 6) intermediary outcomes of changes in teaching and learning practices, and 7) student learning.

York-Barr and Duke (2004) were not alone in attempting to come up with a conceptual framework for TL. Muijs and Harris (2003) framed TL as containing four aspects: 1) brokering role of teacher leaders to ensure that links within and across schools are in place and that opportunities for meaningful development among teachers are maximised, 2) participative leadership role of teacher leaders where they work collegially with other teachers to encourage the examination of instructional practices, 3) mediating role of teacher leaders where they become sources of instructional expertise and information, and 4) Teacher leaders' role in forging close relationships with individual teachers through mutual learning. Extending this conceptualisation, Harris (2005) highlighted four aspects in the definition of TL – 1) creation of collegial norms, 2) opportunities to lead, 3) working as instructional leaders, and 4) re-culturing schools. Although these conceptualisations are less overarching and consolidating than York-Barr and Duke's (2004), what is telling is that the understanding of TL and the establishment of its construct are not easily accomplished, bearing in mind the need to be encompassing yet distilling. Leonard, Petta and Porter (2012) claimed that numerous studies over the last 20 years have wrestled with the definition and conceptualisation of TL. In their analysis of selected studies that directly or indirectly pertain to TL, they concur with the definition of TL outlined by Katzenmeyer and Moller (2011) – that is, "Teacher leaders lead within and beyond the classroom; identify with and contribute to a community of teacher learners and leaders; influence others toward improved educational practice; and accept responsibility for achieving the outcomes of that leadership" (p. 6).

The lack of agreement amongst scholars on the precise definition of TL could be due to several reasons. First, the general leadership construct is still contested, which only serves to frustrate any attempts at clearly delineating the substantive differences among the wide array of leadership models or types, including TL. Harris (2003) asserted that the literature on school leadership contains 'a bewildering array of definitions, theories and models' (p. 318). Second, little attempt has been made to consolidate the different models of leadership. For example, there could be differences and overlaps in the constructs of instructional, transformational leadership and distributed leadership. Third, the lack of recognition that TL is possibly a multi-dimensional construct. Fourth, the lack of both quantitative and qualitative research to explore and distil the meaning and operationalisation of the construct and its attendant dimensions or sub-constructs. Without a more parsimonious and precise conception of TL including its sub-constructs or dimensions, the potential effects of TL will remain largely in the domain of claims instead of empirical evidence. York-Barr and Duke's (2004)

TL framework is thus attractive because it provides a holistic base to further develop a more parsimonious and precise construct of TL along with its multi-dimensionality.

TL has been closely tied to DL (Harris, 2003). As school leaders enact DL, they relinquish decision-making power to other members of the school, especially middle leaders, on matters on the teaching and learning. This probably explains why DL has been closely tied to instructional leadership. However, over the last two decades or so instructional leadership responsibilities and decision-making power have been further distributed to other staff members, namely teachers. For example, in the Singapore school system, it is increasingly a common practice for department heads to pass decision-making power on instruction to teachers such as Subject Representative and Level Co-ordinators to direct, guide and supervise the development of the curriculum matters. This is due to the rise in administrative work of middle leaders as senior leaders (e.g., principals, vice-principals) distribute their administrative responsibilities to middle leaders. These effects of distribution emanates from the increasing intensity, diversity and complexity of the demands place on schools from various school stakeholders. These demands essentially centre on the curriculum development, innovation, and reform – and thus the concomitant increase in administrative support. The eventual outcome is the expansion in the instructional role of teacher leaders in the school organization. In the Singapore setting, teacher leaders include Subject Representatives (subject specialization), Level Co-ordinators or Representatives (curriculum integration), Senior and Lead Teachers (development of beginning teachers), and Professional Learning Team Leaders (collective teacher learning).

Notwithstanding the issues pertaining to the conceptual and definitional definitions of TL, it is proposed that TL can be defined as the enactment of influence by teachers on organizational staff members, but primary fellow teachers, towards shared goals on teaching and learning (Hairon, Goh and Chua, forthcoming). It is also proposed that TL is a multi-dimensional construct consisting of three dimensions: 1) Building collegial and collaborative relations, 2) Promoting teacher learning and development, and 3) Enabling change in teachers' teaching practices (Hairon, Goh and Chua, forthcoming. The proposition is that teacher leaders first and foremost build collegial and collaborative relations among school staff members, especially fellow teachers, in order to support and optimize collective learning and curricular development. Second, they promote teacher learning and development so as to enhance the development of teacher competency and practice. Third, they enable fellow teachers to make improvements to their teaching practice. These could include indirect (e.g., sharing teaching strategies, sharing teaching materials, etc) and direct (e.g., adopting a common teaching strategy across the grade level, lesson observations, etc) approaches. Evidently, these three dimensions are all related to instructional leadership.

Hence, it is theorized that the practices of distributed leadership bring about the distribution or dispersion of instructional leadership practices to teacher leaders. In further consolidating analysis, it is also proposed that TL is centrally to do with teacher collective learning which is founded upon a strong sense community with strong collegial and collaborative relations, and having the primary purpose of improving classroom teaching and learning. This is why Harris (2003) avers the optimal function of TL is in the direct establishment of professional learning communities within and between schools. This is understandable as these are ideal sites for the exercise of TL to bring about teacher collegial relations, collaborative or collective engagement, and learning with the intention of bringing improvements in teaching practices and student learning. Harris (2005) also asserts that professional learning communities embrace the notion of TL insofar as it assumes teachers to be catalysts for change and development towards a commitment to shared collaborative

learning in a community. The close relationship between TL and teacher learning in communities – in whatever terms that are used – has been sufficiently highlighted (e.g., Lieberman & Mace 2009; Mindich & Lieberman 2012). However, it is further argued that collective learning need not be present in communities only (i.e., in groups of more than 2 persons). Collective learning can exist in a dyad relationship such as mentor-mentee relationship.

In summary, it is argued that the impact of DL practices on teaching and learning is mediated by TL practices of instructional leadership specifically through collective learning. In the Singapore context, the contexts for collective learning in school organizations include the following: mentor-mentee relationship, grade level teacher collaboration, subject specialization teacher collaboration, and professional learning teams.

Collective learning

The concept of 'collective learning' is considered as a theoretical paradigm developed in 1990s which borrows insights from sociology, cognitive science and the activity theory of Lev Vygotsky, and emphasizes the social aspects of learning and cognition (Fadul, 2009). It is a framework with a methodology that involves the coordination between individuals and their artifacts, with two key components: 1) symbols and representations that information is held in and transformed from people to people; and 2) the process by which versions of information are coordinated with each other. In this regard, there are two distinctive aspects of collective learning (Fadul, 2009). The former speaks of knowledge, and the latter of learning or cognition. Knowledge resides in individuals (i.e., mental space), and is expressed in external representations available in the environment (e.g., manuals, books, conceptual tools, practices). This is consistent with Gerlak and Heikkila's (2011) assertion that the focus of collective learning is on both the collective process and collective products of learning.

> "Collective learning involves both (1) a 'collective process', which may include acquiring new knowledge through diverse actions (e.g. trial and error), assessing information and disseminating new knowledge or opportunities across individuals in a collective and (2) 'collective products' that emerge from the process, such as new shared ideas, strategies, rules, or policies" (Gerlak & Heikkila, 2011, p. 623).

Fadul (2009) also proposes the presence of distributed-ness in collective learning – that is, knowledge and cognition are "distributed by placing facts, or knowledge tags, and versions of memories, on individuals, tools, and objects in our environment" (p. 211). This is consistent with Spillane's (2004, 2005) theorizing on the distributed perspective of leadership, which borrows from distributed cognition theory and activity theory. Just as cognition is distributed across or stretched over material and cultural artifacts within certain situations or contexts, "school leadership practice is distributed in the interactions of school leaders, followers, and their situation" (Spillane, 2004. p. 2). In furthering the understanding of collective learning, Fadul (2009) further identified three distinctive types of processes involved in collective learning.

1. Cognitive processes may be distributed across the members of a social group.
2. Cognitive processes may be distributed in the sense that the operation of the cognitive system involves coordination between internal and external (material or environmental) structure.
3. Processes may be distributed through time in such a way that the products of earlier events can transform the nature of related events.

In educational contexts, collective learning has been closely tied to teacher learning communities. Castelijns et al. (2013) define collective learning as "the interplay of individuals, communities of teachers, and specific contexts in trying to understand and improve the quality of teaching and student learning" (p. 377), and see it as an effective intervention within learning communities for teacher professional development. In the spirit of intervention, Casterlins et al. (2013) adopt a looser definition on collective learning and proposes a cyclical procedure for collective learning, which include the following: 1) Defining an ambition, 2) Collecting information, 3) Interpretation of information, 4) Deriving consequences, 5) Acting, and 6) Evaluation of products and processes. However, this process is considered as a theory of action resulting from the understanding of collective learning rather than deepening the understanding of the substantive construct of collective learning. Nevertheless, their addition of four more elements supporting this procedure seems to be appropriate in contributing to the substantive conceptual understanding of the construct. They include: 1) Variety of perspectives (multiple view points), 2) Shared influence (all voices are heard and respected), 3) Collective outcome (knowledge creation), and 4) Shared interest (shared ownership and responsibility).

Notwithstanding the variations in the perspectives on collective learning, it is proposed that a more parsimonious definition of collective learning – that is, the learning that takes place between individuals within a pair, group, organization, society or system so as to develop shared knowledge. In this definition, the core aspects of collective learning include both process (learning) and product (knowledge) aspects. Furthermore, shared interest and influence from a variety of individual differences among members are assumed and treated as a given. Although shared goal and values have been identified as a key characteristic in teacher learning communities (e.g., Bolam et al., 2005) – closely related to shared interest and influence among individuals, what is of interest is in gaining greater depth in theorizing the learning that takes place in collective settings. It is argued that the materialization of collective learning is evidence of the presence of shared goal and vision. It is also argued that the construct on collective learning is multi-dimensional. These could include: 1) Storing knowledge, 2) Sharing knowledge, 3) Reflecting knowledge, 4) Interrogating knowledge, 5) Applying knowledge, 6) Transferring knowledge, and 7) Innovating knowledge. 'Storing knowledge' involves collective learning practices that store knowledge in the form of collective practices (e.g., routines, rituals), conceptual tools (e.g., learning cycles), and materials (e.g., manuals, lesson plans, etc). 'Sharing knowledge' involves collective learning practices that transmit knowledge from one individual to another which could be in the form of practices (e.g., demonstrations), conceptual tools (e.g., teaching strategies) and materials (e.g, lesson plans, shared folders). 'Reflecting knowledge' involves collective learning practices that engage individuals to think about and articulate their knowledge on practices in the past or future to others (e.g., articulating ideas and concepts pertaining to what was taught in previous lessons). 'Interrogating knowledge' involves collective learning practices that enable individuals to question and test the veracity of their assumptions and theories (e.g., inductive and deductive thinking, inquiry). 'Applying knowledge' involves learning practices that enable individuals to collectively apply the knowledge that has been collectively developed in practice. 'Transferring knowledge' involves the collective learning practices of transferring the knowledge developed in one context to another (e.g., the strategy of cooperative learning in science being applied to math curricula). 'Innovating knowledge' involves collective learning practices that enable individuals create new knowledge which are not currently absent (e.g., abduction). These proposed dimensions were proposed based on a Wright Map analysis of data collected from one of our previous studies on community-based teacher learning (NIE ERFP, OER 14/12 HS). The Wright Map analysis showed that the

measure for collective learning can be grouped into several aspects or dimensions which range from easy to difficult in terms of implementation – correspondingly, 'sharing knowledge', 'reflecting knowledge', 'interrogating knowledge', and 'innovating knowledge' (Refer to Figure 1).

The addition of 'Storing knowledge', 'Applying knowledge' and 'Transferring knowledge' were derived from further key literature analysis of concepts closely related to collective learning such as organizational learning, learning organization, group learning, and learning communities. The table below outlines key references that highlight the seven dimensions from these closely related terms with collective learning (Refer to Table 1).

In consolidation, the arguments raised above have closely tied DL to TL and finally to collective learning. The key argument in this section follows the following sequence. First, DL is an outcome of educational contexts that are increasingly getting complex insofar as the changes accompanying educational reforms are characterized by intensity, rapidity, fluidity and uncertainty. Second, DL results in the augmentation of TL. Third, TL results in the augmentation of learning across the school organization, which the authors have termed 'collective learning' – that is, the learning that takes place between individuals within a pair, group, organization, society or system so as to develop shared knowledge.

Global Rasch Measures (9 schools)
Input: 45 persons, 12 items; **Measured**: 45 persons, 12 Items

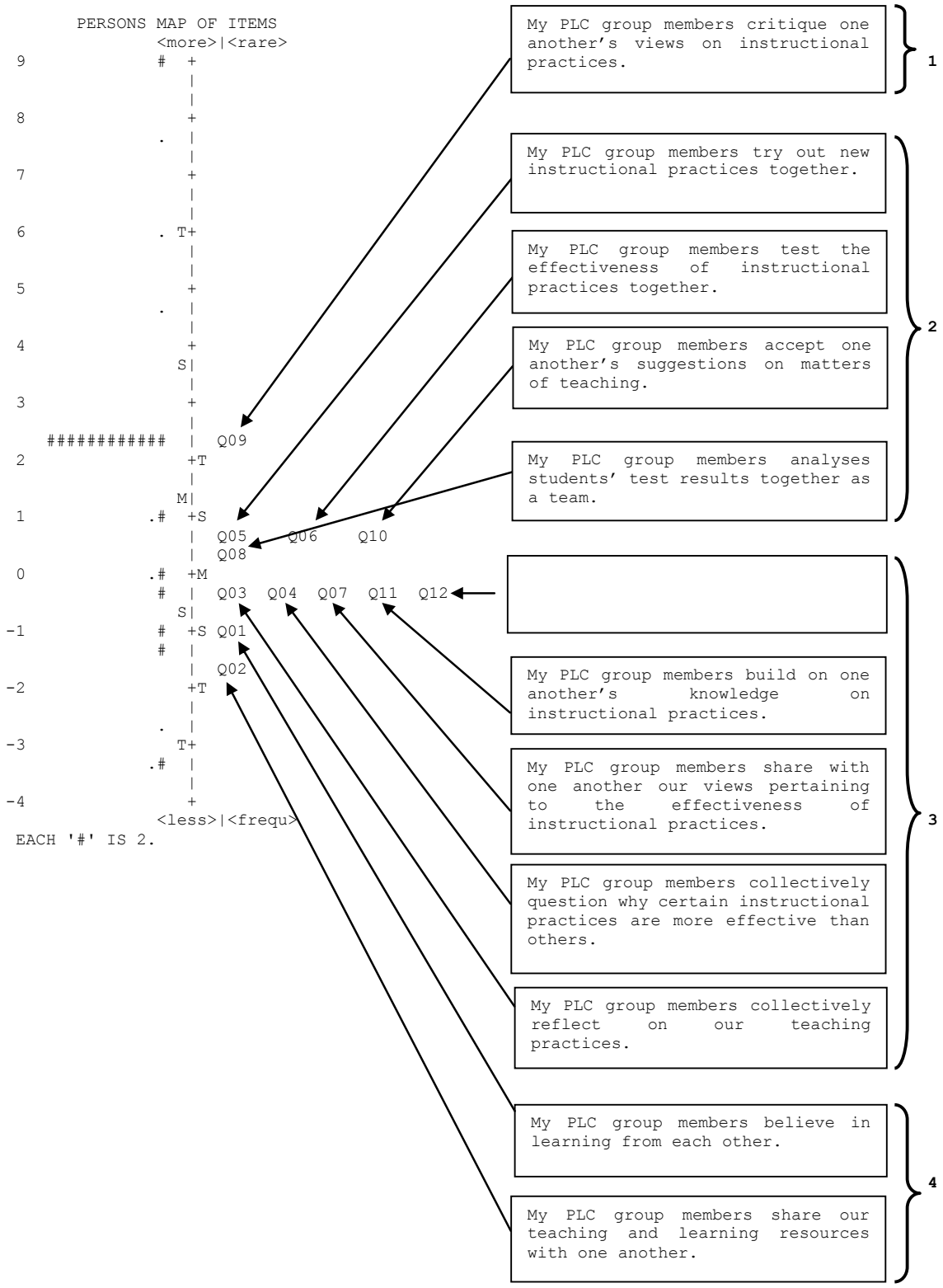

Figure 1: PLC Dimension: Learning

Table 1: Dimensions of Collective Learning in Related Concepts to Collective Learning

Key Concept	Author	Reference	Dimensions of Collective Learning
Organizational Learning	Levitt & March (1988), cited in Fenwick (1996, p. 4)	The earliest notions of organizational learning were concerned with organizational continuity, and assumed the essential stability and coherence of the organization. Learning was viewed conservatively as a process to "encode, store and retrieve the lessons of history despite the turnover of personnel and the passage of time" (p. 319) or to continually improve existing procedures for adaptation.	Storing knowledge Applying knowledge
	Argyris & Schol (1996), cited in Borenham (2004, pp. 308-309)	The first researchers to write about organisational learning at length, Argyris and Schol (1996- first edition 1978) adopted a broadly sociocultural approach when they described it as the growth of culture of open communication, in which members of an organisation collaborate in 'organisational enquiries; to discover better ways of achieving the organisation's purposes.	Interrogating knowledge Innovating knowledge
	Bryk, et al., (1999), cited in Imants (2003, p.298)	… define organisational learning as a general orientation of school faculty towards experimentation and innovation.	Interrogating knowledge Innovating knowledge
	Husyman, (2000), cited in Imants (2003, p. 299)	Organisational Learning is the process through which an organisation constructs knowledge or reconstructs existing knowledge (p.135).	Interrogating knowledge
Learning Organization	Louis (1994, p. 9)	… learning involves not only psychological adaptation, but also active use of knowledge by the organization to improve its fit with the environment.	Applying knowledge
	Senge (1990), cited in Davis & Davis (2009, p.115)	Senge defines the learning organisation as "a place where people are continually describing how they create their reality and how they can change it" (p.13). Additionally, he envisions the learning organisation as "an organisation that is continually expanding its capacity to create its future" (p.14).	Innovating knowledge
	Senge et al. (1994), cited in Fenwich (1996, p. 6)	Central to these disciplines (5 disciplines) is the assumption that employees need to engage in critical reflection and open dialogue, exposing their own belief systems and critically challenging others' belief systems, to break free of thinking patterns which perpetuate dysfunction and prevent innovation.	Reflecting knowledge Interrogating knowledge Innovating knowledge
	Garvin (1993), cited in in Davis & Davis (2009, p.116)	… defines the learning organisation as "an organisation skilled at creating, acquiring, and transferring knowledge, and modifying its behaviour to reflect new knowledge and insights (p.80).	Innovating knowledge Transferring knowledge

Table 1: (continued)

Key Concept	Author	Reference	Dimensions of Collective Learning
Group Learning	Argote et. al (2001, p. 370, cited in Wilson et al. (2007, p.1042)	Group learning has been defined as the activities through which individuals acquire, share and combine knowledge through experience with one another.	Sharing knowledge
	Sole & Edmonson (2002) cited in Wilson et al. 2007 (p.1042)	The acquisition and application of knowledge that enables a team to address team tasks and issues for which solutions were not previously obvious.	Applying knowledge Innovating knowledge
	Wilson et al. (2007, p.1042)	Level of analysis Learning must be at the group level of analysis. Group learning represents a change in the group's repertoire of potential behaviour. We are explicitly stating that the theory, measurement, and analysis of group learning should focus on changes in the group's repertoire.	Applying knowledge
		Fundamental processes The processes inherent in the construct of group learning include sharing, storage, and retrieval of group knowledge, routines, or behaviour.	Sharing knowledge Storing knowledge
		Learning as an outcome Any change in the group's range of potential behaviour, whether or not it is manifested in externally observable behaviour, constitutes evidence of group learning.	Applying knowledge
		Time Our definition explicitly incorporates time by requiring a change in the group's repertoire of potential behaviour over some interval.	Applying knowledge
		Features of Group Learning: <u>Sharing</u> The process by which new knowledge, routines, or behaviour becomes distributed among group members and members understand that others in the group possess that learning. Group learning must be shared, taking on structural properties and exerting influence beyond individuals who constitute the collective, before it becomes a legitimate group construct.	Innovating knowledge Sharing knowledge Storing knowledge
		<u>Storage</u> Storage is necessary for learning to persist over time, so much so that others have defined learning as the exploitation of stored knowledge.	Interrogating knowledge
		<u>Retrieval</u> Retrieval means that group members can find and access the knowledge for subsequent inspection or use.	Applying knowledge

Table 1: (continued)

Key Concept	Author	Reference	Dimensions of Collective Learning
Learning Communities	Wenger (1998), cited in Mittendorf (2006; p.300)	CoP fulfils a number of functions with respect to the creation, accumulation, and diffusion of knowledge in an organisation (Wenger at al., 2002). They are nodes for the exchange and interpretation of information. Because members have a shared understanding, they know what is relevant to communicate and how to present information in useful ways. They can retain knowledge in "living ways", unlike a database or a manual, by preserving the tacit aspects of knowledge, They steward competencies and keep the organisation at the cutting edge. Members of these groups discuss novel ideas, work together on problems, and keep up with developments inside and outside a firm. They provide homes for identities. Identities help to sort out what we pay attention to, what we participate in, and what we stay away from. Having a sense of identity also entails a sense of belonging.	Storing knowledge Sharing knowledge Storing knowledge Storing knowledge Innovating knowledge Applying knowledge
	Scribner, Sunday Cockrell, Cockrell & Valentine (1999), cited in Imants (2003, p. 296)	1) shared norms and values 2) a collective focus on student learning 3) reflective dialogue 4) deprivatised practice 5) collaboration, which involves sharing expertise, joint work to produce materials and activities for curriculum and instruction, and devising new approaches to professional development.	Sharing knowledge Reflecting knowledge Sharing knowledge Sharing knowledge Applying knowledge Innovating knowledge

CONCLUSION

This paper has provided the theoretical links between DL, TL and collective learning. It is first hypothesized that DL lends well to TL, and the effects of TL on teaching and learning are mediated by teacher learning across the organization, termed as 'collective learning'. The development of teacher leadership will then impact on the development of collective learning, leading to the development of teacher competency which then impacts on improvements in student learning. These pathways of effects nevertheless can be moderated by other within school factors such as school culture, instructional leadership practices and contextual factors such as school size, school type (e.g., government or government-aided schools) and staff demographics (e.g., teaching experience), and outside school factors such as students' SES which can be closely associated with students' self-efficacy and motivation, parental expectation and private tuition. Furthermore, these pathways of effects reside in different levels of the school organization – student, teacher and school levels. Notwithstanding the complexity in modelling the pathways of effects of distributed leadership and teacher leadership on teacher competency through collective learning, the core research problem lies in four knowledge gaps.

1. How senior and middle leaders within differing school contexts distribute leadership to teacher leaders.
2. How teacher leaders develop collective learning in differing school contexts to enhance teaching and learning.
3. How teacher leaders are developed in differing school contexts.
4. How distributed leadership and teacher leadership, and their development, bring about concomitant improvements in collective learning.
5. How collective learning bring about improvements in teacher and organizational capacities.

Addressing these aspects of the research problem will help schools optimize their organizational capacity in response to the intensity, rapidity, fluidity and uncertainty of education changes in the 21st century, and in the Singapore context would also fulfill the vision of the 'Thinking Schools, Learning Nation' policy initiative.

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References

Bennett, N., Wise, C., Woods, P., & Harvey, J. A. (2003). *Distributed Leadership*. Nottingham: NCSL.

Bolam, R., McMahon, A., Stoll, L., Thomas, S., Wallace, M., Greenwood, A., Hawkey, K., Ingram, M., Atkinson, A, & Smith, S. (2005). *Creating and sustaining effective professional learning communities.* Research Report No. 637. UK: Department for Education and Skills.

Borenham, N., & Morgan, C. (2004). A sociocultural analysis of organizational learning. *Oxford Review of Education*, *30*(3), 307-325.

Bush, T., & Crawford, M. (2012). Mapping the field over 40 years: A historical review. *Educational Management Administration & Leadership, 40*(5), 537-543.

Bush, T., & Glover, D. (2003). *School Leadership: Concepts and evidence*. Nottingham: National College for School Leadership.

Castelijns, J., Vermeulen, M., Kools, Q. (2013). Collective learning in primary schools and teacher education institutes. *Journal of Educational Change, 14*, 373-402.

Davis, J. L., & Davis, H. (2009). The learning organization implemented in education through advisory committees. *Education*, *130*(1), 114-117.

Fenwich, T. J. (1996). *Limits of the learning organization: A critical look*. Antagonish, Nova Scotia: Educational Resources Information Centre.

Frost, D. (2012).. From professional development to system change: Teacher leadership and innovation. *Professional Development in Education*, *38*(2), 205-227.

Elmore, R. F. (2000). *Building a new structure for school leadership*. Washington, DC: Albert Shanker Institute.

Fadul, J. A. (2009). Collective learning: Applying distributed cognition for collective intelligence. *The International Journal of Learning*, *16*(4), 211-220.

Gerlak, K., & Heikkila, T. (2011). Building a theory of learning in collaboratives: Evidence from the Everglades Restoration Program. *Journal of Public Administration Research and Theory*, *21*, 619–640.

Gronn, P. (2000). Distributed properties: A new architecture for leadership. *Educational Management, Administration and Leadership, 28*(3), 317-338.

Gronn, P. (2008). The future of distributed leadership. *Journal of Educational Administration, 46*(2), 141-158.

Hairon, S. (2014). *Uncovering effective PLC conversations: An ethnographic study of three PLCs in Singapore schools*. Paper presented at the 27th ICSEI Congress, Yogyakarta, Indonesia, 2-7 Jan 2014.

Hairon. S., & Goh, J. W. P. (Forthcoming). Pursuing the elusive construct of distributed leadership: Is the search over? *Educational Management, Administration and Leadership*.

Hairon, S., Goh, J. W. P., & Chua, S. K. (Forthcoming). Teacher leadership enactment in PLC contexts: Towards a better understanding of the phenomenon. *School Leadership & Management*.

Hallinger, P., & Heck, R. (2010). Leadership for learning: Does collaborative leadership make a difference in school improvement? *Educational Management, Administration and Leadership, 38*(6), 654-678.

Harris, A. (2003). Teacher leadership as distributed leadership: Heresy, fantasy or possibility? *School Leadership and Management, 23*(3), 313-324.

Harris, A. (2004). Distributed leadership: Leading or misleading. *Educational Management and Administration, 32*(1), 11–24.

Harris, A. (2005). Teacher leadership: more than just a feel-good factor? *Leadership and Policy in Schools, 4*, 201-219.

Harris, A. (2007). Distributed leadership: Conceptual confusion and empirical reticence. *International Journal of Leadership in Education, 10*(3), 1-11.

Harris, A. (2008). *Distributed leadership: Developing tomorrow's leaders*. London: Routledge.

Harris, A. (2009). *Distributed leadership: Different perspectives*. Dordrecht: Springer.

Harris, A. (2011). System improvement through collective capacity building, *Journal of Educational Administration, 49*(6): 624-636.

Harris, A. (2012). Leading system-wide improvement. *International Journal of Leadership in Education, 15*(3), 395-401.

Harris, A., & Spillane, J. P. (2008). Distributed leadership through the looking glass. *British Educational Leadership, Management and Administration,* 22(1), 31-34.

Hartley, D. (2007). The emergence of distributed leadership in education: Why now? *British Journal of Educational Studies,* 55(2), 202-214.

Harley, D. (2009). Education policy, distributed leadership and socio-cultural theory. *Educational Review, 61*(2), 139-150.

Hopkins, D. (2001). '*Think Tank' Report to Governing Council*. Nottingham: NCSL.

Imants, J. (2003). Two basic mechanisms for organizational learning in schools. *European Journal of Teacher Education, 26*(3), 293-311

Jones, S., Lefoe, G., Harvey, M., & Ryland, K. (2012). Distributed leadership: A collaborative framework for academics, executives and professionals in higher education. *Journal of Higher Education Policy and Management, 34*(1), 67-78.

Katzenmeyer, M., & Moller, G. (2001). *Awakening the sleeping Giant: Helping teachers develop as leaders*. 2nd ed. Thousand Oaks, CA: Corwin Press.

Leithwood, K., Day, C., Sammons, P., Harris, A., & Hopkins, D. (2006). *Seven Strong Claims about Successful School Leadership*. Nottingham: NCSL/DfES). Retrieved from http://www.ncsl.org.uk/media/ECB/97/seven-claims-to-success.pdf.

Leithwood, K., Mascall, B., & Strauss, T. (2009). What we have learned and where we go from here. In L. Leithwood, B. Mascall, & T. Strauss (Eds.), *Distributed leadership according to evidence* (pp. 269-281). London: Routledge,

Lieberman, A., & Mace, D. H. P. (2011). The role of 'accomplished teachers' in professional learning communities: Uncovering practice and enabling leadership. *Teachers and Teaching: Theory and Practice, 15*(4), 459-470.

Lieberman, A., & Miller, L. (1999). *Teachers: Transforming their world and their work.* New York: Teachers College Press.

Lieberman, A., & Miller, L. (2011). The starting point for professional learning is in schools and classrooms: The starting point for professional learning is in schools and classrooms. *Journal of Staff Development, 32*(4), 16-20.

Louis, K. S. (1994). Beyond 'managed change': Rethinking how schools improve. *School Effectiveness and School Improvement, 5*(1), 2-24.

MacBeath, J., Frost, D., & Swaffield, S. (2008). Editorial. *School Leadership & Management, 28*(4), 301–306.

McBeth, M. (2008). *The distributed leadership toolbox: Essential practices for successful schools*. Thousand Oaks, CA: Corwin.

Mindich, D., & Lieberman, A. (2012). *Building a learning community: A tale of two schools*. Stanford, CA: Stanford Center for Opportunity Policy in Education.

Muijs, D., & Harris, A. (2003). Teacher leadership – improvement through empowerment? *Educational Management & Administration, 31*(4), 437-448.

Murphy, J., & Datnow, A. (2003). *Leadership lessons from comprehensive school reforms.* Thousand Oaks, CA: Corwin Press.

Leonard, J., Petta, L., & Porter, C. (2012). A fresh look at graduate programs in teacher leadership in the United States. *Professional Development in Education, 38*(2), 189-204.

Simkins, T. (2005). Leadership in education: 'What works' or 'What makes sense'? *Educational Management Administration & Leadership,* 33(1), 9-26.

Smylie, M. A, Conley, S., & Marks, H. M. (2002). Exploring new approaches to teacher leadership for school improvement. In J. Murphy (Ed.) *Educational leadership challenge: Redefining leadership for the 21st century* (pp. 162-188). Chicago: NSSE.

Spillane, J. P. (2004). *Distributed leadership: What's all the hoopla?* Working paper, Northwestern University, Institute for Policy Research. Available at: http://www.ipr.northwestern.edu/publications/…/Spillane_DistribLead.pdf.

Spillane, J. P., Diamond, J. B., & Jita, L. (2003). Leading instruction: The distribution for instruction. *Journal of Curriculum Studies, 35*(5), 533–543.

Spillane, J. P., Halverson, R., & Diamond, J. B. (2001). Investigating school leadership practice: A distributed perspective. *Educational Researcher, 30*(3), 23–28.

Spillane, J. P., & Healey, K. (2010). Conceptualizing school leadership and management from a distributed perspective: An exploration of some operations and measures. *The Elementary School Journal, 111*(2), 253-281.

Spillane, J. P., & Louis, K. S. (2002). School improvement processes and practices: Professional learning for building instructional capacity. *Yearbook of the national society for the study of education, 101*(1), 83-104.

Timperley, H. S. (2005). Distributed leadership: Developing theory from practice. *Journal of Curriculum Studies, 37*(4), 395-420.

Wilson, J. M., Goodman, P. S., & Cronin, M. A. (2007). Group learning. *Academy of Management Review, 32*(4), 1041-1059.

York-Barr, J., & Duke, K. (2004). What do we know about teacher leadership? Findings from two decades of scholarship. *Review of Educational Research, 74*(3), 255-316.