

Research Article:

An Examination of Teacher Leaders and a Shared Leadership Approach: Contributions to System Improvement in a School District

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ABSTRACT

There is an emerging body of evidence that recognises the significant role informal teacher leaders play in the pursuit of school and system improvement. This article reports the results of a multi-phase, design-based research study conducted with teacher leaders, assistant principals and principals who participated in a two-year design-based professional learning initiative with the goal of building capacity for instructional leadership and system improvement. The question guiding the study was: In what ways do teacher leaders contribute to system improvement? Three dimensions of focus associated with high-performing systems emerged from the data in connection to the investment in professional capital that contributed to system improvement: (a) enhancing the quality of teaching and learning for school and district improvement, (b) preserving continuous design-based professional learning opportunities, and (c) ensuring opportunities for collaborative learning alongside colleagues and the development of a network of teacher leaders with a shared purpose. Teacher leaders are informal leaders and important members of an instructional leadership team contributing to school and district improvement.

Keywords: Teacher leadership, system improvement, school improvement, research-practice partnership, design-based research

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INTRODUCTION

Leaders of school systems generally agree that creating school system improvement is needed to become more effective both in terms of students' academic outcomes as well as in developing the social and cultural wellbeing of the children and adults within the system (Fullan, 2021). Towards that goal, Fullan and Quinn (2016) argued that mobilising and sustaining improvement across whole systems requires both capacity and system improvement at all levels, incorporating whole systems so everyone is learning. Teacher leaders play a significant role in the pursuit of system improvement (Campbell et al., 2018; Friesen & Brown, 2022a; Harris & Jones, 2019; Harris et al., 2018; Leithwood, 2012, 2019; Louis et al., 2010; Murphy, 2005).

The teacher leaders in this study were in an informal leadership role. The teacher leaders were recognised by their colleagues as leaders and were then appointed by a school administrator to support teachers to strengthen their instructional practices, mentor teachers and lead the professional learning community; however, there were no contractual agreements with the teacher leaders and there was no positional authority (Gordon et al., 2021). Wenner and Campbell (2016) defined teacher leaders as “teachers who maintain K12 classroom-based teaching responsibilities, while also taking on leadership responsibilities outside of the classroom” (p. 140). Building on this definition, we defined informal teacher leaders as influencers of practice, that is “classroom teachers who hold classroom teaching responsibility while also assuming a leadership role in improving and strengthening the instructional practices of other teachers in the school through mentoring individual teachers and leading the professional learning community” (Friesen & Brown, 2022a, p. 255). The informal teacher leaders in our study were purposefully selected by their principal, provided with time for professional learning with other teacher leaders in the district, provided with time to facilitate the professional learning in the school by working directly with their colleagues to improve practice, and in the schools we visited, the teacher leaders were invited to be a member of the instructional leadership team (Edwards-Groves et al., 2019; Grootenboer, 2018; Hargreaves, 2019; Hargreaves & Shirley, 2020). Building teacher leaders' capacity to contribute to shared and instructional leadership efforts directed at improving teaching and learning through collaborative professional learning initiatives “is one of the highest yielding strategies to boost student, school, and system performance (Fullan et al., 2015, p. 8). Investing in teacher leaders' professional learning activities, therefore, seems to be worthwhile for educational organisations and could contribute to school and system improvement.

LITERATURE REVIEW

Teacher Leadership

There is wide variation in the definitions of teacher leadership (Criswell et al., 2018; Hamzah et al., 2016; Harris & Jones, 2019; Harris & Muijs, 2003; Lowery-Moore et al., 2016; Mangin, 2016; Muijs & Harris, 2003). Murphy (2005) suggested teacher leadership can

describe the influence of teachers in their classrooms, followed by the influence in shaping school policies and practices as well as the influence on licensure and certification. Cosenza (2015) argued that teacher leadership extends influence beyond the classroom level and teacher leadership is “a collaborative activity that draws them into the decision making” (p. 96). Recognising the lack of a common definition of teacher leadership, Schott et al. (2020) undertook a systematic review of 93 theoretical and empirical articles and books on the topic of teacher leadership. Schott and colleagues noted that common throughout the literature was a description of teacher leadership “as a *process of influencing others* [italics in original]” (p. 6). Within this article, we draw upon the concept of influence and Cheng and Szeto’s (2016) conceptualisation of teacher leaders.

While there is no consensus on the definition of teacher leadership the key idea of teacher leadership is grounded, regardless of formal or informal teacher leader roles, in teachers influencing others to contribute to school improvement or educational practice (Cheng & Szeto, 2016, p. 141).

Teacher leaders often work on improving their own teaching and learning, and concurrently offer support to their colleagues to improve overall student learning in the school. This form of teacher leadership can be considered leading from the middle (LfM) (Hargreaves, 2019; Hargreaves & Shirley, 2020). “LfM is not a location such as a middle tier. Instead, it means getting closer to teaching and learning that is at the heart of the profession” (Hargreaves & Shirley, 2020, p. 102). Hargreaves et al. (2018) described LfM as “supporting those who are closest to the practice of teaching, learning and well-being” (p. 28). Edwards-Groves et al. (2019; 2023) argued that middle leading involves a complex repertoire of practices that are closely interconnected and focus on teaching, learning and leading. This view emphasises the practical aspect of LfM and having influence from a practice perspective. The teacher leaders in this study were not a tier within the system, which the literature suggests involves leading in the middle (LiM) (Hargreaves & Shirley, 2020), but rather leading the work of supporting their colleagues to improve and strengthen their practice through a process of collaborative professionalism (Hargreaves & O’Connor, 2018).

Conceptualised as LfM, the literature suggests that teacher leaders contribute not only to the teaching and learning process within the school but also contribute to the effectiveness of school improvement efforts in a district (Lai & Cheung, 2015). Within the literature, there is an emphasis on providing teachers with the necessary professional learning opportunities to increase their capacity individually and collectively to lead and develop school and system improvement initiatives and thereby exert genuine influence (Bangs & Frost, 2012; Campbell et al., 2018; Cosenza, 2015; Friesen & Brown, 2022a; Fullan & Quinn, 2016; Hargreaves & O’Connor, 2018). Teacher leaders lead from the middle going beyond their classroom responsibilities assuming an informal leadership role within the school and school district to influence and enhance teaching practice and student learning for within the school and contribute to school and system improvement.

School and System Improvement

The literature on school and system improvement has undergone numerous evolutions since

its inception. Researchers interested in the study of school and school system improvement have tended to study the phenomena from a variety of perspectives. Some scholars focus on teaching and learning (Kokkinou & Kyriakides, 2022; Hattie, 2009; Hattie & Smith, 2020) and school leadership (Leithwood et al., 2004, 2020; Robinson et al., 2008; Robinson & Gray, 2019). Underlying this literature is the assumption that there is a relationship among leadership, teaching and student learning; and insights into the nature of the classroom and school-level practices can yield insight into school and system improvement efforts (Hallinger & Heck, 2011; Heck & Hallinger, 2014). Another perspective frames the study of school and system improvement in terms of organisational change (Hall & Hord, 2019). A third perspective explores school and system improvement in terms of school and organisational culture (Leithwood & Jantzi 2000; Leithwood et al., 2020; Mulford et al., 2005). Despite numerous attempts to bring these three seemingly disparate areas together, there still appears to be no consensus within the research community on a single overarching perspective (Hallinger & Heck, 2011). That said, Hopkins et al. (2014) argued that much has been learned about “how to improve individual schools, but successful efforts at systemic improvement have been less common” (p. 257).

Mourshed et al. (2010) undertook an ambitious study to examine how the world’s best performing school systems come out on top. They found “that all the school systems that are successful in achieving sustained improvement within a given performance journey share a common set of characteristics in what they do and how they do it” (p. 111). They noted, “as the system improves, the engine for improvement shifts to instructional practices... primarily driven by the teachers and the schools themselves” (p. 111). Acknowledging the contributions of Mourshed et al. (2010), Hopkins et al. (2014) advanced that among the features of high-performing systems include:

1. Making student learning and wellbeing a central focus.
2. Enhancing the quality of teaching and learning.
3. Ensuring there are continuous professional learning opportunities in place.
4. Establishing system level structures that link together various levels of the system facilitated by networking, self-reflection, refinement and continuous learning.

In 2016, Fullan and Quinn articulated a set of drivers to create system improvement, which Fullan (2021) acknowledged “did not go widely or deeply enough for system change” (p. 5). In 2021, Fullan revised the drivers for system improvement proposing the following four drivers, for whole system success: (a) wellbeing and learning, (b) social intelligence, (c) equality investments, and (d) systemness (p. 5). In many ways, the four drivers proposed by Fullan (2021) are consistent with the findings from Hopkins et al. (2014) in terms of the core features of school and system improvement. Regarding whole system learning, Fullan et al. (2015) described the idea of professional capital as a valuable investment for system improvement. However, unlike a business capital view, a professional capital approach in teaching requires continuous and collaborative improvement to make a difference towards system improvement. The vision for professional capital includes human capital, social capital and decisional capital (Hargreaves & Fullan, 2012). In other words, a vision for developing professional capital in educational contexts requires continuous support and

investment in individuals, collaboration and making sound judgements. In our study, we were particularly interested in exploring how one school district's ongoing investment in professional learning for teacher leaders contributed to system improvement.

Context

The education system in Alberta is known as a high performing system in Canada (Hargreaves & Shirley, 2012). The school district participating in our study, located in Alberta, identified building professional capital as a top priority over a three-year period. The district, a large urban Canadian district serving over 120,000 students, aimed to build a coherent professional learning program and an evidence-informed culture through a research-practice partnership with a university and professional learning network. To action this strategy, they created informal teacher leadership roles; these teacher leaders were highly regarded by their colleagues and selected by school principals to lead and support teachers within the schools. There are no contractual arrangements within the province, salary expectations, or policies requiring school districts to allocate teacher leaders in Alberta. In the district involved in this study, teacher leaders benefited from professional learning time with other teacher leaders in the district, and additional release time to mentor teachers in their classrooms and lead professional learning communities in the school (e.g., grade level teams, subject focused teams). Every school in the district had one or more professional learning communities in the school. The informal teacher leaders aimed to:

1. Improve and strengthen their own instructional practices and their colleagues through mentoring and coaching individual teachers,
2. Lead professional learning communities, and
3. Participate as a member of the school instructional leadership team through a shared leadership approach (Leithwood, 2012; Louis et al., 2010).

The study evolved from a three-way research-practice partnership (Coburn & Penuel, 2016; Friesen & Brown, 2021; 2023) involving the district, university researchers and professional learning consultants from the Galileo Educational Network. Working alongside researchers and using a design-based research approach, the purpose of the research partnership was to study the ways leadership teams, including formal leaders, such as principals and assistant principals, and informal teacher leaders worked collaboratively to improve student outcomes in schools and across a system. While there was typically only one principal in a school, the number of assistant principals and teacher leaders varied depending on the size of the school and school configuration, for example, a smaller school of up to 300 students would have one principal, assistant principal and a few teacher leaders; while a school with over 1,000 students would have one principal, three assistant principals and up to ten or more teacher leaders. Participants in teacher leader roles were provided with time during the school day to participate in design-based professional learning with other teacher leaders in the district during our study (Friesen & Brown, 2022a; Friesen & Jacobsen, 2015; Timperley et al., 2020). Design-based professional learning (DBPL) uses an iterative inquiry model known to be grounded in complex systems (Chu et al., 2022; Friesen & Brown, 2023). Design-based professional learning is a dynamic approach to professional

learning in which people are interconnected with others and their context, providing each other with feedback and engaged in iterative cycles of improvement. It is an approach similar to collaborative professionalism (Hargreaves & O'Connor, 2018).

The district was also preparing to implement a professional practice standard. The Leadership Quality Standard (Alberta Education, 2020), developed by the education ministry that oversees education in Alberta stated, “quality leadership occurs when the leader’s ongoing analysis of the context, and decisions about what leadership knowledge and abilities to apply, result in quality teaching and optimum learning for all school students” (p. 2). While this mandate established one standard for all leaders in the province, this standard includes nine competencies. The nine competencies are: (1) fostering effective relationships, (2) modelling a commitment to professional learning, (3) embodying visionary leadership, (4) leading a learning community, (5) supporting the application of foundational knowledge about First Nations, Métis, and Inuit, (6) providing instructional leadership, (7) developing leadership capacity, (8) managing school operations and resources, and (9) understanding and responding to the larger societal context. The confluence of a DBPL model adopted throughout the district occurring at the same time as the implementation of a professional practice standard in Alberta provided a rich context for a study exploring how the school district’s investment in professional learning for teacher leaders contributed to system improvement.

Theoretical Framework

A complex systems theory considers the interconnectedness of the components of a system in the context of relationships with each other (Alonso-Yáñez et al., 2021; Davis & Sumara, 2006; Timperley et al., 2020). Researchers have identified components of a complex system, such as the behaviour of the interconnected components that are not explained by the properties of the components, but rather emerge from the interactions of the components; a non-linear system that relies on feedback to shape its evolution; and a system that operates on multiple timescales and levels simultaneously (Davis & Sumara, 2006; Fenwick, 2012; Morrison, 2010). These components suggest that “systems begin as a collection of individual actors who organise themselves and create relationships” (Snyder, 2013, p. 11). The actors also use a process of positive and negative feedback loops, with positive feedback moving the actors closer to their perceived goal. Within the context of educational systems, the role of central administrators is to create processes and maximise the organisation and flow of feedback between and across the levels in a district. Leaders in formal and informal positions can positively influence and support complex adaptive systems (Uhl-Bien et al., 2007). Drawing upon complex systems theory provided us with the ability to focus on the ways that a prioritisation of building professional capital through ongoing professional learning for teacher leaders played a role in system improvement.

METHODOLOGY

A design-based research approach was used in this study (Amiel & Reeves, 2008; Bannan-

Ritland, 2003; Dai, 2012; McKenney & Reeves, 2019) in conjunction with design-based professional learning (Friesen & Brown, 2022a, 2022b, 2023; Friesen & Jacobsen, 2015). Design-based research originates from works of Brown (1992) and Collins (1992) and many variations of design research have emerged in learning environments (Bannan-Ritland, 2003; Barab, 2014; Dai, 2012). This type of research can take place in communities of practice where the participants interact with each other to support the learning and growth for everyone involved (Wenger, 1998; Wenger-Trayner & Wenger-Trayner, 2015). In this study, we used McKenney and Reeves' (2019) model to frame the iterative approach for professional learning within a community of practice that we describe in longitudinal research-practice partnerships (Friesen & Brown, 2023).

This study consisted of two phases. In the first phase, we collected data using the DBPL survey to measure participants' ratings of learning designs, teacher collaboration, and assessment practices in 220 schools in the district (Chu et al., 2022). The total population of teacher leaders participating in the professional learning sessions with representatives from all schools in the district were invited to participate in the survey. All principals and assistant principals attending a district meeting were also invited to participate in the study. The response rate was 85%, or 1,109 of 1,291, total participants, and completed surveys were received from teacher leaders ($n = 683$), principals ($n = 207$) and assistant principals ($n = 219$). There was at least one respondent from each school and 82 schools had more than one respondent. The survey analysis generated a list of schools demonstrating high levels of agreement in survey responses among the respondents from the same school and with an interest in participating in additional research activities. This analysis led us to the second phase of the study and opportunity to study three schools in more depth and specifically focus on the ways teacher leaders contributed to system improvement.

A subset of 300 participants of the total participants ($n = 1,109$) agreed to participate in the second phase of the study which consisted of school observations and interviews. We analysed the school location for each participant and selected schools for the second phase using the following inclusion criteria:

1. Schools with at least three participants including a principal expressing interest to participate in the second phase.
2. Diversity in geographical area from across the metropolitan area.
3. Diversity in grade levels across the selected schools.
4. A selection of three schools.

There were 23 schools that fit the first criterion for inclusion and after applying the second and third criterion, we were able to identify and confirm participation with three schools for the second phase of the study, an elementary, middle and high school located in different areas of the city.

Methods

In the first phase of the study participants responded to the questions in the DBPL survey using a five-point Likert Scale: 1 = I do not have enough evidence to say; 2 = Does not

describe the teachers in my department/school(s); 3 = Describes less than 50% of the teachers in my department/school(s); 4 = Describes 50%–75% of the teachers in our department/school(s); 5 = Describes 75%–100% of the teachers in my department/school(s). The descriptive statistics and analysis of the internal consistency (0.926) for the survey indicated very high reliability for the instrument and three factor model with questions organised in three subsections: learning designs, teacher collaboration, and assessment (see Chu et al., 2022 for more detail about the survey instrument). The second phase involved site visits at three schools at the end of the school year and included observations of teaching in two classrooms, and four observations of professional learning activities, and seven semi-structured interviews with teacher leaders, principals, and assistant principals.

Table 1 shows data collected from three type of schools (elementary, middle school and high school).

Table 1. Phase II: Data collected from three schools (elementary, middle school, high school)

| | Interviews | | | No. | Observations |
|---------------|------------|---------------------|----------------|-----|--|
| | Principal | Assistant principal | Teacher leader | | Type |
| Elementary | 1 | 1 | - | 2 | PL planning and PL day |
| Middle school | 1 | - | 1 | 1 | Grade 9 Class |
| High school | 1 | 1 | 1 | 3 | Grade 12 Class, PL planning and PL day |

The interview questions provided participants with an opportunity to provide examples about how learning was designed at the school, how staff worked together to improve practice, what evidence was collected and used to inform instructional practice, how professional learning was supported in the school for teaching and learning, and who was part of the instructional leadership team and how they were involved in supporting teachers’ and students’ learning in the school. Participants were also asked to describe opportunities to learn with other colleagues outside of their school. The interviews resulted in transcripts that we analysed using descriptive and thematic coding (Miles et al., 2014). The researchers also arranged to observe two classrooms (grade 9 and grade 12) and four professional learning activities at the schools. The converged data from the survey, observations and interviews resulted in emerging themes that helped us examine the ways teacher leaders contribute to system improvement.

RESULTS

Three key findings were identified in the merged data analysis. These findings indicated the

teacher leaders in this study had an impact on improving colleagues' practices within their school and across the school system by improving the quality of instruction, developing competency in instructional leadership, leading a learning community, and leveraging supportive school and system level structures to focus on student learning. The observational field notes and interview transcript data reflected the survey results and provided additional insight about the result of the teacher leaders joining the instructional leadership team within the school. Further, our results indicated that teacher leaders became competent leaders within their respective school's instructional leadership team.

Improving Quality of Instruction

A core area for school and system improvement is the extent to which school leaders and teachers focus on student learning. One of the ways that such a core area is strengthened is through intentional efforts to improve and strengthen the quality of instruction within a school. Results from the analysis of survey data and confirmed by the analysis of the data from the site visits and observations indicated that teacher leaders, assistant principals and principals made the following three dimensions of practice a focus in their respective school improvement efforts: (a) learning designs, (b) teacher collaboration, and (c) supporting accurate formative and summative assessment practices. The details are shown in Table 2. In the interviews with teachers and school leaders during the site visits, involving one elementary, one middle school and one high school, participants similarly described these three areas of strength in their schools when providing examples illustrating how members of the instructional leadership team support learning in the school.

Table 2. DBPL survey subsections

| Dimension | Mean | Standard deviation | Internal consistency (Cronbach Alpha) |
|-----------------------|--------|--------------------|--|
| Learning designs | 4.0384 | 0.77186 | 0.886 |
| Teacher collaboration | 3.8756 | 0.79355 | 0.791 |
| Assessment | 3.7027 | 0.88145 | 0.855 |

When reviewing the overall mean responses for the questions organised around three subsections in Table 1, it was evident that participating teacher leaders and school leaders from all the schools in the district reported that greater than 50% of the teachers in their school exhibited practices consistent with each of the dimensions, and for those dimensions where the mean scores are 4 or approaching 4, 50%–75% of teachers within the school exhibit proficiency in these areas of practice. Looking more closely at the survey items contained within each of the dimensions suggested that the leaders' focus on instructional improvements contributed to a robust teaching and learning culture in the schools within the district. The site visits and interviews with the teacher leaders, assistant principals and principals, further supported these results and indicated a robust culture of teaching and learning with a consistent focus on improving quality of instruction.

Teacher Leaders Develop Competency in Instructional Leadership and Leading a Learning Community

During the site visits and observations in three schools, the researchers interviewed teacher leaders, assistant principals and principals, and asked: Who is part of the instructional leadership team and how are they involved in supporting teachers' and students' learning in the school?

Instructional leadership

All three principals identified teacher leaders as members of their instructional leadership teams. The teacher leaders and assistant principals who were interviewed described how the teacher leaders supported the professional learning and growth of their colleagues in the school through instructional leadership. This was confirmed in the researchers' observation of the professional learning activities (e.g., observation of a co-planning session involving principal, assistant principal and teacher leaders preparing professional learning activities for whole staff to review school development plan goals and discuss what success looks like). A key aspect of their role as described by teacher leaders was developing competence in instructional leadership. The following excerpt from an interview with a teacher leader we interviewed described feeling part of a leadership team and contributing to instructional decision-making:

A lot of decisions made in the school are not just from the principal or the assistant principal. It is a collective understanding of what do we need next. We as a team talk about professional learning communities... or here is a decision that has to be made, so what should we do with it? We work together very closely on trying to figure out how to best run the school together.

A common sentiment among all the teacher leaders and assistant principals we interviewed was that they felt "valued" and their "voices are heard" as part of the leadership team. The following excerpt from an interview with a teacher leader describes how they worked alongside colleagues and illustrates instructional leadership:

In my role, I also attend grade team meetings to help work on building tasks together and assessments and to give them guidance and support... When they ask a question and I am stumped, I just admit that and "You know what? I struggled with that too." I always feel like I need to expand my knowledge on that, or, through a professional learning community they might ask questions and say, "What are some different strategies we can use that are high impact strategies?"

One of the assistant principals interviewed described the role of teacher leader as follows: "There are eight people on our teacher leader team and they are all connected to professional learning community groups in our school. That would involve all our teachers, and then our teachers are connected to our students." Similarly, in one of the other schools in the study,

the principal discussed how they have professional learning communities (PLCs) run with either one or two teacher leaders. The PLCs are grade based and subject based.

Instructional leadership teams often consisted of individuals in formal roles (principal, assistant principal) informal roles (teacher leaders), and teachers involved in other design-based professional learning cohorts in the district (e.g., new teachers, math teachers) and teachers leading in other ways (e.g., grade teams, inclusive practice, community learning). The following excerpt was documented by one of the researchers conducting an observation of a leadership team meeting at the elementary school:

The purpose of a leadership team meeting at the elementary school with the principal, assistant principal and six teacher leaders was to identify and create long-term plans for areas of instructional need and to collaboratively plan an upcoming staff professional learning day. An inspirational quote was provided as a provocation for generative dialogue at the beginning of the meeting: “The past is your lesson. The present is your gift. The future is your motivation.” As the group reflected on this quote, they started generating ideas for the upcoming staff professional learning day. Each member in the group was provided with an opportunity to contribute and share their ideas. The principal asked, “As a collective, where do we want to go? What is it that we want for that day, why are we doing this and what is our hope to accomplish?” Together the group determined there was a strong alignment in the desire to revisit evidence of student learning they had collected over the past year, interpret data to inform practice, and then use the analysis to inform priorities for the next year.

The researchers noted that developing competence in instructional leadership and working collectively to lead a learning community was a priority at the school. This was further supported when conducting other observations at the school, including the observation of the staff professional learning day. Similar accounts were gathered by the researchers during the other observations at the middle and high school. One of the principals interviewed described how teacher leaders help build leadership capacity in the school, “the way I see my role is working with the leadership team. I have teacher leaders to build them up so that they can effectively lead the community.” Another principal acknowledged the role everyone has in the school as a part of leading the work, but particularly emphasised the important role of the teacher leaders:

I would like to think that really, it is our whole staff that is leading the work forward. We have got those key leaders, teacher leaders, in positions to help be those subject experts or be those experts in those key areas to move the work forward, believing in what we are doing.

Overall, in the three schools that participated in the site visits, it was evident that teacher leaders were developing competence in instructional leadership, they were considered instructional leaders, and were contributing members of the school’s instructional leadership team.

Leading a learning community

Consistent with the survey results, all three schools in the second phase of this study focused on instructional improvements in assessment practices. As one of the principals noted, “Our big area of growth is calibrating our assessment across grades, across subjects, throughout the whole building so that we are accurately reporting what kids can and cannot do.” To observe the ways in which the teacher professional learning was enacted in practice, the research team had the opportunity to observe teachers’ classroom practice. In the middle school, the researchers observed a math lesson where students were using tabletop whiteboards to solve problems and engaging in formative assessment practice. The researchers documented how formative assessment strategies such as instructor questioning, and peer feedback were observed. The following excerpt is from the researcher’s observation notes:

The students were seated in small groups of three or four at a table with a moveable whiteboard surface. Each student used markers and they took turns solving the problem projected by the teacher on the Smartboard. In some cases, students each solved the problem on a portion of the board and then together examined the different ways of solving the problem. In other cases, the students worked through the problem together and offered suggestions to their peers for next steps. The teacher circulated from group-to-group and continually assessed students thinking, and provided formative feedback through questioning (e.g., how can you demonstrate that in your equation? What is shown as equivalent? Plug it in and see if it works). Students also comfortably moved around to check-in with other groups and seek peer feedback. The teacher reminded students, “Get up and walk around. See if others have a strategy, you never thought of.” Seeking peer feedback seemed like a common and comfortable practice for students. Students appeared engaged with the problem and on task and the level of challenge seemed appropriate for the students. After approximately 20 minutes wrestling with the problem, the teacher discussed a few key items with the whole class and asked a critical question for students to consider, “What was a common error?” Students discussed common errors they encountered, and the teacher also provided some additional feedback based on observations while circulating among all the groups.

In the high school site visit, researchers observed the use of shared assessment continuums and rubrics. The principal, assistant principal and teacher leader all spoke of the importance of this practice for teacher collaboration and student learning. They described the development process which involved subject area department teams working collaboratively to identify key outcomes from their provincially mandated curriculum and creating department-wide rubrics to guide assessment. The department teams also created competency continuums and shared these with students to help them reflect on their learning over time and recognise the progression of disciplinary competencies through grades 10–12. When visiting the

grade 12 Social Studies classroom, the following excerpt was recorded in the researcher's observation notes:

Students were working with partners to develop a project. In discussing their developing work, several student groups self-initiated using the department shared rubric and continuum as a target to support their work. Students demonstrated a high level of comfort with the rubric and the language used in the continuum. The teacher noted the value of having students utilise the same language in Social Studies from Grade 10-12 because it helps students to recognise the ways in which their learning tasks are interconnected and supports students to build on successes and focus on areas of improvement over time.

In the three schools, it was evident through the site visits that everyone involved had a common instructional focus on assessment strategies and the teacher leaders were described by the interview participants as instrumental in leading the learning community towards improved assessment practices.

Overall, the results in the second phase of this study provided insight into the ways that teacher leaders were brought fully into the school's instructional leadership team. Observations in the classrooms and at the leadership team meetings used to plan professional learning activities helped us understand the ways in which teacher leaders were not only mentored into the leadership teams, but also the pivotal role they held for instructional improvements through a focus on becoming competent as instructional leaders and leading a learning community. Similarly, the interviews conducted during the site visits demonstrated how teacher leaders were positioned to develop competence in instructional leadership and as critical members of the school leadership team, the teacher leaders helped support leading their learning community towards improved assessment practices.

Teacher Leaders Leveraged Supportive School and System Level Structures to Focus on Student Learning

During the site visits and interviews, the participants were also asked to describe opportunities to learn with other colleagues outside of their school.

Sharing artifacts of learning designs and student learning

One of the system level structures commonly discussed by the participants was the DBPL approach that permeated throughout the district. Teacher leaders, assistant principals and principals were all engaged in system wide DBPL focused on student learning through improving and strengthening professional practice. The participants described the iterative cycles of improvement that occurred during each of the DBPL sessions and how they were provided with key insights and resources from other role-specific groups (principals, assistant principals, teacher leaders), and other groups in the district. For instance, a group of beginning teachers and a group of elementary math teachers were also involved in DBPL groups during the time of our study. Participants reflected that they were asked

to discuss the professional learning with their leadership teams since all members were attending the sessions and engaged in similar activities. Principals noted that their discussions about artifacts of learning designs, including videos of student and teacher work, samples of student work, and/or teacher leader insights extended beyond the DBPL sessions and were also shared at the district level. Principals recalled discussions at system leadership meetings with district level leaders that were connected to the topics discussed during the DBPL sessions. Principals highlighted the value of having a common focus on instructional leadership throughout the system and a cohesive through line of DBPL from system meetings through to the daily work of the school leader. The high school principal summarised how it is important for leaders to ensure students have optimal learning experiences and this is one way to gauge if more support is needed to help respond to students' learning needs:

We bring some artifacts to system meetings, area meetings for sure. And how do we keep paying attention to that? Because that is what it is all about. The students in the classroom with their teacher and the content and engaging in worthwhile work. So, how do we know if that fact needs more support in various ways? And if what we think we are doing is working. That is what we need to check.

Participants discussed how sharing artifacts of learning designs was a central part of their instructional leadership work and leading a learning community at the school. The structures used in the DBPL sessions were replicated at the school level and many of the participants shared how these structures helped support mentorship and coaching colleagues at the school. Participants discussed how designing professional learning opportunities at the school also followed a DBPL approach using artifacts of learning designs for professional dialogue. According to the participants interviewed, the practice of colleagues gathering around artifacts of learning designs and engaging in discussions to continually improve learning for all students was a common structure in the DBPL sessions and even during system meetings. The high school teacher leader described the structure as follows:

We have really focused on PLC work so that people are bringing in student projects, saying, "Here is what I have done." We use that fine-tuning protocol to say, "Here is where I wanted them to go. Here is a couple of examples of what the task was that they presented in the end. Here is their projects. Let's talk about it." Then, as a team we can assess, not so much was it a good task, did your design come alive, could you have been more creative on that, but how did the students really demonstrate their learning? Those have been very powerful conversations throughout the last two years about how are students understanding? What it is that we want them to understand? Can we see evidence of that through what they're producing? Then, the teacher can go back and say, "Okay, I can now redesign this based on the feedback of how people see my student's achieving success or not."

Participants discussed leading a learning community through systematically analysing artifacts of student learning to improve practice and the importance of learning alongside colleagues in their schools and in the district.

Facilitating access to research-informed practices

Discussing research was a part of professional conversations that took place during the DBPL sessions and participants commented about how this practice was consistent with approaches also used in district level meetings. District structures, such as a commitment to research-informed practice to support student learning was described by the elementary principal-as follows:

We have a huge commitment to research and that informs my practice. When I go to system meetings, when I go to my area meetings, we are all talking the same thing throughout the system. As a leader I connect to research at that level, share it, then take that research, and say what does it mean in our school... what evidence do I have that there is growth in our school development plan? And then take that piece and then bring it back. Everybody is expected to do that.

The high school principal also noted, that “moving teaching practice forward, I think you have to continually be grounded in what research is saying, it cannot just be pie in the sky or hypothetical.” One of the teacher leaders interviewed from the middle school highlighted the richness of learning communities continually sharing and reflecting on practice, using research-informed strategies, and working in collaborative learning communities:

Everybody would share their work at that time, and then we would look for an area of growth or need, and then the next time we had our next PLC, we would meet again with that cross-grade group, or we would bring back research, or we would bring back strategies ... whatever we needed and talk about share and then go back into our grade team, so we would plan again. Then we were recognising that we needed one more loop in there so we can come back to our grade team to see how everything went because it was great to plan together.

Facilitating access to research-informed practices was another important characteristic of DBPL sessions.

Culture of collaboration and shared responsibility for instructional leadership and leading a learning community

The high school principal shared how collaborative relationships characterise the work and that moving forward requires collaboration and not isolation:

The committee work, the teacher leader meetings, the ways that we operate is all collaborative. I would even say the fact that the school is designed in a certain way. We do not have department offices with one or two exceptions. All of our core subjects, there is no social studies place

to hang out. We have to find each other and collaborate if we want to, but more likely, we will find teachers that are not in our discipline that we are asking questions of. It provides for greater understanding of the depth of what is going on across the entire school.

The assistant principal from the elementary school commented, "I am learning alongside everyone and that is a really big piece with leadership and how you frame everything.... It is important everyone knows why we are sharing and collaborating." The interview participants also discussed how collaboration has been embedded in the structures at the school and district level:

The way in which we work alongside each other support some of that collaboration and the building of one's practice and pedagogy. As a collective we meet, support, share best practices. It could be a staff meeting, it could be a PLC group, full staff PLC. We hear, we listen, we try, we come back, and we share.

Other structures mentioned by the participants that supported their collaboration, included the three-year district plan. The middle school principal described how the three-year plan helps develop a shared responsibility for student success:

Because of the three-year plan and urging from the district as a greater whole which makes sense...we should all be on the same page, and we are not always because we are such a big organisation...it set direction for us initially and then we tailor it to our students.

Similarly, the high school principal emphasised the value of a common through line provided by the three-year district plan and alignment between school-district-education ministry:

As a system, if this is the through line from boots on the ground in my school all the way to our district three-year plan, and even to Alberta Education and our ministerial order, how is everything aligning, how does one thing lead and build on the next so that it is not done in silos but is done sort of as woven tapestry along the way.

The survey results indicated teacher collaboration is widely occurring in schools and this was consistent with the site visits, observations and interviews. The high school principal emphasised how the embeddedness of these structures can possibly lead to future sustainability. Creating a culture of collaboration and a shared responsibility for instructional leadership and leading learning communities has become a common part of the work in schools and in the district:

It cannot just be me because I have a shelf-life. For this to be sustainable, for any kind of change to be sustainable, it really has to be about what is the culture we have created, what is the environment we have created and how does this live with everyone?...It becomes impossible to go back to

the old paradigm, it becomes impossible to go back to old ways, because I think it is great then that kids expect it, parents expect it, and it just becomes the natural way of how we do business.

Overall, teacher leaders leveraged supportive school and system level structures (DBPL approaches, sharing artifacts, research-informed) to focus on student learning. Working collaboratively and taking a shared responsibility for a three-year plan with a focus on student learning were consistently discussed among the participants involved in the second phase of the study.

DISCUSSION

We recognise there are many leadership drivers for school and system success. In our study, we specifically explored how informal teacher leadership in schools impacted system improvement. Informal teacher leaders influenced colleagues and made contributions towards system improvement. The surveys, site visits, observations and interviews helped us understand the ways teacher leaders contributed to improvement within the school and district in this study. Three dimensions of focus associated with those in high-performing systems (Hopkins et al., 2014) emerged from the data in connection to an investment in professional capital that contributed towards system improvements:

1. Enhancing the quality of teaching and learning for school and district improvement.
2. Preserving continuous design-based professional learning.
3. Ensuring opportunity for collaborative learning alongside a network of teacher leaders with a shared purpose.

Enhancing the Quality of Teaching and Learning for School and District Improvement

Informal teacher leaders in this study were engaged in improving their own repertoire of practices while concurrently offering support to their colleagues to improve student learning in the school. The informal role of the teacher leaders in this study confirmed the following three key dimensions of teacher leadership identified by Harris and Jones (2019, p. 123):

1. The importance of teacher leadership as influence rather than a role or a formal responsibility.
2. The idea of teacher leadership as *action* going beyond their formally assigned classroom roles to share practice and initiate changes.
3. Developing pedagogical excellence within their classroom and beyond to influence the practice of others.

When conducting the site visits and observing practice, it was evident that teacher leaders had been engaged in developing pedagogical excellence and a repertoire of practices in the area of shared formative assessment practices. Integrating formative assessment practices is

known as a common challenge area for teachers across grades and disciplines (O'Connor, 2007) and was an intentional focus for instructional improvements in all the schools across the district. Formative assessment has been described as a “driver towards better outcomes” for system success (Fullan, 2021, p. 18). Having a shared direction and priority in the district, such as an agreed upon formative assessment focus, can bring together a learning community around a common point of discussion and in this study, this coherent focus seemed to make a difference in developing overall professional capital (Hargreaves & Fullan, 2012) and as a driver contributing to system improvement.

The informal teacher leaders in this study, leveraging their influence and leading from the middle using a repertoire of practices (Edwards-Groves et al., 2023) that contributed not only to the teaching and learning process within their respective schools but also contributed to the coherence and cohesiveness of the school improvement efforts of the district (Fullan et al., 2015; Hargreaves, 2019; Hargreaves & Shirley, 2020; Hargreaves et al., 2018; Harris & Jones, 2019). Teacher leaders were a source of influence contributing to school improvement and supported a coherent and cohesive focus on formative assessment to improve the quality of teaching and learning in the district. Instead of simply implementing assessment strategies as way to comply and meet strategic priorities in the district, the teacher leaders were part of instructional leadership teams at the school and worked closely with the principal, assistant principal, teachers and students in their respective school communities, and influenced a way of being in schools and in the district described as a culture of collaborative professionalism (Hargreaves & O'Connor, 2018). Informal teacher leaders contributed to enhancing the quality of teaching and learning in their own classrooms and schools through practice, and at the same time contributed to developing a growing culture of collaborative professionalism that permeated throughout the district.

Preserving Continuous Professional Learning

Forms of continuous professional learning whereby teachers examine evidence of learning are emerging. Examining artifacts of learning, such as lesson plans and student work is a part of a high-quality professional learning experiences (Desimone, 2009; Hargreaves & O'Connor, 2018). A common aspect of DBPL is the “process of reviewing work with colleagues and engaging in self-evaluation of their teaching practices through looking at student work with prompts for critical reflection and with guidance from researchers” (Brown et al., 2021, p. 4). Preserving a commitment in the district to engage in continuous professional learning was another consistent feature of the DBPL sessions organised for teacher leaders, assistant principals and principals along with other professional learning communities in the district, such as new teachers and elementary math teachers.

A similar commitment to DBPL approaches was observed at the schools. Teacher leaders established PLCs at their schools and continued to model approaches for examining artifacts of learning with colleagues. Principals practised examining artifacts during DBPL sessions with other principals in the district and were encouraged to meet with their school leadership teams, including teacher leaders, to keep developing this practice

in their schools. The consistent approaches and cycles of inquiry used in the DBPL sessions helped support all teachers, assistant principals and principals with carefully and critically examining artifacts of learning and engaging in professional conversations to improve student learning. There was continuous support and investment for a common approach to professional learning (DBPL) that was embraced by the participants in the three schools we visited. As a system, the district ensured there was continuous professional learning through examination of learning artifacts with peers to help create the conditions for conversation to occur about how to improve student learning. Periods of change can make preserving professional learning a challenge for schools and systems such as turnover in system leadership or during a health crisis and pandemic, so it becomes important to recognise drivers that are contributing to system improvement.

Ensuring Opportunities for Collaborative Learning Alongside Colleagues and Development of a Network of Teacher Leaders

Teacher leaders played a significant role in school and system improvement and developing a collaborative culture to improve student learning (Brown et al., 2020; Friesen & Brown, 2022a). Collaborative learning alongside colleagues is a feature of DBPL that extended to collaborative networks in schools (e.g., grade teams, PLCs, leadership team), and in the district (e.g., teacher leaders, new teachers, math teachers, principals, etc.). DBPL is known as “an approach to professional learning in which teachers engage in sustained, collaborative systematic inquiry and design process with colleagues to improve their own practices and the practices of the community” (Brown et al., 2021, p. 2). Teacher leaders in this study assumed an important role within each of the schools in the district by committing to student-centred learning and collaborating with their colleagues to support them to enhance and strengthen their pedagogical practices. This intentional focus on developing a repertoire of practice extended to school and district networks.

The teacher leaders were instrumental in leading the schools’ PLCs which were structured and organised using DBPL approaches (Friesen & Brown, 2022b). For instance, one of the approaches commonly used was an iterative process for analysing and refining artifacts of learning with colleagues to continuously improve practice consistent with collaborative inquiry models (Rincón-Gallardo & Fullan, 2016). In addition to leading instructional improvement in the schools, teacher leaders became valued members of the instructional leadership team in the three schools that we visited. Everyone in the system has responsibility toward system improvement. In other words, “they have a responsibility to interact with, learn from, contribute to and be a living member of the system as it evolves” (Fullan, 2021, p. 33). A professional capital approach involves investment and support to ensure continuous and collaborative learning can occur alongside colleagues and networks can be formed in schools and in a district with a shared purpose for overall system improvement. Although there are limitations to this study, such as the limited number of site visits that occurred at the end of the school year, and limited observations and interviews conducted in the schools, the results from this study can serve to inform practitioners, researchers, schools, districts and those interested in professional capital investments for system improvement.

CONCLUSION

In the interviews, teacher leaders, assistant principals, and principals discussed their respective leadership competencies within the context of the provincially mandated professional leadership standard (Alberta Education, 2020). The participants indicated they viewed the competencies not as separate entities to be addressed individually, but rather as an interconnected set of competencies that could be realised while giving particular emphasis to instructional leadership and leading a learning community. Teacher leaders attributed their ability to lead a learning community and attend to and lead instructional improvements to their professional growth through participating in the district wide DBPL sessions and network of teacher leaders (Friesen & Brown, 2022a; 2023). Three strategies describing the ways that teacher leaders contributed to system improvement emerged from the study as a way to develop professional capital and these are associated with dimensions of focus in high-performing systems: (a) enhancing the quality of teaching and learning for school and district improvement, (b) preserving continuous design-based professional learning opportunities, and (c) ensuring opportunity for collaborative learning alongside colleagues and the development of a network of teacher leaders with a shared purpose of system improvement. This study contributes to the emerging body of evidence that recognises the significant role of informal teacher leaders and drivers for system improvement.

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