Teacher Leadership Development: Tracking One District’s Progress Over Three Years

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Abstract: This study tracks the progress of one Iowa school district over the course of three years through its implementation of a Teacher Leadership and Compensation (TLC) model, designed in response to a statewide TLC system initiative. A survey administered at baseline and at the conclusion of each of three pilot years measured teacher leadership development, identified specific areas for improvements, and guided the district’s teacher leadership support efforts. Scores from the items demonstrated evidence of reliability and district leaders reported that resulting data were beneficial to an implementation plan that yielded increased planned retention and improved practice, two goals for the TLC model. Implications for the use of the survey tool, policy, and practice around teacher leadership development are discussed in the context of the collective leadership of teachers and administrators together.
Keywords: teacher leadership; school leadership; leadership development; school improvement; shared leadership; distributed leadership; collective leadership

Desarrollo de liderazgo de maestros: Monitoreo del progreso de un distrito durante tres años

Resumen: Este estudio monitorea el progreso de un distrito escolar de Iowa a lo largo de tres años, a través de la implementación de un modelo de Liderazgo y Compensación de Maestros (TLC), proyectado en respuesta a una iniciativa del sistema estatal de TLC. Una investigación administrada al inicio del estudio y en la conclusión de cada uno de los tres años piloto midió el desarrollo del liderazgo del maestro, identificó áreas específicas para mejoras y orientó los esfuerzos de apoyo al liderazgo docente del distrito. Las puntuaciones de los ítems demostraron evidencias de confiabilidad y los líderes distritales relataron que los datos resultantes fueron beneficiosos para un plan de implementación que resultó en mayor retención planificada y mejor práctica, dos objetivos para el modelo de TLC. Las implicaciones para el uso de la herramienta de investigación, política y práctica en torno al desarrollo del liderazgo del maestro se discuten en el contexto del liderazgo colectivo de maestros y administradores en conjunto.

Palabras clave: liderazgo maestro, liderazgo escolar, desarrollo de liderazgo, mejora escolar, liderazgo compartido, liderazgo distribuido, liderazgo colectivo

Desenvolvimento de liderança de professores: Monitoramento do progresso de um distrito durante três anos

Resumo: Este estudo monitora o progresso de um distrito escolar de Iowa ao longo de três anos, através da implementação de um modelo de Liderança e Compensação de Professores (TLC), projetado em resposta a uma iniciativa do sistema estadual de TLC. Uma pesquisa administrada no início do estudo e na conclusão de cada um dos três anos-piloto mediu o desenvolvimento da liderança do professor, identificou áreas específicas para melhorias e orientou os esforços de apoio à liderança docente do distrito. As pontuações dos itens demonstraram evidências de confiabilidade e os líderes distritais relataram que os dados resultantes foram benéficos para um plano de implementação que resultou em maior retenção planejada e melhor prática, dois objetivos para o modelo de TLC. Implicações para o uso da ferramenta de pesquisa, política e prática em torno do desenvolvimento da liderança do professor são discutidas no contexto da liderança coletiva de professores e administradores em conjunto.

Palavras-chave: liderança docente, liderança escolar, desenvolvimento de liderança, melhoria escolar, liderança compartilhada, liderança distribuída, liderança coletiva
Teacher Leadership Development: Tracking One District’s Progress Over Three Years

Teacher leadership has long been advanced as a vehicle for school improvement (Murphy, 2005; Wenner & Campbell, 2017; York-Barr & Duke, 2004), often as a component of distributed, shared, layered, or collective leadership (Eckert, 2018b; Day, Gu, & Sammons, 2016; Hargreaves & Fullan, 2012a; Leithwood, 2010; Leithwood & Mascall, 2008; Seashore-Louis, Leithwood, Wahlstrom, & Anderson, 2010; Spillane, Halverson, & Diamond, 2001). The basic premise of these approaches is that education “leadership” is most productively defined as the work entailed in facilitating school improvement efforts. Thus, leadership is an action that may be undertaken by any effective educator, not predetermined by assigned roles within a school or school system.

However, the development, conditions, and support of this type of leadership can be context-specific and have not been extensively studied (Eckert, 2018a; Smylie & Eckert, 2018) or supported at the state policy level. For the purposes of this paper, teacher leadership is defined as “the practices through which teachers—individually or collectively—influence colleagues, principals, policymakers, and other potential stakeholders to improve teaching and learning” (Eckert, Ulmer, Khatchatryan, & Ledesma, 2015, p. 701).

In 2013, Iowa launched a Teacher Leadership and Compensation System (TLC). The goal of TLC was to improve educational opportunity for all Iowa public school students by developing classroom-based leadership in each district prepared to support students and colleagues. The TLC goals were to attract and retain effective teachers, promote collaboration, reward professional growth and effective teaching, and ultimately improve student achievement.

Acknowledging the realities of equifinality, the recognition of the situational efficacy of different pathways that lead to positive results (Burke, 2014), Iowa allocated $50 million per year to support districts’ design and implementation of TLC models that responded to local student and educator needs. Districts submitted proposals to the Iowa Department of Education (IDE) describing their planned TLC model. If approved, districts received IDE funds and reported annually on their progress. Across three years of implementation, districts were expected to provide evidence of impact to justify continued policy and fiscal support. Policymakers and leaders also needed the data to determine whether and how TLC systems might form a replicable, effective national model for student-centered, teacher-led instructional supports.

Bettendorf Community School District (BCSD) in Bettendorf, Iowa, is a district of nearly 5,000 students. Formed in 1907, BCSD is composed of eight schools and has a district enrollment of 4,607 students, 34% of whom qualify for free and reduced meals. The district has an operating budget of just over $50 million and spends almost $11,000 per pupil. On average, teachers have 12 years of experience in education and almost 10 years of experience in BCSD. The high school graduation rate is 93.3% and the district exceeds state and national averages for student achievement (Bettendorf Community School District, 2018).

Their TLC Model was among the first approved by the state and was designed to 1) serve as a vehicle to transform teaching and learning practices to increase overall student achievement and eliminate current achievement gaps; 2) retain the most effective teachers by providing teacher leader career opportunities with increased leadership responsibilities and compensation; 3) establish a process where teacher leaders can assist colleagues through the continuous learning process; 4) promote additional collaboration between and among teacher teams to impact student achievement positively; 5) identify, clearly define and assess the knowledge, skills, and competencies that teachers need in order to assume and retain meaningful leadership roles within the district, and how these forms of leadership can be distinguished from, but work in tandem with, existing teacher leader and
administrative roles; and 6) develop a culture of collegiality, trust, and respect in which all teachers and administrators demonstrate and value the ability to collaborate, think critically and creatively, and work in teams to continually improve the teaching and learning process.

In 2014, the BCSD superintendent engaged the authors to collect baseline perceptual data on school conditions that are conducive to teacher leadership that improves collegiality, teaching practice, strategic retention of educators, and student outcomes. For three years, we administered the same survey tool of 166 items to teachers, teacher leaders, and administrators about the implementation and initial outcomes of their TLC model.

As such, this paper represents an effort to bridge policy and practice around the emerging field of teacher leadership for school improvement through as captured by a survey instrument. We use applied research approaches, grounded in existing literature and an analytic model, to test the reliability of survey responses as we conducted a pragmatic program evaluation of a scaled teacher leadership intervention. As a means of determining progress, we will explicate the framework and the survey response’s reliability to demonstrate their utility in collecting reliable responses about readiness and progress toward teacher leadership development.

**Theoretical Framework**

To better understand teacher leadership development comprehensively and evaluate success in a given district or state systems context, we developed multiple iterations of an analytic model (Smylie & Eckert, 2018). A conventional literature search and identification processes using scholarly electronic search engines, book searches, and the review reference lists of known sources as a “snowballing” technique of identifying additional sources and discerning key wide-cited sources within the broader literature were used to build the teacher leadership development model. We based the survey on the analytic model as well as a wide range of research that included the literature reviews and original empirical work of Lieberman and Miller (2004), Murphy and his colleagues (Louis, Mayrowetz, Murphy, & Smylie, 2013; Mayrowetz, Murphy, Louis, & Smylie, 2007; Murphy, 2005; Murphy, Smylie, Mayrowetz, & Louis, 2009; Smylie, Mayrowetz, Murphy, & Seashore-Louis, 2007), Smylie and his colleagues (Smylie, 1997; Smylie & Brownlee-Conyers, 1992; Smylie, Conley, & Marks, 2002; Smylie & Denny, 1990; Smylie & Mayrowetz, 2009), and York-Barr and Duke (2004).

Additional literature included research on work design and redesign (e.g., Campion, Mumford, Morgeson, & Nahrgang, 2005; Hackman & Oldham, 1980; Humphrey, Nahrgang, & Morgeson, 2007) and leadership development generally and across organizational type and sector (e.g., Avolio, 2010; Conger, 1992; Day, Zaccaro, & Halpin, 2004; Fulmer, 1997; Popper, 2005; Van Velsor, McCauley, & Ruderman, 2010; Yukl, 2013). Specifically, we used the early theoretical work design literature, notably that of Hackman and Oldham (1980), to conceptualize teacher leadership and to examine its potential efficacy, considering this type of leadership as redesigned work (Mayrowetz, Murphy, Louis, & Smylie, 2007; Smylie, 1994). This redesigned work should result in collective leadership development: the work through which teachers and administrators collaboratively influence colleagues, policymakers, and others to improve teaching and learning at a range of levels in a given education system (Eckert, 2018a, 2018b).

Seven antecedent conditions are necessary to give rise to the systemic development of teacher leadership that can promote school improvement and affect student outcomes. We present these conditions as seven constructs, with multiple dimensions and functions associated with each. Of the seven constructs, we argue that first four are antecedent to the other three, acknowledging the systemic interactive relationships among all seven. By seeking such prioritization, we are not minimizing the importance of any construct or the situational nature of their relationships or need
for development. Rather, this emphasis allows school districts to better determine readiness and prioritize resources for teacher leadership support and development.

Acknowledging the systemic interactive relationships that likely exist among these conditions, theoretical and empirical literature suggests that some of these conditions are likely antecedent to others. The order of our Constructs indicates the priority given to each one. This ordering indicates that Constructs 1, 2, and 3 are crucial, first order conditions to be met. Without a coherent vision and strategy, supportive administrative leadership, and adequate resources, it is unlikely that teacher leadership development will occur, much less be sustained. Additionally, without appropriate and sufficient resources, those who engage in the task of teacher leadership development will have nothing with which to work (Bass, 1990; Firestone, 1996; Smylie, 2010; Yukl, 2013).

Our review of the literature led us to identify and prioritize the seven constructs as follows (see Figure 1):

Construct #1: Vision and strategy for teacher leadership
Construct #2: Supportive administrative leadership
Construct #3: Appropriate and adequate human, fiscal, and physical resources
Construct #4: Work design
Construct #5: Supportive social norms and working relationships
Construct #6: Constructive organizational politics
Construct #7: School orientation toward improvement

Outputs and outcomes resulting from effective exercise of the seven conditions are shown moving to the right of the model, including development experiences, teacher leadership capacity and practice, and initial outcomes (see Figure 1).

Figure 1. Analytic Model for Teacher Leadership Development

To better understand teacher leadership development, we developed a survey based on the seven conditions and initial outcomes in the analytic model. The survey was administered to both
teachers and administrators. Responses were compared as there is typically a disconnect between teachers and administrators' perceptions. For example, a recent survey by RAND (Johnston, Akinniranye, & Doss, 2018), found that 96% of principals surveyed feel that teachers are involved in making important school decisions while only 58% of teachers do. These types of findings demonstrate the need for these types of survey tools that describe the conditions at schools from different perspectives. We used the survey to answer two research questions that frame our study:

1. What is the reliability of the survey responses when organized by model constructs?
2. How do these survey data inform teacher leadership development?

Methods

Data Collection

We administered the 166-item survey to all BCSD instructional staff at school and district level at baseline and at the end of each of three years. While we did not link individual respondents across all three years, the repeated cross-section and limited (less than 5%) annual turnover in the district from year to year combined with a high response rate allowed for adequate comparison of response cohorts. The survey took approximately 30-40 minutes to complete during a spring in-service day each year. Document review and a combination of phone and in-person interviews with key district personnel informed our understanding of the context for BCSD’s TLC Model, plans for its implementation and support, and resulting outcomes.

Analytical Methods

We analyzed the survey annually using descriptive and inferential statistical analysis of results including analysis by school, experience, and role using ANOVA and post-hoc Tukey HSD tests to determine significant differences between groups. For roles, we compared administrators, teachers, and teacher leaders. BCSD defined teacher leaders as “instructional coaches, model teachers, house/team leaders, and curriculum/professional development leaders.” Model teachers were specifically identified as part of their TLC Model and were teachers who were able to be observed by other teachers in order to spread their expertise.

In order to compare means, we converted Likert scale items to numerical values, with 1 as a least positive response (“strongly disagree” or a rarely occurring experience) and 5 as a most positive response (“strongly agree” or a frequently occurring experience). All differences within a 95% confidence interval were considered in the analysis. Treating Likert scale responses as interval data can be problematic (Carifio & Rocco, 2007; Clason & Dormody, 1994). For the purposes of this study, however, doing so allowed us to identify patterns or trends that provide for relative comparisons across years. Concision and clarity are achieved with minimal impact on precision (Rea & Parker, 2005).

We used independent samples t tests, and one-way between-subjects ANOVA to determine significant differences between groups. Additionally, paired-samples t-tests were used to compare items that asked respondents to report on their perceptions before implementation of the TLC Model and now (at the time of the survey administration each year). This item construction was important for determining changes in perception that might give some indication of initial outcomes. All of these items were analyzed, and all significant differences within a 95% confidence interval were reported to BCSD.

In order to determine reliability, item responses were grouped according to the seven model constructs and analyzed across all three years using Cronbach’s alpha. By doing this, we were able to determine whether items could be reported at the construct level in future iterations. This step was
essential for increasing the ease with which data could be communicated as the average length of our annual reports was over 40 pages. Being able to report items at the construct level will increase the ease and reliability of reporting.

Findings

The response rates each of the three years, was exceptionally high: 2015 (n=281, an 89% response rate), 2016 (n=262, a 75% response rate), and 2017 (n=304, an 87% response rate). Analyses demonstrate the reliability of the survey responses for assessing the presence and improvement of conditions that support teacher leadership with a high degree of coherence across the seven constructs. Its application as a tool for improvement and evaluation of BCSD’s TLC Model resulted in positive outcomes for the district in meeting its goals for the Model’s implementation, particularly in 1) positioning educators to problem-solve challenges for their schools and students, 2) building collegiality among teachers and administrators, and 3) increasing planned retention of educators. We discuss these general findings in greater detail below, and discuss implications for the field in our concluding section.

Reliability of the Survey Responses

Using all three years of data collection, we found the survey responses to be highly reliable when organized by construct. The reliability of items, ranging from fair (α = .747) to excellent (α = .982) based on constructs, indicated coherence. For representative items from each of the constructs and their reliability, see Table 1. The reliability of the items extended to disaggregated responses as well. For example, for supportive administrative leadership, the responses were disaggregated by role: teachers, teacher leaders, and administrators. On the 21 items, the items were reliable by subgroup for teachers (α = .966), teacher leaders (α = .958), and administrators (α = .895).

Table 1
Sample Survey Probes by Construct

<table>
<thead>
<tr>
<th>Construct and Reliability</th>
<th>Sample Survey Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision and strategy for Teacher Leadership</td>
<td>The teacher leadership initiative has been put into place exactly as it was planned.</td>
</tr>
<tr>
<td>(3 items, α = .764)</td>
<td></td>
</tr>
<tr>
<td>Supportive administrative leadership</td>
<td>To what extent are administrators engaged in the following activities to create conditions that support teacher leadership: Advocate for the idea of teacher leadership</td>
</tr>
<tr>
<td>(21 items, α = .982)</td>
<td></td>
</tr>
<tr>
<td>Resources (appropriate and adequate human, fiscal, and physical resources)</td>
<td>Teachers who have come into leadership work are very capable for performing this work well.</td>
</tr>
<tr>
<td>(10 items, α = .808)</td>
<td></td>
</tr>
<tr>
<td>Work design</td>
<td>To what extent are the following goals for teacher leadership being accomplished by the initiative? Create new opportunities for teachers to learn from each other</td>
</tr>
<tr>
<td>(3 items, α = .747)</td>
<td></td>
</tr>
<tr>
<td>Supportive social norms and working relationships</td>
<td>Please indicate below how your working relationships with different groups of people may have changed with the implementation of the teacher leadership initiative: Working relationships with school-level administrators</td>
</tr>
<tr>
<td>(6 items, α = .857)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 cont.

Sample Survey Probes by Construct

<table>
<thead>
<tr>
<th>Construct and Reliability</th>
<th>Sample Survey Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructive organizational politics (15 items, $\alpha = .906$)</td>
<td>How much influence did you have in your relationships with the following groups of people before/after the teacher leadership initiative went into effect: other teachers in my school, administrators in my school, teachers in other schools in my district, district administrators.</td>
</tr>
<tr>
<td>Orientation toward improvement (10 items, $\alpha = .856$)</td>
<td>To what extent did you agree or disagree with the following statements before/after the implementation of the teacher leadership initiative? I can be successful with every student.</td>
</tr>
<tr>
<td>Initial outcomes (32 items, $\alpha = .952$)</td>
<td>I feel that I am making a significant educational difference in the lives of the students at my school.</td>
</tr>
</tbody>
</table>

In addition to the understanding the reliability of the responses, BCSD needed data on initial results related to their TLC Model. As we were testing the reliability of the items, we collected and analyzed data on initial outcomes and changing conditions. These questions allowed us to track progress over time. Using 32 items to track initial outcomes around improved teacher leadership development, practice, and outcomes of that practice, we found that the scores were highly reliable ($\alpha = .952$). Without additional data to triangulate these findings, these results were primarily descriptive of possible leading indicators of future improvement.

As we were testing the reliability of the responses based on constructs, we were also providing formative feedback to BCSD. These results were descriptive of the changes in perception that occurred over three years. Results show that on nearly every indicator, BCSD has shown marked improvement against the TLC Model’s goals. After comparing all 166 probes between 2015 and 2017, the only statistically significant changes were positive. Our analyses occurred annually and compared changes across years; teachers, teacher leaders, and administrators; and school and experience level. The specific data were particularly useful for the district. However, in order to answer our second research question, we will provide a number of illustrative examples.

**Survey Data and Teacher Leadership Development**

According to survey results, the TLC Model intensified and made more visible areas of strength that were already present in BCSD prior to implementation (see Table 2). These included collaborative culture and shared leadership; principals’ support for teachers’ roles as instructional and professional learning leaders; individual capacity of teacher leaders; and access to resources for collaborative learning and collaboration among staff, particularly time (all rated on five-point scales). Over the course of implementation, teacher leaders reported a significant increase (on a four-point scale) in their influence on teachers and administrators at the school and district levels. The greatest reported increase in influence was on administrators in the teacher leader’s school. In addition to a significant increase in time working with teacher leaders, teachers reported increased abilities of teachers to develop leadership in others, improved problem-solving and innovative solutions, and increased ability to improve one another’s practice.

Teachers and teacher leaders also reported that their principals had changed over the course of three years (see Table 2). Principals were significantly more likely to be able to secure resources for professional learning, involve others in decision making, collaborate with teachers to determine leadership tasks, and expand the power of teachers.
Table 2

Significant Differences Based on Items Before TLC and After Three Years of TLC

<table>
<thead>
<tr>
<th>Item</th>
<th>Before</th>
<th>sd</th>
<th>After</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>The principal is comfortable expanding the power of teachers (n=241).</td>
<td>3.62</td>
<td>0.85</td>
<td>3.80</td>
<td>4.15**</td>
</tr>
<tr>
<td>The principal collaborated with teachers to determine leadership tasks (n=241).</td>
<td>3.51</td>
<td>0.87</td>
<td>3.69</td>
<td>3.18**</td>
</tr>
<tr>
<td>The principal believes that involving others in decision making will likely produce better decisions (n=240).</td>
<td>3.62</td>
<td>0.88</td>
<td>3.87</td>
<td>5.05**</td>
</tr>
<tr>
<td>The principal is able to secure resources and opportunities for teacher professional learning and development (n=241).</td>
<td>3.77</td>
<td>0.78</td>
<td>3.93</td>
<td>3.69**</td>
</tr>
<tr>
<td>Approximately how many hours per week, on average did you spend working directly with teacher leaders (n=203)?</td>
<td>1.44</td>
<td>0.80</td>
<td>1.73</td>
<td>5.37**</td>
</tr>
<tr>
<td>There are teachers who have the ability to work well with and help other teachers improve their practice (n=241).</td>
<td>4.10</td>
<td>0.62</td>
<td>4.29</td>
<td>4.77**</td>
</tr>
<tr>
<td>There are teachers who can think through problems well and come up with innovative solutions (n=240).</td>
<td>4.12</td>
<td>0.62</td>
<td>4.32</td>
<td>5.33**</td>
</tr>
<tr>
<td>There are teachers who have the ability to develop leadership in others (n=241).</td>
<td>4.04</td>
<td>0.64</td>
<td>4.23</td>
<td>4.47**</td>
</tr>
<tr>
<td>Teacher leaders’ influence: Other teachers in my school (n=40).</td>
<td>2.30</td>
<td>0.82</td>
<td>2.97</td>
<td>4.52**</td>
</tr>
<tr>
<td>Teacher leaders’ influence: Administrators in my school (n=40).</td>
<td>2.05</td>
<td>0.78</td>
<td>2.80</td>
<td>5.64**</td>
</tr>
<tr>
<td>Teacher leaders’ influence: Teachers in other schools in my district (n=40).</td>
<td>1.55</td>
<td>0.74</td>
<td>2.10</td>
<td>4.64**</td>
</tr>
<tr>
<td>Teacher leaders’ influence: District administrators (n=39).</td>
<td>1.43</td>
<td>0.59</td>
<td>1.97</td>
<td>5.23**</td>
</tr>
</tbody>
</table>

**p < .01 based on paired samples t test
*p < .05 based on paired samples t test

Perceived Growth Around Collaborative Culture and Collective Leadership

BCSD educators reported a continued trend of progress against several key indicators related to development of trust and collaborative decision-making. First, respondents’ perceptions were more positive about teachers’ readiness to co-lead improvement processes in schools and their ability to develop leadership in others. Although the magnitude of changes was typically small, these differences were statistically significant and likely to be related to the TLC Model implementation. Teachers had a significantly increased sense of efficacy since the TLC implementation. Moreover,
the fact that increasingly positive perceptions were reported by all educators suggests that the initiative is building a sense of collective efficacy across roles, as well as improving the capacity of individuals serving as or served by teacher leaders in the Model (see Table 3).

Table 3

<table>
<thead>
<tr>
<th>Significant Changes Based on Items Before TLC and After Three Years of TLC – Collective Efficacy</th>
<th>m</th>
<th>sd</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>The principal is comfortable expanding the power of teachers ( (n=241) )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>3.62</td>
<td>0.85</td>
<td>2.56**</td>
</tr>
<tr>
<td>After</td>
<td>3.80</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Collectively, the teachers at this school can solve most any problem, no matter how difficult ( (n=241) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>4.00</td>
<td>0.77</td>
<td>2.56*</td>
</tr>
<tr>
<td>After</td>
<td>4.09</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>I can work well with administrators at this school ( (n=239) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>4.09</td>
<td>0.77</td>
<td>3.58**</td>
</tr>
<tr>
<td>After</td>
<td>4.23</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>If I put my mind to it, I can work well with any teacher at this school ( (n=241) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>4.11</td>
<td>0.75</td>
<td>2.96**</td>
</tr>
<tr>
<td>After</td>
<td>4.21</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>I can be successful with every student ( (n=241) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>3.82</td>
<td>0.85</td>
<td>3.67**</td>
</tr>
<tr>
<td>After</td>
<td>3.95</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>If I try really hard, I can make progress with even the most difficult and unmotivated students ( (n=241) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>4.05</td>
<td>0.76</td>
<td>2.18*</td>
</tr>
<tr>
<td>After</td>
<td>4.13</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>My principal values the work I do at this school ( (n=241) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>3.84</td>
<td>0.96</td>
<td>3.17**</td>
</tr>
<tr>
<td>After</td>
<td>3.97</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Teachers at this school value the work I do at this school ( (n=240) ).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>3.87</td>
<td>0.90</td>
<td>3.17**</td>
</tr>
<tr>
<td>After</td>
<td>4.00</td>
<td>0.90</td>
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\* \* \( p < .01 \) based on paired samples \( t \) test

\* \( p < .05 \) based on paired samples \( t \) test

In addition, respondents reported that since implementation, principals were viewed as being significantly more comfortable expanding the power of teachers, more likely to collaborate with teachers to determine leadership tasks, and more likely to believe that involving others in decision making is likely to produce better decisions (see Figure 2).
**Teacher Leadership Development**

**Design of and Support for Teacher Leader Roles**

Teacher leader positions within the TLC Model were intended to focus on supporting job-embedded, collaborative learning. Starting in 2015-16, this included a particular emphasis on data-informed reflection and improved classroom assessment strategies. Teachers indicated that they were most commonly collaborating (58%) to use “data to inform instruction and inquiry.” The second most common response (56%) was to “design student assessments.”

Respondents were significantly more positive in 2017 than 2015 about how the TLC Model overall was accomplishing district goals for the pilot, including an 11% increase in perceptions of student learning improvements and an 8% increase in influence on instructional practice were significant. A 9% increase between 2015 and 2017 in the influence on the quality of the district-level decision-making was also significant.

Teacher leaders responded to several items assessing the perceived quality and relevance of their professional development each year. Of those teacher leaders, 87% rated their professional development in each content category at least “somewhat” valuable. This represented significant improvement from prior to TLC Model implementation, and compares very favorably with national survey data that suggest that one in five teachers are satisfied with the in-service experiences their districts provide (Grunwald Associates LLC & Digital Promise, 2015).

Additionally, early career teachers had more positive perceptions of the TLC Model than their more seasoned peers, specifically on providing professional support for beginning teachers and with their overall satisfaction with teaching as a career. Teachers with three or less years’ experience were more likely to report favorable perceptions of working relationships with other teachers and administrators, the degree to which principals were willing to expand autonomy for teachers, and the efficacy of teachers in their schools.

Teaching experience level did not consistently make a difference in survey responses—but teachers’ perceptions about the success of the TLC Model did vary, sometimes significantly, by
Beginning teachers (0-3 years) were significantly more positive than more veteran teachers (4+ years) about the impact of TLC on several important initial outcomes around governance, learning, instruction, and support in their classrooms (see Figure 3).

**Figure 3.** The extent to which the following goals for teacher leadership are being accomplished by the initiative: response differences between beginning teachers (0-3 years) and experienced teachers (4+ years)

* *p < .05  ** *p < .01 based on independent samples t test of 2017 responses

**Increased Collective Teacher Efficacy**

Initial outcomes demonstrated leading indicators of future student achievement gains (See Table 3). Respondents were significantly more likely in 2017 than before implementation to agree or strongly agree that they “can make progress with even the most difficult and unmotivated students” (+2 percentage points to 87%), that classroom instruction has improved (+8 percentage points to 82%), and that student learning has improved (+11 percentage points to 81%).

**Variations in Perceptions by Educator Role**

Individuals in different roles had different perceptions of TLC model implementation. The most notable of these gaps was evident around the extent to which new opportunities provide support for administrators in their work promoting working relationships with teacher leaders, engaging teachers collaboratively across a number of indicators, and supporting conditions that accelerate teacher leadership development and effectiveness. Administrators were significantly more positive than teachers and teacher leaders about the leadership development opportunities and influence of teacher leaders. Responses on the extent to which instructional improvements are occurring and the strengthening of academic expectations and outcomes for students followed a similar pattern.
**Discussion**

While focus groups and interviews would be needed to fully understand many of the issues raised by this study, the survey responses are reliable and provide insights that can be used by practitioners for improved implementation of leadership development efforts. Our analytic model suggests that all seven conditions are important for improved teaching and leadership practice, which positively influence teachers’ retention and student learning growth (Jackson & Bruegmann, 2009; Kraft & Papay, 2016; Ronfeldt, Farmer, McQueen, & Grissom, 2015). These in turn lead to continuous school improvement (Hargreaves & Fullan, 2012; Murphy, 2005; Smylie, 2010). The items related to collective teacher efficacy, the belief that a group of teachers can make progress with all students are particularly encouraging. With an effect size of 1.57, collective teacher efficacy is one of the most influential factors on improved student outcomes (Hattie, 2015). Additionally, the survey results demonstrated significant differences between teachers and administrators’ perceptions of opportunities for teachers to lead and contribute to decisions (Johnston et al., 2018).

We also found teacher leadership development to be inadequate to meet the demands of the district. Teachers and administrators need time and opportunity to develop leadership work together. Teacher leadership needs to expand to collective leadership. Collective leadership is the work through which teachers and administrators influence colleagues, policymakers, and others to improve teaching and learning (Eckert, 2018a, 2018b). In its most basic form, collective leadership in schools is the work that is done toward shared goals.

The findings also reinforce the notion of “equifinality” (Burke, 2014). As the model indicates, there are multiple feedback loops from the enactment of leadership work that influence school conditions. The leadership work and school conditions vary by context and also change as leadership is developed. This makes prescribing a formula for the development of teacher and collective leadership impossible; however, by identifying the iterative process and finding constructs across contexts, data can be collected that can serve as progress monitoring. By monitoring progress, schools and districts can make mid-course corrections that can enhance implementation. Across all sectors, leadership development is complex and messy (Yukl, 2013). By not sanitizing the analysis of that development, the model allows researchers and practitioners to see more clearly how conditions impact outcomes and outcomes impact conditions in context-specific ways. By seeing these complexities more clearly, policymakers should be less likely to attempt “one-size-fits-all” development efforts (Clarke & Dede, 2006). Furthermore, by examining development based on the seven constructs, districts might be able to determine schools or locations where they are likely to achieve success. With the reliability of the responses now established, we can report scores to schools and districts by construct which should increase the utility of the tool.

In addition to testing the model and describing the complexity of leadership development, we provided a district with data for reporting purposes and implementation improvement. Teacher leadership development is contingent on vision and strategy, supportive administrative leadership, adequate resources, work design, supportive norms and relationships, constructive organizational politics, and the school’s orientation toward improvement. In the descriptive findings for BCSD, the constructs are evident. Moreover, they have been reinforced by the TLC Model as the development experiences and increased leadership capacity continue to influence the conditions.

These iterative feedback loops create some ambiguity between causes and results. For example, there is a lack of clarity around whether the TLC Model is improving teachers’ leadership competencies, or whether increased opportunities to demonstrate those competencies simply made extant skills more visible. Likewise, principals may always have been open to supporting teachers’ co-leadership and simply had fewer explicit avenues for doing so until now. Either way, the TLC
Model appears to be moving the district toward its goal around identifying teacher leadership and strengthening a culture of collective leadership.

Moreover, nationally, 20\% of teachers report satisfaction with the quality of the professional learning experiences they receive through their districts or other formal structures (Grunwald Associates LLC & Digital Promise, 2015). In BCSD, 87\% of Bettendorf’s teacher leaders rated their professional development in each content category at least “somewhat” valuable. This appears to be a positive result that is at least related to the TLC Model.

Sources of variation between groups is difficult to determine without accompanying qualitative evidence. For example, there were differences between early career teachers and their more experienced counterparts. In most cases, the early career teachers were more positive about the influence of the TLC Model. Certainly, the TLC Model is intended to most support and influence retention of early career educators. Taken at face value, these results seem to reflect success. However, it may be that less experienced teachers have a correspondingly less clear picture of actual needs and the extent to which they are likely to be met, resulting in an unusually positive response.

The district will likely need to broaden its development efforts to encapsulate collective leadership so that teachers and administrators can develop together doing requisite leadership work. Parallel efforts to develop teachers and administrators are insufficient to meet the demands of schools. The significant changes we continue to observe in other indicators—particularly around collaboration, leadership, and decision-making in schools—do correlate with improved teacher retention over time in other studies (Gray & Taie, 2015; Johnson, 2004; Shen, 1997). This is encouraging as relational trust (Bryk & Schneider, 2002) is built over time and is a necessary condition of collective leadership.

Progress toward goals of school change processes like the ones in BCSD’s TLC Model is not similar across all goals at once (Murphy, 2005; Smylie, 2010). Trust and relationship-building (Bryk & Schneider, 2002; Bryk, Sebring, Aliensworth, Luppescu, & Easton, 2010), definition of roles and work (Firestone, 1996), clarification of vision and purpose around new initiatives, and a sense of familiarity with other structural and cultural elements of the intended changes typically appear first. If designed and implemented successfully, those systems will then generate effects on collaboration and professional learning, which give rise to desired shifts in the practices of teaching and leading schools. Only later—sometimes years later—are the distal impacts on student learning, teacher retention, and teacher recruitment realized.

Limitations

These analyses have several limitations. First, while we have the benefit of high response rates and three years of data collection, the BCSD responses could not be compared to other districts in the state as other districts were not compelled to use this specific tool. Instead, other districts participated in summative evaluations of outcomes from their respective TLC Models rather than examining the specific shifts, practices and processes leading to those outcomes.

Second, teacher leadership development is challenging to triangulate with distal student outcomes. Although BCSD has a strong record of student achievement, connecting those results causally to teacher leadership development over three years is challenging. The perception of teachers and administrators is that teaching and learning have improved as a result of the TLC Model, and few other new programmatic or policy interventions were implemented during the pilot period, but BCSD has not empirically established links between the TLC Model and student outcomes.
Third, without additional data for triangulation (Patton, 2002), moving beyond the basic inferential statistics used in the survey analysis would be problematic. The analytic approaches we chose allowed us the most relevant application of rigorous research methods in the service of pragmatic work in the field.

Conclusions

As a state, Iowa has made a significant investment in teacher leadership. Other districts and schools have made, or are considering, investments in teacher leadership. Evidence of impact and data on implementation will be essential to the success of any of these initiatives. Data such as these provide formative feedback on implementation and potential impact. While much of this analysis is at the item level and would benefit significantly from interviews, focus groups, and other qualitative evidence, the data here provide indications that respondents are positive about the changes in culture, working conditions, leadership, and instruction. The reliability of responses by constructs has potential to improve future research and practice. Additional triangulation of data including teacher retention data, teacher and administrator evaluations, as well as student achievement data is also necessary. However, these data indicate positive trends that appear to demonstrate improved working conditions, teaching, and learning.

As teacher leadership becomes collective leadership, survey tools that provide formative feedback of progress and initial outcomes that prioritize collective teacher efficacy will be valuable. The survey will be useful for formative feedback but not as an evaluative tool. The progress that BCSD was captured over time and used by teachers and administrators to assess and drive the changes that their context required. We are currently working with and across districts to use data like these to drive improvement toward meaningful goals. In combination with supportive administration, relational trust, and positive orientation toward inquiry, and a belief that progress is possible, districts in states like Iowa and South Carolina are making strides toward a collectively led shared vision that benefits students.

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