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# DEVELOPING LEADERSHIP CAPACITY TO IMPROVE STUDENT LEARNING

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## Abstract

Many research studies are examining the link between school leadership and improved student learning. This article describes a collaboration in which university professors in educational leadership and administrators in a public school district have taken the challenge of developing leadership capacity to pursue deep implementation of a professional learning community, which will cultivate high levels of success for all students. We use the Learning Community Culture Indicator, or LCCI, to monitor the effectiveness of leadership training in supporting a high-functioning professional learning community in each school within the district. In this article, we share student achievement and LCCI results after our first 18 months of training, and make recommendations for ongoing leadership development.

## INTRODUCTION

School improvement and changes in professional development have been a focus of academic study for more than four decades. Research studies sponsored and published in the early 1980s by the newly created United States Department of Education inspired a public outcry for improved schools across America. Unfortunately, the demand for change has not been silenced by decades of research and policy-making focused on school improvement (Sergiovanni, Kelleher, McCarthy, & Fowler, 2009). Practitioners have scrambled to research and implement relevant and effective professional development opportunities for teachers and leaders. Following an extensive 1984 study of curriculum and teacher development, Huberman and Miles noted that "commitment follows competence" and encouraged school and district leaders to focus on building the competence of teachers by implementing effective teaching strategies versus focusing on motivation for the needed change (Joyce & Calhoun, 2012). Professional learning communities came on the scene and were heralded as the most promising practice for achieving school improvement since they often lead to high levels of learning for all students (DuFour, DuFour, Eaker, & Many, 2010).

This article evaluates the efforts of professors from a mid-size, Minnesota university to assist a metropolitan public school district in its goal to transform the organization into a high-functioning learning community through ongoing, job-embedded professional development, with the ultimate goal of improved achievement for all student groups. The purpose of our collaborative work, and the proposition we put forward for study and debate, is that focused professional development of leaders triggers shifts in school culture that improve student achievement. To measure the effectiveness of our collaborative work, we monitored two outcomes: shifts in the professional learning community and changes in student achievement results. To report on shifts in the development of a professional learning community, we use annual survey results collected to monitor and measure the perception of staff (both teacher and leadership) on eight commonly identified elements of a learning community using the Learning Community Culture Indicator, or LCCI (Williams, Matthews, Stewart & Hilton, 2007). To report on student achievement, we use trend data as evidence from the Minnesota statewide assessment system, as reported by the Minnesota Department of Education (MDE, 2013).

### Leadership and School Improvement

Alongside this mix of research and development of educational practices and professional development are decades of study and debate on the effect leadership has and does not have on student achievement. Much of the collected evidence on the effect of leadership on student achievement has been inconsistent and sketchy (Leithwood & Louis, 2012). Research to quantify the leadership-learning connection continues to this day, while the connection between how leaders lead and what they must do to improve schools continues to be elusive. However, one recently published five-year study confirmed, "Leadership, whether from principals or teachers through their work in professional communities, matters for student achievement…," and that leadership shapes culture and creates a focus on instructional practices, both of which contribute to higher levels of student improvement (Leithwood & Louis, 2012).

## Leadership and Improved Student Achievement

The challenges of school improvement initiatives are many fold. It is essential to ensure high levels of learning for all, specifically by identifying relevant and effective professional development for teachers and leaders, which translates into improved student learning while transforming the school culture into a professional learning community. Even with the development of a professional learning community, the illusive connection between leadership and school improvement remains. District, school, and teacher leaders work diligently to provide excellent learning conditions and outcomes for their students. Yet, school improvement, particularly improved student achievement for all student groups, continues to be an unreached target for many schools. Michael Fullan, a well-known school reform advocate, is quoted as saying, "American school reform initiatives are severely lacking as evidenced by lack of improvement" (Fullan, 2010). Bringing this closer to home, the 2009 Minnesota Minority Education Partnership State of Students of Color Report (MMEP, 2009) confirms that Minnesota has one of the highest achievement gaps in the nation between black and white students and this gap has persisted for decades, despite a multitude of efforts to narrow or eliminate the achievement gap.

## Literature Review of Essential Themes

This section offers a review of the literature related to professional learning communities, the Learning Communities Culture Indicator, the connection between leadership and school improvement initiatives, and best practice professional development for educators.

### *Professional Learning Communities*

Discussing the purpose, design, and results of this study requires a brief overview of the concept of professional learning communities, which are defined as an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve (DuFour et al., 2010).

Three core beliefs are fundamental to a professional learning community:

1) The purpose of the school is to ensure all students learn at high levels.
2) All students learn best through a collaborative and collective effort.
3) Student achievement results and other evidence of student learning must be used to assess effectiveness.

In response to these beliefs, professional learning communities are dedicated to using the results of student learning to inform and improve their professional practice by actively responding to students who need intervention or enrichment (DuFour et al., 2010).

Similar defining components of a professional learning community in an organization are found throughout the literature. The common elements indicative of a high-functioning professional learning community are:

1) A focus on learning.
2) A collaborative culture focused on high levels of learning for all.
3) Common use of collective inquiry to investigate issues uncovered in current school data and best practice.
4) An action orientation to problem solving and proactive instructional design.
5) Adoption of a continuous improvement mindset throughout the culture.
6) A focus on results to measure growth and progress in terms of student success indicators.

(DuFour et al., 2010)

*Learning Community Culture Indicator*

Educational professionals have worked over the past 10 years to create measures to monitor evidence of commonly identified components of a professional learning community within an organization. One such measure is the LCCI, which was developed by a group of researchers dedicated to supporting practitioners in the pursuit of developing high-functioning professional learning communities, in order to reform education and achieve higher levels of academic success for all student groups (Williams et al., 2007). The authors of this paper and implementers of the professional development model underway in this project share the approach of Williams, Matthews, Stewart and Hilton. The literature on professional learning communities was studied to develop a ten-element model to represent a unified and re-conceptualized list of characteristics of a professional learning community. The LCCI was developed to measure implementation of professional learning community, and was later revised to collapse elements measuring similar constructs, leaving the eight LCCI categories currently in use today (Stewart, 2009).

*Leadership and Student Achievement*

Competent and unified district and school leadership is essential to sustaining school improvement initiatives. Research has identified seven conditions that correlate to effective schools. Further research found that these seven conditions were insufficient for long-term school improvement and that individual schools could not remain effective without the support of the central office (Lezotte, 2008). Leithwood and Louis (2012) recently published a significant piece of work investigating the connection between leadership and student learning. The dynamic between leadership and student learning occurs in separate yet interactive dimensions: the professional learning community and focused instruction of students. Leithwood and Louis described how culture strongly influences focused instruction, which in turn strongly influences student learning. In addition, the research also identifies a smaller, yet positive and direct connection between culture and student learning. In support of this research, another study of schools outperforming their demographics on the statewide assessment, given in Minnesota, found that: principal leadership influences teachers in the school, teachers influence

school atmosphere and accepted beliefs, and atmosphere and accepted beliefs directly impact a school culture that embraces high levels of student achievement for all (Raskin, Stewart, & Haar, 2012). The dual propositions put forth in this study, that the quality of school leadership impacts student learning and that the development of school leadership's capacity positively impacts the professional learning community, which also leads to improved student-learning outcomes, are both supported in current educational research.

It follows from this that one of the main responsibilities of school leadership committed to school improvement is the transformation of culture to a professional learning community. This transformation to a professional learning community will not occur without the effective leadership of the principal. Principals are in a key strategic position to promote or inhibit the development of a teacher learning community in the school (DuFour & Marzano, 2011). Research linking leadership to student learning conducted by Leithwood and Louis (2012) identified four successful leadership practices of effective principals: set the direction for the organization, develop capacities of organizational members to pursue these directions, redesign the organization to align and support members' work, and improve the instructional program within the school. These leadership practices line up with those identified by experts in the field of leadership study, including well-known researchers and educators Kouzes and Posner (2007). Support and confirmation of findings across studies, experts, and fields of leadership application lends confidence and credence to the proposition that leadership matters to school improvement initiatives.

Since strong principal leadership is imperative for effective professional learning community development (DuFour & Marzano, 2011; Leithwood & Louis, 2012), district leaders must engage with and monitor principals as they develop a professional learning community in their schools (DuFour & Marzano, 2011). Powerful strategies have been identified to support principal leadership within a professional learning community. Developing and understanding the dimensions and processes of professional learning communities heads the list of powerful strategies which also includes: enhancing the collaboration skills and collective effort of the administrative team, having open discussions of hurdles and challenges encountered with administrative colleagues, and public presentations to colleagues of improved student results. Results of the Leithwood and Louis study (2012) support the proposition that central office and district leadership support is essential for school leadership to realize maximum results. Specific findings indicate the four leadership practices identified above and nine district conditions are significant contributors to building the collective sense of efficacy that school leaders experience in their current school setting.

The nine district conditions that support effective principal leadership are: focus on student achievement, commitment to job-embedded professional development, investment in both school and district leadership, setting of district personnel policies, emphasis on teamwork and professional community, use of data district-wide, dedication to school improvement planning, development of relationships with stakeholders, and allowance of school choice. Analysis indicates that central office leadership indirectly impacts school leaders by creating and sustaining these district conditions. The Leithwood and Louis study (2012) further stated that school leaders seek experiences that will build their own confidence for school improvement, and that district leaders consider

school leaders' collective sense of efficacy for school improvement to be among the most important resources available to them for increasing their abilities to realize improved results.

Effective school leaders do not attempt to lead, grow, and maintain a professional learning community alone. Teacher leaders are central to the deep implementation and sustainment of professional learning community dynamics in a school (DuFour & Marzano, 2011). Teacher leadership development, like principal leadership development, is most effective and enduring when there is learning by doing (DuFour & Marzano, 2011). In a professional learning community, principals become capacity builders of teacher collaboration and leadership, and view a professional learning community as an opportunity to develop teacher leadership (DuFour & Marzano, 2011). Principal leadership provides a solid foundation for both teacher leadership and higher quality instruction (Leithwood & Louis, 2012).

*Effective Professional Development Models*

Educational advocates and reformers as early as 1984 have seen "school improvement as people improvement" (Boyer, 1984). This is echoed in current research of effective professional development for school improvement (Elmore, 2005; DuFour & Marzano, 2011; Joyce & Callhoun, 2012). Models of professional development vary, but over-riding themes of quality professional development transcend the model of delivery. The research is clear and consistent. Quality professional development for educators pursuing high levels of learning for all student groups is specifically aligned to transparent goals, focused on student improvement, job-embedded, and sustained over time (DuFour & Marzano, 2011).

In 2007, the National Staff Development Council (NSDC) began a collaborative project to establish standards of professional development to guide effective practice. The standards are organized into three areas of importance: context standards, process standards, and content standards. Within the context standards, the three core elements of effective professional development are learning community, leadership, and resources. The NSDC further articulates under the context standards that effective staff development improves the learning of all students and organizes adults into learning communities whose goals are aligned with the goals of the school and district, specifically focused on improved student learning for all. The leadership dimension of the context standards states that staff development that improves the learning of all students requires skillful school and district leaders who guide continuous instructional improvement. Finally, the third category within the context standards articulates that staff development that improves the learning of all students requires resources to support adult learning and collaboration (NSDC, 2009).

Tallerico (2005) presented five categories of professional development opportunities, as follows: individually guided professional development; collaborative problem solving; observation; and assessment of teaching, training, and action research. A particular model for professional development must align with the goal and content of the work the practitioner intends to engage in. The specific model, entitled, *The Training Model,* was selected for our work with administrators in the public school setting as the one that most closely aligns with our goals to support deep implementation of a professional learning community culture. The Training Model has the most

comprehensive research base, demonstrates increased effectiveness when tightly focused on goals, can be sustained over longer time periods, and easily incorporates a variety of effective professional development strategies (Tallerico, 2005).

Five components of quality professional development have been identified in theory: demonstration, practice, feedback, follow-up, and coaching (Joyce & Callhoun, 2012). In our work, we incorporated these elements of effective professional development into the sessions designed to support leaders in the implementation of professional learning communities. The following outline was constructed to design each session: present the theory or concept under study, demonstrate and guide practice of essential skills, assign extended practice tasks to take place in-between professional development sessions, collect evidence and record reflections from practice, and share experiences and results.

In addition to the core components of quality professional development, it is essential to sustain training. Michael Fullan (2010), in his extensive research on change in educational practice, found that it takes at least 20 to 25 practice trials over an eight to ten-week period to transfer moderately complex skills into comfortable strategies. Fullan also advises that it takes three to five years to implement a school-wide change of practice (2010). Ongoing professional development must take place strategically throughout the year and be sustained over multiple years to be effective in making new skills a habit and embed new practices throughout a school system.

## METHODOLOGY

The main argument of our work, and this project's focus, is that focused professional development for leaders triggers shifts in school culture that improve student achievement. To test the hypothesis that leadership development will lead to higher levels of student learning, specifically through the establishment of high-functioning professional learning communities in a school culture, we chose to measure the presence of agreed upon dimensions of a professional learning community using the LCCI. Trend data as organized and monitored by the local school district was also monitored to track student achievement results.

### *Use of the LCCI*

As previously mentioned, the LCCI measures eight elements identified through a thorough literature review and pilot testing of the LCCI survey conducted by the research team of Williams, Matthews, Stewart, and Hilton (2007).

The eight elements measured in the LCCI are:

1) Common mission, vision, values, and goals that are focused on teaching and learning.
2) Decision making based on data and continuous assessment.
3) Participative leadership that is focused on teaching and learning.
4) Teaming that is collaborative.

5) Interdependent culture based on trust.
6) Systems of prevention and intervention that ensure academic success for all students.
7) Professional development that is teacher driven and job embedded.
8) Principal leadership that is focused on student learning.

In addition to the extensive literature review for the identification of the key professional learning community culture indicators, Dr. Stewart conducted multiple exploratory and confirmatory factor analyses to determine the structural validity of the LCCI. Reliability measures also indicated high levels of internal consistency among the survey items. Following factor analysis, individual survey items were modified to increase measures of validity. The original ten culture indicators were collapsed into eight elements after multiple test runs indicated that questions in two culture areas were attempting to measure the same construct. The research conducted by Dr. Stewart on the LCCI produced substantial evidence that the revised survey is a valid and reliable instrument in measuring levels of professional learning community implementation across the eight indicators. The original research team recommends the LCCI survey as a method in which future research can be conducted to empirically support the influence of professional learning communities on student achievement (Stewart, 2009).

The second version of the LCCI was switched to an online delivery format. The online version has several benefits. First, the survey is e-mailed to teachers and completed within a designated window of time at the participant's convenience. Second, the online survey requires each response to be completed before moving to the next prompt and increases the randomization of survey items. Rather than prompts organized into the constituent elements (as in the pilot study), the online version provides randomization of all items each time the survey is taken. Third, administrators are able to track completion results of all participants to monitor thorough participation of staff members. Finally, the online survey format decreases processing time and increased accuracy of recording results. Rather than coding paper responses, data can be downloaded from the website housing the online survey (Stewart, 2009).

Three basic components of quality research are: design, data collection, and analysis (O'Dwyer & Bermnauer, 2014). The research design for this study is a mixed-methods approach using a qualitative instrument (the LCCI), which is a perceptual survey of school staff, and the application of quantitative analysis of survey results. The essence of qualitative research is to understand perceptions of how phenomena are experienced by participants; thus the LCCI, as a perceptual survey, is a qualitative method of research design (O'Dwyer & Bermnauer, 2014). Our research plan was to administer the LCCI annually during our work with a local public school district, while measuring changes in school culture as administrators and district leaders participated in professional development to support deep implementation of a professional learning community. The school and district leaders that participated in the professional learning community training had the task of leading projects and modeling processes indicative of professional learning communities in their schools. The first launch of the LCCI survey was November 2011, approximately three months into our first year of collaborative

work. The second LCCI survey was launched in May 2013, at the end of year two of our work.

After design, the second requirement for a quality research study is to ensure that data is collected in a systematic and reflective manner. Online survey management, survey launch, and data collection of the LCCI was handled by Dr. Stewart, one of the developers of the LCCI. Dr. Stewart forwarded a database of survey results for each survey launch to Minnesota State University, Mankato (Minnesota State Mankato) in electronic format. The Center for Excellence in Scholarship and Research (CESR) at Minnesota State Mankato conducted a comparative analysis of the two datasets to uncover and better understand any shifts in culture that occurred during the first 18 months of our collaborative work.

When design and data collection are effectively addressed, reliable and intelligent data analysis is the final step in a quality research study. CESR conducted quantitative data analysis at both district and school levels, for all dimensions of professional learning community indicators measured in the LCCI. Quantitative data analyses help us better understand and interpret qualitative research; therefore, contributing to our understanding of qualitative phenomena (O'Dwyer & Bermnauer, 2014). In this study, the quantitative analysis of the LCCI survey results is intended to help us better describe the depth of a professional learning community's implementation in the school culture. Quantitative data analysis is also appropriate when the researcher is interested in knowing whether a certain treatment or intervention changes the attributes or behaviors of individuals or groups (O'Dwyer & Bermnauer, 2014). This research study focused on measuring the impact of training on school culture after Minnesota State Mankato faculty delivered professional learning community training, thus helping us measure the effectiveness of our training.

Quantitative data analysis, which was conducted in this research study, has two connected dimensions: 1) school and between-school measurement and comparisons of the means of eight professional learning community indicators, and 2) district measurements and comparisons of the same eight professional learning community culture indicators. In September 2013, school and district data were analyzed. Within phase one, the school and between-school descriptive data analysis was conducted to determine a mean score for each school in each of the eight elements of culture for launch one and two. Then a one-way ANOVA was used to compare mean scores between schools. Phase two of the data analysis began with a descriptive analysis to determine mean scores for each element of culture followed by a comparison of district mean scores from launch one and two. District mean score comparisons were analyzed using independent samples t-tests to identify significant differences in mean score. (Adjustments to significance factor were made to account for family-wise error likely to occur as the result of running multiple independent samples t-tests.)

*Context of the Study*

Inver Grove Heights Community Schools, ISD #199, encompasses 22 square miles of Inver Grove Heights, Minnesota, located in northern Dakota County in the southeast metropolitan area of the Minneapolis-St. Paul communities. The district is home to approximately 3,960 pre-kindergarten through grade twelve students and their families. Currently, there are 105 students in Early Childhood Special Education, 162

students in school readiness programs, 1,716 students in grades K-five, 864 students in grades six-eight, and 1,112 students in grades nine- twelve.

Overall, 37.5% of the district's students and their families meet federal income guidelines, qualifying them for free and reduced lunches. Approximately 14% of students in the district qualify for special education services. In 1992, non-white enrollment in Inver Grove Heights was 6.8% of the school population; the non-white population doubled by 2001 to 13.1%. Between 2001 and 2014, the non-white population tripled to 39.0%. Non-white student population is highest at the elementary level with an average across elementary schools of 46.2% of the population being non-white; the high school population currently sits at 34.7% non-white. English Language Learner student population continues to grow.

Minnesota State Mankato initially entered into a two-year contract to partner with ISD #199 to provide professional development services to administrators on essential concepts and skills of professional learning community development. By January of our first year of work, the contract was extended to three years and incorporated teacher leaders in years two and three. Three professors engaged in the professional development design and delivery of the training provided, which was titled Leadership Institutes. The purpose of the Leadership Institutes is to identify professional learning community concepts, skill areas, and transferable activities; share best practice processes with administrators and teacher leaders as a means of training; and assign follow-up tasks for implementation in each school.

In the first year, Minnesota State Mankato faculty met with district and school leaders seven times (about every six weeks) for half-day training sessions. Training topics in year one included: professional learning community basics; the need for collaborative culture; culture foundations of mission, vision, and values; an overview of the LCCI survey and the learning community culture indicators; understanding and using the LCCI results; the leader's role in school improvement using powerful practices and shared leadership; difficult conversations; courageous leadership; and characteristics of effective schools. Year two included half-day sessions for teacher leaders in addition to continuing the half-day sessions with district and school administrators. Training topics in year two included: beliefs and behaviors in a professional learning community; focus on results with attention to the achievement gap; need for clarity of purpose; celebration of successes; shared leadership and difficult conversations part two; and change leadership.

*Limitations of the Study*

A significant limitation of this study is the short time frame for measurement of student progress and professional learning community culture shift. As mentioned previously, system change takes three to five years to successfully implement and for new practices to become embedded in the systems and structures of the school and improve student learning (Fullan, 2010).

A second limitation of the study is the lack of comparative standards to identify the existence of professional learning community indicators in a school and to mark progress against. In this study, we are simply looking at any and all changes in culture shift without an understanding of whether the growth, while even statistically significant, is average, above, or below growth in a typical school or school district. Additional

research and analysis of data collected on the use of the LCCI would shed light on typical growth and decline in perceptual survey results.

Additionally, while the LCCI is a useful, reliable and valid pre- and post-intervention tool, the survey results might be most useful in guiding decision-making for annual school improvement planning. The information gathered for this study and the ongoing collaborative project between Minnesota State Mankato and ISD #199 will add to the growing professional knowledge base of professional learning community implementation, but the researchers and school district leadership find this knowledge base useful only to the extent that it is shared and understood by everyday school practitioners. The challenge is to take the academic knowledge gained in university research and study, and apply it in school settings to help achieve true school reform in America and address the achievement gap challenges that persist in schools today.

Finally, given the inconsistent nature of the Minnesota statewide assessment system, little can be concretely stated regarding student achievement gains or losses in ISD #199. For purposes of evaluating levels of student achievement, other assessment data collected by the district may shed more light on trends in reading and math proficiency.

## RESULTS

*Student Achievement Trend Data*

Student achievement was monitored in ISD #199 through multiple measures. This report shares district-level student proficiency rates on the statewide assessment used in Minnesota, the MCAs. Proficiency data is shared from the last three years of assessments. Assessments are taken in the spring of each year; therefore, the year at the top of the column indicates assessment scores for the preceding year. Scores in the 2011 column indicate assessment scores for the 2010-11 school year, etc. Scores in Chart 1 and Chart 2 below indicate the percentage of students that scored at proficiency or higher on the MCAs for each year indicated. Highlighted scores in the 2012 and 2013 columns indicate a drop from the previous school year in reading performance by students in ISD #199. No statistical evaluation of these scores was conducted to determine statistically significant drops in reading proficiency percentages. The highlighted scores simply indicate a decrease in percentage of students in the district achieving at proficiency or higher on the MCA reading assessment each of the years indicated.

*Student Achievement Trend Data for Reading*

Chart 1

| *District MCA reading proficiency scores* | | | |
|---|---|---|---|
| All District Students | 2011 | 2012 | 2013 |
| All Students | 75.6% | 76.5% | 56.6% |
| All White Students | 81.9% | 83.8% | 65.8% |
| All Black Students | 57.5% | 56.1% | 35.6% |
| All Hispanic students | 52.5% | 56.6% | 34.0% |
| All Asian Students | 83.9% | 79.8% | 67.4% |
| All American Indian Students | 71.4% | 82.4% | 47.4% |

| | | | |
|---|---|---|---|
| All Special Ed Students | 50.4% | 48.5% | 34.3% |
| All Free & Reduced Students | 59.1% | 58.6% | 34.9% |
| All EL Students | 32.5% | 34.1% | 15.9% |
| | | | (MDE, 2013) |

Chart 1 displays District #199 reading proficiency score trends by sub-groups for the assessment years of 2011, 2012, and 2013. The highlighted scores identify a decrease in the percentage of students in the district that reached reading proficiency compared to the prior assessment year.

*Student Achievement Trend Data for Math*

Chart 2

| *District MCA math proficiency scores* | | | |
|---|---|---|---|
| All District Students | 2011 | 2012 | 2013 |
| All Students | 60.5% | 64.2% | 61.0% |
| All White Students | 69.0% | 71.5% | 72.0% |
| All Black Students | 36.1% | 37.0% | 31.6% |
| All Hispanic students | 34.6% | 44.9% | 36.5% |
| All Asian Students | 54.5% | 58.8% | 59.6% |
| All American Indian Students | 53.3% | 64.7% | 50.0% |
| All Special Ed Students | 33.2% | 36.8% | 32.0% |
| All Free & Reduced Students | 40.9% | 41.9% | 36.2% |
| All EL Students | 29.1% | 34.4% | 23.2% |
| | | | (MDE, 2013) |

Chart 2 displays District #199 math proficiency score trends by sub-groups for the assessment years of 2011, 2012, and 2013. The highlighted scores identify a decrease in the percentage of students in the district that reached math proficiency compared to the prior assessment year.

*Learning Community Culture Indicator (LCCI) Results*

LCCI Data Phase One – School and Between-School Analysis

The tables below convey the ANOVA results, which are a comparison between mean scores of culture indicators of schools for two survey data collection points. The survey data collection points occurred in year one and again in year two of Minnesota State Mankato's collaborative project with ISD #199. The underlying assumption is that all schools had equal means for each of the eight elements. The results for any of the comparisons that are significant, indicated by a p-value less than .05, are highlighted.

Table 1

| *ANOVA results from LCCI Launch 1, November 2011* | | | | | | |
|---|---|---|---|---|---|---|
| LCCI Culture Indicators | | Sum of Squares | df | Mean Square | F | Sig. |
| Common Mission, Vision, Values, and Goals That are Focused on Teach and Learning | Between Groups | **29.707** | **4** | **7.427** | **3.030** | **.019** |
| | Within Groups | **406.824** | **166** | **2.451** | | |
| | Total | **436.531** | **170** | | | |
| Interdependent Culture Based on Trust | Between Groups | **14.996** | **4** | **3.749** | **1.557** | **.188** |
| | Within Groups | **399.738** | **166** | **2.408** | | |
| | Total | **414.734** | **170** | | | |
| Participative Leadership that is Focused on Teaching and Learning | Between Groups | **40.117** | **4** | **10.029** | **1.786** | **.134** |
| | Within Groups | **904.334** | **161** | **5.617** | | |
| | Total | **944.451** | **165** | | | |
| Collaborative Teaming | Between Groups | **10.626** | **4** | **2.657** | **1.721** | **.148** |
| | Within Groups | **223.834** | **145** | **1.544** | | |
| | Total | **234.460** | **149** | | | |
| Systems of Prevention and Intervention that Assures Academic Success for All Students | Between Groups | **37.426** | **4** | **9.356** | **4.666** | **.001** |
| | Within Groups | **288.782** | **144** | **2.005** | | |
| | Total | **326.208** | **148** | | | |
| Data-Based Decision-Making Using Continuous Assessment | Between Groups | **10.433** | **4** | **2.608** | **1.378** | **.245** |
| | Within Groups | **240.314** | **127** | **1.892** | | |
| | Total | **250.748** | **131** | | | |
| Professional Development that Is Teacher Driven and Embedded in Daily Work | Between Groups | **15.924** | **4** | **3.981** | **1.458** | **.218** |
| | Within Groups | **420.472** | **154** | **2.730** | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | **436.396** | **158** | | | |
| Principal Leadership That Is Focused on Student Learning | Between Groups | **67.371** | **4** | **16.843** | **5.987** | **.000** |
| | Within Groups | **405.078** | **144** | **2.813** | | |
| | Total | **472.448** | **148** | | | |
| | | | | | | |

Three significant results were identified in the ANOVA comparison of Launch One, indicating significant differences of mean scores for schools in the areas of Common Mission Vision, Systems of Prevention and Intervention, and Principal Leadership. Further analysis was applied using the Games-Howell or Boneferroni post-hoc analyses, and only one school in each of two categories, Systems of Prevention and Intervention and Principal Leadership, yielded significant gap results between other schools in the district. To summarize Table 1, the overall ANOVA results identified significant results in difference of means in some areas of professional learning community culture indicators, but there were relatively few significant results in the subtests, indicating that the differences between schools on the learning community culture indicators are not large enough to identify significant gaps in means.

Table 2 conveys the ANOVA results for the second data collection point of the LCCI survey. The same underlying assumption is applied and tested, that all schools had equal means for each of the eight elements of professional learning community culture. The results are highlighted for any of the comparisons that are significant, indicated by a p-value less than .05.

Table 2

*ANOVA results from LCCI Launch 2, May 2013*

| LCCI Culture Indicators | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Common Mission, Vision, Values, and Goals That are Focused on Teach and Learning | Between Groups | **76.421** | **4** | **19.105** | **11.251** | **.000** |
| | Within Groups | **309.046** | **182** | **1.698** | | |
| | Total | **385.467** | **186** | | | |
| Interdependent Culture Based on Trust | Between Groups | **26.081** | **4** | **6.520** | **3.233** | **.014** |
| | Within Groups | **367.090** | **182** | **2.017** | | |
| | Total | **393.171** | **186** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Participative Leadership that is Focused on Teaching and Learning | Between Groups | **25.726** | **4** | **6.431** | **1.052** | **.382** |
| | Within Groups | **1106.072** | **181** | **6.111** | | |
| | Total | **1131.798** | **185** | | | |
| Collaborative Teaming | Between Groups | **31.568** | **4** | **7.892** | **2.897** | **.024** |
| | Within Groups | **460.407** | **169** | **2.724** | | |
| | Total | **491.976** | **173** | | | |
| Systems of Prevention and Intervention that Assures Academic Success for All Students | Between Groups | **164.161** | **4** | **41.040** | **19.089** | **.000** |
| | Within Groups | **374.082** | **174** | **2.150** | | |
| | Total | **538.244** | **178** | | | |
| Data-Based Decision-Making Using Continuous Assessment | Between Groups | **43.222** | **4** | **10.805** | **4.652** | **.001** |
| | Within Groups | **362.313** | **156** | **2.323** | | |
| | Total | **405.535** | **160** | | | |
| Professional Development that Is Teacher Driven and Embedded in Daily Work | Between Groups | **10.001** | **4** | **2.500** | **.709** | **.587** |
| | Within Groups | **628.129** | **178** | **3.529** | | |
| | Total | **638.130** | **182** | | | |
| Principal Leadership That Is Focused on Student Learning | Between Groups | **206.399** | **4** | **51.600** | **12.058** | **.000** |
| | Within Groups | **723.186** | **169** | **4.279** | | |
| | Total | **929.586** | **173** | | | |

Note the growth in the number of learning community culture indicators that yielded significant results in the between-school comparisons of means in the second launch of the LCCI. Six significant results were identified in the ANOVA comparison of Launch Two, indicating significant differences of mean scores for schools in the areas of Common Mission and Vision, Interdependent Culture, Collaborative Teaming, Systems of Prevention and Intervention, Data-Based Decision Making, and Principal Leadership. Significant results were further analyzed using Games-Howell or Boneferroni post-hoc analyses depending on the results of the Homogeneity of Variance test. Further analysis

of the identified professional learning community indicators in the second data collection identified significant differences in mean scores between schools in three to five schools, in each of the six identified culture indicators. To summarize, by the end of year two, significant differences emerged between schools on mean scores of professional learning community indicators. Evidence emerged that identified significant shifts in learning community culture indicators had occurred, and varying levels of professional learning community were present in individual schools.

*LCCI Data Phase Two – District Measure Analysis*

Launch One (November 2011) and Launch Two (May 2013) Comparison

Independent samples t-tests were run to compare 2011 and 2013 district mean differences across the eight elements of the professional learning community. Statistically significant differences between 2011 and 2013 are indicated by a p-value of less than .006, located in the Sig. 2-tailed column in the tables below. The significance threshold of .006 was calculated to account for family-wise error, which results from running multiple independent samples t-tests. Three indicators of professional community yielded significant results. The areas identified with significant results are: Collaborative Teaming, System of Prevention and Intervention, and Professional Development. The tables below provide an overview of group statistics for each area and identify significant findings from further data analysis.

*Collaborative Teaming*

Table 3

| *Group statistics* | | | | | |
|---|---|---|---|---|---|
| | Group | N | Mean | Std. Deviation | Std. Error Mean |
| Collaborative Teaming | Pre | **150** | **5.0829** | **1.25442** | **.10242** |
| | Post | **174** | **6.1757** | **1.68635** | **.12784** |
| | | | | | |

Table 4

| *Independent samples test* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Collab. Teaming | Levene's Test | | t-test for Equality of Means | | | | | |
| | F | Sig. | t | Df | Sig. (2tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |

| | | | | | | | | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Equal variance assumed | **12.841** | **.000** | **-6.530** | **322** | **.000** | **-1.09284** | **.16735** | **-1.4220** | **-.76361** |
| Equal variance not assumed | | | **-6.671** | **315.459** | **.000** | **-1.09284** | **.16381** | **-1.4151** | **-.77054** |

As seen in Table 4, the results for the culture indicator of Collaborative Teaming are significant as indicated by the Levene's test result smaller than .05. Therefore, equal variance is not assumed and a result of less than .006 in the Sig. 2-tailed column in the Equal Variance Not Assumed line confirms a significant finding. The shift from a mean of 5.08 to 6.17 in the culture indicator of Collaborative Teaming is statistically significant.

*Systems of Prevention and Intervention*

Table 5

| *Group statistics* | | | | | |
|---|---|---|---|---|---|
| | Group | N | Mean | Std. Deviation | Std. Error Mean |
| Systems of Prevention and Intervention that Assures Academic Success for All Students | Pre | **149** | **7.3166** | **1.48462** | **.12163** |
| | Post | **179** | **6.5223** | **1.73892** | **.12997** |

Table 6

| *Independent samples test* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Systems of Prevention and Intervention That Support Student Learning | Levene's Test | | t-test for Equality of Means | | | | | | |
| | F | Sig. | T | Df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | Lower | Upper |
| Equal variances assumed | **3.649** | **.057** | **4.398** | **326** | **.000** | **.79421** | **.18058** | **.4389** | **1.14947** |
| Equal variances not assumed | | | **4.462** | **325.782** | **.000** | **.79421** | **.17800** | **.4440** | **1.14439** |

Table 6 displays results for the culture indicator Systems of Prevention and Intervention. The Levene's test results are not significant as indicated by the test result larger than .05. Therefore, equal variance is assumed and a result of less than .006 in the Sig. 2-tailed column in the Equal Variance Assumed line confirms a significant finding. Therefore the shift from a mean of 7.31 to 6.52 in the culture indicator of Systems of Prevention and Intervention is statistically significant.

*Professional Development*

Table 7

| *Group statistics* | | | | | |
|---|---|---|---|---|---|
| | Group | N | Mean | Std. Deviation | Std. Error Mean |
| Professional Development that Is Teacher Driven and Embedded in Daily Work | Pre | **159** | **6.2138** | **1.66193** | **.13180** |
| | Post | **183** | **5.4645** | **1.87249** | **.13842** |

Table 8

| *Independent samples test* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Professional Development that Is Teacher Driven and Embedded | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| | F | Sig. | t | Df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | Lower | Upper |
| Equal variances assumed | **2.579** | **.109** | **3.888** | **340** | **.000** | **.74936** | **.19273** | **.37025** | **1.12846** |
| Equal variances not assumed | | | **3.921** | **339.840** | **.000** | **.74936** | **.19113** | **.37341** | **1.12530** |

In Table 8, the results for the culture indicator of Professional Development on the Levene's test is not significant as indicated by the test result larger than .05. Therefore, equal variance is assumed and a result of less than .006 in the Sig. 2-tailed column in the Equal Variance Assumed line confirms a significant finding. The shift from a mean of 6.21 to 5.46 in the culture indicator of Professional Development is statistically significant.

Further analysis of the culture indicators of Collaborative Teaming and Systems of Prevention and Intervention were run in an attempt to understand how individual school culture indictors contributed to these significant district findings. Independent samples t-tests were run to compare 2011 to 2013 school mean differences. For each school, statistically significant mean differences were indicated by a p-value of less than .02. A significance threshold of .02 was used to account for family-wise error, which occurs as a result of running multiple t-tests. Two of the five district schools indicated significant positive change in means in the culture indicator of Collaborative Teaming. Two different schools (of the five schools in the district) indicated significant negative change in means for the culture indicator for Systems of Prevention and Intervention. Only one school showed significant negative change in means in the culture indicator of Professional Development.

## DISCUSSION

Results of shifts in learning community culture as a result of professional learning community training, as presented in this research study, leads to the following findings:

1. Greater differences of learning community culture indicators are present between schools after 18 months of professional learning community training.

2. District-wide results yielded significantly positive growth of mean score in the learning community culture indicator of Collaborative Teaming after 18 months of the Minnesota State Mankato and ISD #199 collaborative project. Two of the five schools in the district showed a statistically significant positive growth in mean in the Collaborative Teaming learning community culture indicator between the first and second launch of the LCCI survey.

3. District-wide results yielded a statistically significant decline of mean score in the learning community culture indicator of Systems of Prevention and Intervention that Support Student Learning after 18 months of the Minnesota State Mankato and ISD #199 collaborative project. Two of the five schools in the district showed a statistically significant decrease in mean in the culture indicator of Systems of Prevention and Intervention that Support Student Learning between the first and second launch of the LCCI survey.

4. District-wide results yielded statistically significant decline of mean score in the learning community culture indicator of Professional Development that is Job-embedded after18 months of the Minnesota State Mankato and ISD #199 collaborative project. One of the five schools in the district showed a statistically significant decrease in mean in the Professional Development culture indicator between the first and second launch of the LCCI survey.

5. Inconsistent results are reported regarding student achievement in reading and math proficiency as measured by the Minnesota MCAs.

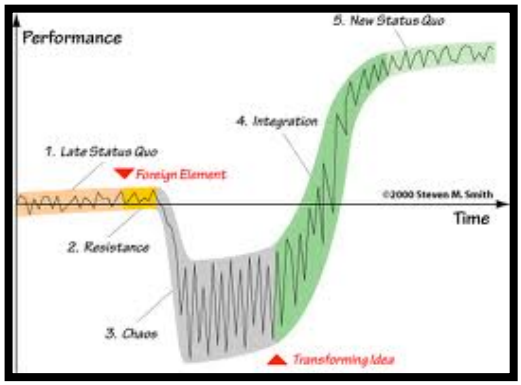
### *Discussion of Results*

The first finding to be discussed is that greater differences of learning community indicators are present between schools after 18 months of professional learning community training. These statistically significant differences support the first part of the argument posed at the beginning of the research study: focused professional development for leaders triggers shifts in school culture. The differences in the effect training had on the culture of each school may be attributed in part to leadership. All leaders received the same training; however, the level of application and the effectiveness in deploying implementation strategies likely varied by leader and accounts for some part of the differences in the effect training had on each school culture.

Finding more occurrences of statistically significant differences of means in more culture indicator areas is somewhat explained by the SATIR change model, which was presented to administrators and teacher leaders as a part of change leadership training.

The SATIR model identifies phases of change and points of trigger that cause disruption to the status quo, which forces individuals into new practices and ways of thinking leading to a period of uncertainty and necessary practice of new skills before higher levels of competency are achieved. Picture 1 is a graphic of the SATIR change model (Weinberg, 2000).

Picture 1




Picture 1. Satir Change Model. This model outlines the typical phases of the change process and identifies two key elements that move a person or system through the change process, namely the Foreign Element and the Transforming Idea (Banmen, 2002).

The leadership training provided in the Leadership Institutes acted as the foreign element in the change diagram. Minnesota State Mankato came into District #199 with training and support, which triggered changes in practice and thinking about how school systems ought to operate to achieve high levels of learning for all. The training disrupted the status quo. While some drop in performance is expected as the change process unfolds, we would expect to see the people within the system, and the system as a whole, bounce back to higher levels of performance once the new skills and beliefs become more secured in the daily routine of the professionals working in the school system.

The second finding, a statistically significant increase in district means for Collaborative Teaming, is quite exciting. Collaborative Teaming is essential to the development of professional learning community. Leadership impacts teacher collaboration, and teacher collaboration impacts student learning, which reinforces the centrality of leadership to the development of the essential elements of a professional learning community (DuFour & Marzano, 2011; Leithwood & Louis, 2012; Raskin et al., 2012). Recent research connecting leadership to student learning reported that one effective method principals have to impact improved classroom instruction is by building a positive school culture that fosters collaborative and effective working relationships among teachers. Further, there is accumulating evidence that increased collaboration is related to improved instruction, student achievement, and shared leadership (Wahlstrom & Louis, 2008). Fullan (2010) urged administrators to create cultures and structures in which current educators continuously improve both their individual and collective professional practice. Nineteen of the twenty-one factors identified by Marzano, Waters,

and McNulty (2005) as effective practices of strong school leaders are applied and accomplished through the vehicle of collaborative teams. In addition, research on principal efficacy finds that the time principals devote to building the capacity of teachers to work in collaborative teams is more effectively spent than time spent attempting to supervise individual teachers to perform better (DuFour & Marzano, 2011).

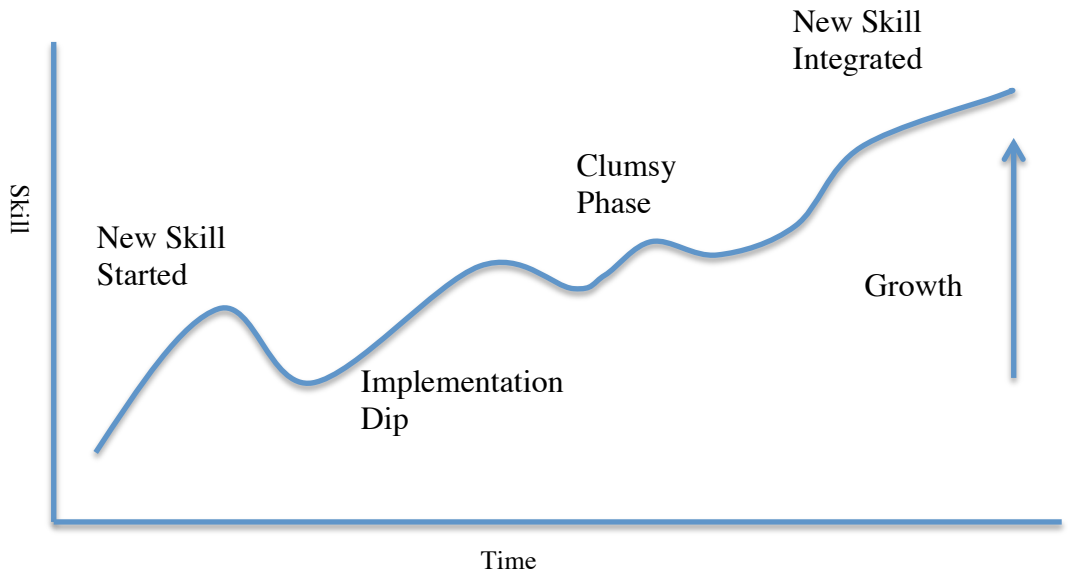
It is important to include that professional learning community development is more than the development of collaboration. While collaborative teams are an essential part of a professional learning community, full professional learning community development requires additional school-wide and district-wide efforts; the sum is greater than the individual parts (DuFour et al., 2010). Collaborative Teams do not imply only teacher collaboration, but collaborative leadership teams in schools and across the district. Fullan (2010) articulated this essential level of collaborative work, stating that creating excellent schools across a system requires a collaborative effort and the development of the collective capacity of leaders across the system (Elmore, 2005; DuFour & Marzano, 2011).

Findings three and four describe the previously mentioned statistically significant decline in mean of two professional learning community culture indicators: Systems of Prevention and Intervention that Support Student Learning and Professional Development that is Job-embedded. This downward adjustment of perception mean score in survey results may actually indicate deeper levels of understanding of the elements of the concepts, rather than a decline in practice. The decline in perception of professional learning community indicators is partially explained by an occurring phenomenon noted in other perceptual research studies known as the J-curve (Stewart, 2009). It has been noted that schools that are emerging as professional learning communities might overestimate their level of development out of ignorance of what professional learning communities truly are. Initially, members' understanding of an organization's new initiative is shallow and members of the organization think they are functioning at higher levels. As knowledge, understanding, and application within the organization grow, members will actually reflect more critically on their implementation of a concept. As organizational members come to a deeper understanding of the requirements of the process, a realization occurs that, in reality, the organization was not demonstrating the requisite skills or processes to the level required. Eventually the organization's members develop a higher application of the concepts and the accompanying perception increases as measured by future surveys. The increase in observation of the measure leads to accomplishments beyond initial levels of performance. This J-curve was not observed in the pilot study data of the LCCI at the group level, but there was anecdotal evidence that this overestimation of performance was occurring at various individual schools (Stewart, 2009).

A second understanding of the change process is helpful in the discussion of the significant decrease in district mean scores of the culture indicators of Systems of Prevention and Intervention and Professional Development. A recent publication from Learning Forward and the National Staff Development Council entitled, "Managing the Change Process", was developed to assist leaders with the development of school-based professional learning communities. The underlying assumption is that understanding change and the change process can better support adult learners in reaching their goal of improving learning for all (NSDC, 2012). The article presents the three phases of change

as initiation, implementation, and institutionalization, and addresses the implementation dip as a frequent phenomenon that must be successfully managed as part of the change process.

The implementation dip acknowledges that change involves the learning of new strategies and skills. When learning a new process there is a phase when skills are new and application is clumsy. This newness of skill application may result in a dip in performance. As leaders, understanding and allowing for this temporary dip in skill performance is essential to providing support for new initiatives in your organization. The implementation dip acknowledges that there will be a phase of challenge and difficulty before results improve.




Picture 2. Diagram of typical skill development over time. The change process involves incorporation of new skills. There may be a dip in performance; however, as skills are developed, performance improves.

The implementation dip suggests that leaders and teachers, as a part of the change process unfolding in ISD #199, should persist in their change efforts and the adoption of new skills and attitudes to establish high-functioning learning communities in their schools and throughout the district. The decrease in means in the culture indicator areas of Systems of Prevention and Intervention and Professional Development may both be explained in part by the implementation dip. The application of new skills and strategies desired by leaders to establish effective Systems of Prevention and Intervention and/or Professional Development may have caused an initial dip in performance, and thereby, a dip in evidence of the presence of each culture indicator. With persistence, guided and skillful practice, and the ongoing support for the development of new skills and strategies, we expect to see a high-functioning learning community. These new skills and strategies will result in higher levels of learning for all students once they become routine throughout ISD #199.

The final finding in this research study is that there are inconsistent reading and math proficiency scores, particularly when evaluated over a 3-year trend. Inconsistent reading and math proficiency scores are indicative that our work targeting the development of professional learning communities through leadership training has not yet improved student achievement in the ISD #199. The state assessment has undergone much iteration since our work began, which may explain much of the inconsistency and downward trending of proficiency data. Notably, in 2012, the state reading assessment was piloted on a limited basis in some districts as a computerized assessment. In 2013, ISD #199 chose to participate in the computerized administration of the reading assessment. Additionally in 2013, the state reading assessment was aligned for the first time to the Common Core English Language Arts standards, with little time for districts to realign instruction and properly prepare students for the assessment.

The state proficiency assessment in math has undergone additional iterations as well. As a pilot, the statewide math exam has been offered to students up to three times per year. In 2012, districts were allowed to use the highest score obtained by a student in any of the three administrations of the math exam. In 2013, only the final assessment score was allowed to count for purposes of determining proficiency. In addition, prior to 2011, the sequence of expected instruction for the state math standards was changed mandating algebra for all Minnesota students no later than grade eight. The 2013 Minnesota state math assessment was adjusted to reflect the earlier algebra requirement, with little time for districts to realign instruction and properly prepare students for the assessment.

Given the many iterations and continual changes in structure and delivery of the MCA assessment in both reading and math content areas, we acknowledge that the MCAs are not the most stable measure to monitor changes in student achievement and correlate these changes to our collaborative project. These continual changes make analysis of trend data difficult at best, and highly problematic to use as evidence for improved student learning. However inconsistent MCA scores are, when combined with other measures of student achievement gathered by ISD #199, a dip in results in both reading and math proficiency must be acknowledged. Administrators and teachers continue to collect evidence of student learning and adjust instruction to better meet the needs of learners in the district.

## RECOMMENDATIONS

Five recommendations are clear as we move forward in our work to support school leaders in the deep implementation of a professional learning community that is aimed at advancing their efforts and success in addressing the needs of the diverse students they serve:

1. Training will continue in this collaborative project through year three. We will continue to provide leadership development and support to administrative and teacher leaders. We want to echo once again the quote by Huberman and Miles (1984), “Commitment follows competence.” If we are to realize high-functioning professional learning communities in this school district, we must continue to contribute to the skills and attitudes of these leaders.

2. The LCCI survey will be given again at the end of the third year of professional learning community training. This will provide an additional year of data to compare and analyze as we monitor and observe the expected and unexpected results from the deep implementation of a professional learning community.

3. The district level of commitment and support must remain strong. The literature is clear that effective system-wide implementation of the professional learning community process requires central office leaders to visibly commit to the elements of professional learning communities. District leaders must also persist in creating structures and processes that will help principals and teachers function as collaborative teams (DuFour & Marzano, 2011). District efforts to provide professional development to school leaders will have limited effects on student achievement unless the district develops clear goals for improvement, sets high expectations for student learning, and emphasizes collective responsibility for all leadership. Professional development is not likely to produce higher levels of student achievement unless these initiatives are accompanied by leadership development practices that principals perceive as helping them improve their personal competencies (Wahlstom, Louis, Leithwood, & Anderson, 2010).

4. Minnesota State Mankato will continue to strive to meet all dimensions of best practice for professional development. Training must be aligned to school and district goals, focused on improved results, sustained, job-embedded, and viewed as collective and collaborative (DuFour & Marzano, 2011).

5. The researchers at Minnesota State Mankato working collaboratively with administrators and teacher leaders in ISD #199 will pursue and analyze additional assessments and measures of success collected by the district. A clearer picture of actual shifts in student learning will shed light on the impact that professional learning community and leadership development have on student achievement.

## CONCLUSION

Professional learning community development is a never-ending process of school leadership that has an impact on the structure, culture, and professional practices in the school organization (DuFour et al., 2010). In this collaborative project, professors at Minnesota State Mankato are attempting to help professional educators close the "knowing doing gap" (DuFour et al., 2010) by providing relevant, job-embedded, professional development to administrators and teacher leaders over an extended contract.

In this paper, we have shared significant details of the processes and structures used to provide training and report on preliminary results from the first two years of Minnesota State Mankato's work in ISD #199. The results we share are enlightening, but perhaps the greatest insight researchers and educational reform professionals have gained in similar work with public school districts across the continent is that organizations that

take the plunge and are doing the work of a professional learning community develop their capacity to help all students learn at high levels far more effectively than schools that spend years preparing to become a professional learning community (DuFour et al., 2010).

We have also learned that leadership, whether from the principal or teachers in a school, matters for student achievement (Wahlstrom & Louis, 2012). Our results support the argument put forth, focused professional development for leaders triggers changes in school culture. Our confidence that these culture changes will have a positive impact on student achievement is unshaken. We embrace future research projects and empirical evidence that explores our focus on improving professional learning communities through leadership development, and discovering whether such effort does improve student learning for all.

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## AUTHOR BIOGRAPHIES

**Dr. Deirdre (Dee) Wells** is a 32-year veteran of public education. Dr. Wells received her Bachelor's and Master's Degrees in Communication Disorders from the University of Wisconsin-Eau Claire. She also earned a Masters Degree in Administration and a certification for Director of Pupil Services and Special Education from the University of Wisconsin–Superior. In 2003, Dr. Wells earned her Ed.D. in Educational Leadership from Cardinal Stritch University in Milwaukee, Wisconsin. Dr. Wells has an extensive professional background, which includes work as a speech therapist and pathologist, early childhood coordinator, assistive technology coordinator, grant coordinator, district special education coordinator, director of pupil services and special education, transportation director, staff development director, human resources director, and assistant superintendent. In 2003, Dr. Wells was selected as the Superintendent of the Medford Area Public School District in Medford, Wisconsin. In 2005, she accepted the position of Superintendent at Inver Grove Community Schools in Inver Grove Heights, Minnesota. In 2014, Dr. Wells was selected as the Superintendent of the Marshfield School District in Marshfield, Wisconsin. She also served as an adjunct instructor for the University of Wisconsin–Superior and Minnesota State University–Mankato. Dr. Wells has, along with Dr. Wilson, led the development of Professional Learning Communities and Administrative Leadership in Minnesota and Iowa.

**Dr. Barbara R. Wilson** holds a bachelor's and master's degree from the University of Wisconsin-Madison. Her studies initially involved elementary education and evolved to curriculum and instruction. Dr. Wilson earned the credentials for an administrative license and her doctoral degree in Educational Policy and Administration from the University of Minnesota-Twin Cities. Upon completion of her doctoral work, Dr. Wilson began her career as a school administrator. Dr. Wilson worked for more than ten years in three unique districts in the Twin Cities area to gain experience leading in urban, suburban, and rural districts. Dr. Wilson joined the Department of Educational Leadership at Minnesota State University-Mankato in 2011, where she currently teaches and advises graduate students while researching effective leadership development practices. As a university professor, Dr. Wilson continues to serve K-12 educators by providing professional development for administrative teams and teacher leaders in public school districts. Her current research projects include use of the Learning Community Culture Indicators (LCCI) to measure the development of professional learning communities in schools and the Leadership Practices Inventory (LPI) to monitor the effectiveness of professional development of school leaders for the benefit of student learning. Dr. Wilson's work includes strong threads of racial equity to ensure high levels of learning for all student groups.

## PREFERRED CITATION

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