Examining Professional Learning Communities in a Title I High School

Ronald Scott Wynn

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The Dissertation Advisory Committee and the student’s Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

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ABSTRACT

In July 2017, the state of Georgia implemented a teacher certification renewal program that required educators to participate in a job-embedded professional learning communities (PLCs) facilitated by local school districts. This study investigated the shared instructional leadership behaviors and teacher collaboration found in effective PLCs in one high-needs high school in Georgia. The administrators of the high-needs high school selected for the study, point to the work of their established PLCs as being responsible for a 16% increase in graduation rates over a 3-year period. This inquiry used quantitative data from the Teacher Collaboration Assessment Rubric (TCAR; Woodland, 2016), which assesses 15 content-specific PLCs and data collected from a Likert scale teacher questionnaire. The TCAR and teacher questionnaire quantitatively assess each PLC by looking at four categories of collaboration: dialogue, decision
making, action, and evaluation. The study used the principles of shared instructional leadership to investigate the behaviors that are prominent in established PLCs. A multiple regression analysis was used to predict the effectiveness of PLCs based on teacher collaboration as measured by the teacher questionnaire. Along with addressing a void in the literature regarding high school PLCs, this study provides a perspective on a state-mandated change to professional development. The results demonstrate that teacher collaboration has a statistically significant impact on predicting effective PLCs in a high-needs high school.

INDEX WORDS: Professional Learning Communities, Collaboration, Shared Instructional Leadership, Multiple Regression
EXAMINING PROFESSIONAL LEARNING COMMUNITIES
IN A TITLE I HIGH SCHOOL

by

RONALD SCOTT WYNN

A Dissertation

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Degree of
Doctor of Education
in
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in
Educational Policy Studies
in
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Georgia State University

Atlanta, GA
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DEDICATION

This dissertation is dedicated to my beautiful wife, Ashley. Thank you for your unwavering support through this process and in all my endeavors.
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There are many people I would like to acknowledge and thank for their support in this long and trying journey. First, I would like to thank my family for all of their support and encouragement in this process. Next, I would like to thank the members of Cohort V (The Whole Handful) and especially the LEADS tribe and Tim. I would also like to thank the members of the great administrative team who put up with my complaining while supporting and lifting me up at every turn. Finally, this journey would have never happened without the guidance and support of Dr. Wang and my incredible dissertation team, Dr. Sauers and Dr. Dykes.
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CHAPTER 1

PROFESSIONAL LEARNING COMMUNITIES AND LEADERSHIP

In the 2010 Georgia legislative session, policy makers in the state made a decision that ran counter to the calls for greater teacher accountability. In response to the challenging economic times which included teachers’ salary cuts through furloughs, reduced local supplements, and reductions in RESA funding, the Georgia General Assembly (2010) passed Georgia House Bill 1307 (HB 1307). Hence, many educators were having to shoulder the cost of participating in professional learning opportunities. To ease the financial burden, HB 1307 would suspend the requirement that educators who hold a clear renewable teaching certificate would need to participate and receive credit for professional development within a 5-year window for recertification (State of Georgia House Media Services, 2010).

The Georgia Department of Education (GaDOE) and Georgia Professional Standards Commission (GaPSC) recommended districts continue to assess professional learning needs; maintain records of professional learning units (PLUs) for all employees; evaluate the priorities of the district’s professional learning; and evaluate the content and relevance of professional learning activities along with the district’s PLU credit plan. Although HB1307 created a 5-year window for teachers, the state of Georgia extended the moratorium on requiring PLUs for certificate renewal through June 30, 2017. On July 1, 2017, the state transitioned to a certificate renewal process based on continuous job-embedded professional learning within individual schools and districts (Georgia Professional Standards Commission, 2016a). The new model for educators to renew their certificates required professional learning through professional learning communities (PLCs; Georgia Professional Standards Commission, 2016b).
Background of the problem.

Change can be intricately challenging. Often, written policy and the subsequent implementation have unintended consequences not considered at the initial stage (Hill, 2006). Although there have been calls for teacher evaluation to be linked with PLCs (Woodland & Mazur, 2015), Georgia is the first state to take the PLC approach when it comes to educators renewing their teaching certificates (Moore, personal communication, June 26, 2016). Being at the forefront of mandating professional development in a new modality is exciting and should be scrutinized to determine its effectiveness—or lack thereof—and any unintended consequences. Furthermore, there is an absence of studies focusing on high-needs high school implementation of PLCs as professional development.

Although, DuFour and Eaker (1998) are looked to as the founding authorities of the structured PLC movement for school improvement, in 2017, the state of Georgia did not have an accessible definition of a PLC in their published guidelines or on the state’s certification website. In this study, PLCs are defined as a group of people with a clear mission who share a vision, work in collaborative teams to engage in a collective inquiry of best professional practices and current reality of their environment by taking the necessary steps to correct differences engaged in ongoing cycles of improvement; all of this is done through gathering and analyzing data (DuFour, 2003; DuFour, DuFour, Eaker, & Karhanek, 2004; DuFour & Eaker, 1998). In 2018, the state did provide a link to leaningforward.org, where a very similar definition can be found. As recently as 2019, the state’s linked definition stated the following:

Professional learning within communities requires continuous improvement, promotes collective responsibility, and supports alignment of individual, team, school, and school system goals. Learning communities convene regularly and frequently during the workday to engage in collaborative professional learning to strengthen their practice and increase student results. Learning community members are accountable to one another to
achieve the shared goals of the school and school system and work in transparent, authentic settings that support their improvement. (Wiedrick, 2019, para. 1)

**Research Questions**

The following questions will guide the current study:

1. What shared instructional leadership behaviors are prominent in established PLCs in one high-needs high school?

2. To what extent does teacher collaboration predict the effectiveness of PLCs?

**Literature Review**

Professional development through a PLC “shifts from workshops to the workplace, from an external focus to learning in the setting where teachers work, from individual learning to group and organizational learning, and from a focus on activities to a focus on results” (DuFour et al., 2004, p. 176). Successful PLCs begin with professional development that can demonstrate techniques and clarify strategies (Berger & Forgette-Giroux, 2012). The PLC changes the model of professional development from a passive chore to an engaging, focused, outcome-driven endeavor (Cherkowski, 2014). PLCs in successful high-needs schools can make a positive impact on the school and the actions of the staff (Ylimaki, Brunderman, Bennett, & Dugan, 2014). The work of a PLC to address underserved populations can bring light to critical areas of need (Ryoo, Goode, & Margolis, 2015).

Teachers and administrators report that the dialogue within PLCs are about opportunities for all students; hence, this has made the always difficult discussions about achievement gaps easier to grasp and work on (Ryoo et al., 2015; Ylimaki et al., 2014). The responsibility of ensuring PLCs focus on student learning also falls under the principal’s duties (Lambertson, 2014). Leading by example, principals should consider sharing their personal and professional development goals and transparently model the practices to reach those goals (Cherkowski,
they must provide the infrastructure for faculty, such as training, a location, time, data, and adequate feedback (DuFour & Eaker, 1998; Liou & Daly, 2014). DuFour and Eaker (1998) stated that to encourage all faculty to participate in PLCs, principals must make constant efforts to include teachers in the decision-making processes of their schools. Therefore, shared leadership is essential because the duties of leading a school are too complex to do alone (DuFour & Eaker, 1998). Administrators should build capacity in teachers by creating an environment of collaborative decision making, developing instructional strategies through the use of data, and building a culture of experimentation based on informal accountability (Berger & Forgette-Giroux, 2012). In this sense, professional learning requires learners to independently build on previous experiences and learn at their own pace (Cherkowski, 2014). In the current study, participation in PLCs leading to teacher collaboration in dialogue, decision making, action taking, and evaluation through shared instructional leadership practices will be the focus of professional learning that is addressing the needs for one high-needs school.

**Role of the principal.**

**Focus of the PLC.**

PLCs can focus the teachers at a school on student learning and change the beliefs of the entire environment (Berger & Forgette-Giroux, 2012; DuFour & Eaker, 1998; Lambertson, 2014; Zhang, Yuan, & Yu, 2016). Unfortunately, high-stakes testing undermines the work of the PLC by forcing teachers to teach to the test instead of focusing on student learning (Zhang et al., 2016). Student learning based on the collaborative work of principals and teachers can “establish processes that not only clarify what students must know and be able to do but also clarify the strategies that enable the school to make valid conclusions regarding the degree of student
learning” (DuFour & Eaker, 1998, p. 197). Using PLCs to improve instruction designed around student outcomes, not mandated testing, must remain the focus of the principals and teachers.

In their study, Berger and Forrette-Giroux (2012) investigated PLCs as vehicles of change; here, a qualitative case study approach was used to study six schools, and the participants were interviewed for 20 to 75 minutes over one or two rounds. There were 20 individual interviews conducted, including building- and system-level administrators, general and special education teachers, and literacy coaches. The researchers were assessing the current or anticipated role in implementing PLCs, how the school was addressing the components of the PLCs, barriers to implementation, support factors in place for the PLCs, and the benefit of the outlined processes of the PLC in supporting school improvement (Berger & Forrette-Giroux, 2012).

Berger and Forrette-Giroux (2012) found that PLCs play a role in collaborative processes such as planning, decision making, and experimentation. Increased dialogue and shared leadership were noted as the benefits of PLC implementation. Berger and Forrette-Giroux (2012) also concluded that the successful implementation of PLCs requires the school to develop capacity in the areas of collaborative decision making, instructional strategies and data use, and informal accountability with experimentation. Furthermore, they posited that professional development builds capacity in teachers based on the required leadership in PLCs. The necessary leadership must guide decision making that emerges from the dialogue about goals and encourages experimentation and accountability inside the PLCs (Berger & Forrette-Giroux, 2012).

By working collaboratively, administrators and teachers can come to a consensus about student learning, strategies, and success (Berger & Forrette-Giroux, 2012). Administrators
should encourage and reward teachers who offer different ideas that cause their peers to become uncomfortable with their teaching methods (Zhang et al., 2016). Classroom teaching is only second to instructional leadership in importance when it comes to student achievement outcomes (Berger & Forgette-Giroux, 2012). Increased frequency of professional discussions between leaders and teachers about instructional strategies and student learning are nurtured through PLCs (Berger & Forgette-Giroux, 2012). Teachers, school administrators, and district level leaders should constantly communicate about the processes involved (Zhang et al., 2016). Principals must be central in the operations of PLCs: enhancing communication, listening, talking, supporting, and relaying information to keep the work of the PLC progressing (Cranston, 2011).

Researchers in the Los Angeles Unified School District investigated the professional development of the Exploring Computer Science (ECS) initiative through the PLCs of teachers in different buildings (Ryoo et al., 2015). In this 5-year study, the teachers would participate in week-long workshops before and after the school year, meet quarterly, observe each other, be observed by coaches, and would sometimes meet with community members. Ryoo et al. (2015) used quantitative methods through the grounded theory approach, employing observations and surveys that included a Likert scale and open-ended questions. The research question addressed how the ECS PLC model impacted educators’ professional growth. In this context, the PLC also concentrated on the needs of traditionally marginalized groups of students. The researchers evaluated the responses to 81 yearly surveys modified each year and that were completed by 38 different teachers over a 4-year period. For example, a Likert scale was added to provide additional support to open-ended questions, or questions were restated within the survey to test for consistency in responses by survey participants. Following the grounded theory approach, the
researchers found codes, themes, and categories. Emerging themes were compared with the major findings from a year-long study of nine classrooms to support the study’s conclusions (Ryoo et al., 2015).

Ryoo et al. (2015) identified the results related to PLCs and equity concerns for students in the field of computer science. The teachers reported an increased understanding, confidence, and application of inquiry-based and equity-based teaching practices because of their participation in the ECS PLC. The PLC improved teaching practices by presenting new avenues for increasing participation in computer science and by recognizing different ways to acknowledge student capacities. Participation in the PLC eliminated the feeling of isolation that is common with computer science teachers who are often the only subject area teacher on campus. Both veteran and novice teachers reported the benefits of PLCs. Teachers in years four and five of the study continued to report positive personal growth because of their participation in the PLC. Furthermore, discussions were conducted to address equitable teaching practices, challenge beliefs, and structural differences that have led to African American, female, and Latino students being underrepresented in the computer science field. Opportunities were provided for teachers to discuss teaching through inquiry-based learning for a diverse student population. Changes in practice occurred through practice teaching sessions, coaching sessions, and PLC meetings (Ryoo et al., 2015).

**Building capacity.**

To ensure continuous professional growth and student success, administrators should build capacity in the teachers participating in PLCs (Berger & Forgets-Giroux, 2012; Cherkowski, 2014; Cranston, 2011; Lumpkin, Claxton, & Wilson, 2014; Mullen & Hutinger, 2008; Urick & Bowers, 2014a; Zhang et al., 2016). There are pitfalls that school leaders at all
levels must avoid and work to mitigate to facilitate continuous successful progress (Lambertson, 2014; Zhang et al., 2016). Zhang et al. (2016) used a qualitative case study to collect data from three high schools to investigate the implementation and development of PLCs. The study collected data through semistructured interviews with 18 educators (six administrators and 12 teachers) that lasted 40–60 minutes (Zhang et al., 2016). A qualitative inductive approach was used to analyze the data to identify emergent themes around the barriers to PLCs from the perspectives of the teachers and administrators. The data were analyzed separately by the authors; then, the results were compared and discussed until the researchers came to a consensus (Zhang et al., 2016). Zhang et al. (2016) concluded that teachers must eliminate obstacles to sharing and collaboration; school leaders’ support for PLCs must include distributive leadership and mutual collaboration; district leaders should provide policies and financial support for PLCs; and all levels of educators must communicate with each other to promote shared understandings.

Zhang et al. (2016) argued that a teacher’s additional duties and heavy workload are a burden on the development of high-functioning PLCs. Teacher shortages and a lack of financial support can be an additional obstacle (Zhang et al., 2016). Furthermore, school leaders who lack systematic support and planning hinder the collaborative process and inhibit the growth of the PLC (Zhang et al., 2016). With better awareness of these issues and by taking deliberate steps to combat them, principals can build capacity within PLCs by being actively involved in the learning process of their organizations (Mullen & Hutinger, 2008). Teachers’ sense of value is increased when administrators are connected to the faculty (Cranston, 2011). Administrators should build capacity in teachers by creating an environment of collaborative decision making, developing instructional strategies through the use of data, and building a culture of experimentation based on informal accountability (Berger & Forgette-Giroux, 2012).
Ylimaki et al. (2014) described the Turnaround Leadership Development Project (TLDP) that was designed to assist leaders in making quick improvements to schools with accountability concerns and changing demographics. Based on the willingness and support of the superintendent for the 18-month-long project, 45 schools were selected to participate. All the schools were in Arizona’s rural, urban, and suburban areas and were designated as Tier III, or as low-performing schools. All of the principals who participated had been in their current roles for 3 years or less (Ylimaki et al., 2014).

Ylimaki et al. (2014) used a mixed methods design to analyze the TLDP; they investigated the impact of the TLDP on teachers’ and principals’ leadership knowledge and skills. The study also addressed the leadership modules’ influence on turnaround practices in persistently underperforming schools and to what extent the project impacted school performance labels and student outcomes. A survey using a Likert scale consisting of eight sections was administered with a 89% return rate. The total sample consisted of 62 participants (35 principals, 27 staff members). The study included 30–45 minute semistructured interviews with 29 participants who completed all the training (Ylimaki et al., 2014).

Ylimaki et al. (2014) concluded that PLCs build capacity in the entire staff and changed the manner in which leadership was viewed in the school. Indeed, principals must build capacity in teachers to move students toward high achievement, regardless of the proficiency in language or historical attitude of the population toward education. The difference forced administrators to build on collaboration as a priority for the school. The structure of the PLC shifted the community from individual leadership to coleadership through diverse stakeholders within the group. According to Ylimaki et al. (2014), there are three common leaderships practices in turning around high-needs schools. The first is organizing learning, collaboration, and capacity
building into the foundational pieces of the school’s operation. Second, principals must promote high-level teaching, learning, and professional development. Third, leaders should use culturally responsive practices throughout the organization (Ylimaki et al., 2014).

Principals can build capacity in teacher leaders to expand school and classroom improvement initiatives (Lumpkin et al., 2014). After creating a shared vision based on what teachers feel is the most important, administrators should empower department heads and strong teachers to lead and take risks, consequently building capacity in all teachers (Cherkowski, 2014). Building organizational capacity requires principals to build trust among different stakeholders and to lead conversations about sensitive topics such as racial achievement gaps which can be common in high-needs schools (Ylimaki et al., 2014).

**Infrastructure.**

Creating a time and location for the PLC to work during the school day allows for creativity and innovative ideas to emerge (Cherkowski, 2014; Liou & Daly, 2014). According to Mullen and Hutinger (2008), study groups—as a means of job-embedded professional development—force teachers to evaluate their learning and the learning of their students. Therefore, time and opportunities are created for meaningful peer learning (Mullen & Hutinger, 2008). Teachers look to principals for organizational structures and stability (Cranston, 2011). Spanneut (2010) contended administrators should take the lead in providing useful resources to ensure active engagement within PLCs. Participants need access to literature, research, and examples while working beside the school leaders (Spanneut, 2010). In facilitating the work of PLCs, principals need to be aware of possible issues such as weak, isolated, or compact groups that are hindering an inclusive network (Liou & Daly, 2014). Principals should take on an active role to build cohesion and attend to the staff members’ states of mind (Cranston, 2011).
Principals should also support PLCs by providing half-day substitutes for communities to meet with instructional coaches, discuss and develop strategies, plan lessons, and locate instructional resources (Lumpkin et al., 2014). When principals facilitate the establishment of norms that allow for change and taking risks in a safe environment, trust is built within PLCs (Cranston, 2011).

**Shared leadership.**

A shared leadership and vision are key components of successful school reform that can be attributed to PLCs when they are guided by administrative support (Berger & Forgette-Giroux, 2012; Cherkowski, 2014; Lumpkin et al., 2014; Zhang et al., 2016). Shared leadership, starting with the values and direction of the PLC, is necessary (Cherkowski, 2014). Berger and Forgette-Giroux (2012) argued that schools need to create shared leadership among staff. The principal plays an important role in fostering and sustaining PLCs, but the principal is not the only one responsible for success (Cherkowski, 2014). Leaders need to share their authority and responsibility by giving the PLC the opportunity to step outside of its normal comfort zone (Zhang et al., 2016).

Berger and Forgette-Giroux (2012) further stated that when teachers and administrators have a shared purpose, experience, and accountability, the PLC starts to gain momentum. Indeed, success is predicated on shared leadership between the administrator and the teacher charged with leading the PLC (Berger & Forgette-Giroux, 2012). Teams should be built with shifting leadership, allowing a member with the capability in a specific area to assume temporary leadership based on his or her expert knowledge, not position (DuFour et al., 2004). Principals need to search for leadership within their schools and endorse teachers’ involvement by allowing decision making to be shared and by developing teacher leaders while encouraging them to share
their expertise (Lumpkin et al., 2014). The greatest impact a principal can make comes from leading learning to empower teachers to collaborate, allowing the principals to act as conductors (DuFour & Eaker, 1998).

Trust.

According to Cherkowski (2014), building relationships with teachers to create an atmosphere of confidence is a key role of principals. Teachers working within a PLC need to feel trusted by their administrators so that they will risk trying different techniques and take initiative (Zhang et al., 2016). School leaders, though, must earn the trust of teachers (Cranston, 2011); therefore, collective trust between the faculty and the principal is a critical factor in the success or failure of a PLC (Cranston, 2011). In this sense, teacher engagement within a PLC is connected to the trust and support built into sharing ideas and expanding their professional knowledge (Liou & Daly, 2014).

Cranston (2011) was interested in what characteristics are identified by principals as most prevalent in the conception of school as PLCs. The qualitative study considered relational trust among teachers and between the teachers and principal. The researcher used a naturalistic inquiry approach that focused on activities occurring in their usual settings. The study included 12 principals from diverse settings, such as urban, suburban, and rural communities; private and public schools; varying school sizes; and different school levels (elementary, secondary, mixed). Over a 6-month period, the study used two focus groups of six principals that took place in two 90-minute sessions, followed by individual interviews lasting between 45 and 75 minutes held at another time and location. The focus groups were held first to allow participants to interact and state ideas that they may not have been able to express in an individual interview. The follow-up interview was designed to allow the participants to extend and further describe the responses
made during the focus group meetings and allowed the researcher to pay attention to nonverbal

cues (Cranston, 2011).

The naturalistic approach employed by Cranston (2011) allowed the data to emerge into
categories as opposed to making the data fit into predetermined templates. The separation
process was revisited, and the category analysis concluded with five themes that centered around
trust. First, trust develops when teachers are in relationships. Next, relational trust requires
establishing group norms around risk-taking and change orientation to foster a safe, comfortable
climate for professional growth. Third, relational trust supports effective collaboration in PLCs.
Next, the principal is central in establishing a climate of trust. Finally, the faculty need to be able
to trust the principal (Cranston, 2011).

In a study based on social networks and how those constructs manifest within PLCs, Liou
and Daly (2014) used a mixed method design that included quantitative, qualitative, and social
network data; they investigated the relationship between network members, the role trust plays
within that relationship, the conversations members were engaged in, and how those
conversations impact the network. To conduct the study, the researchers used a purposive
sampling strategy developed through a grounded theory approach to assess the work of four
high-performing elementary schools. These schools were selected from the schools identified as
out-performing the state average on standardized tests and having self-perceived high-
performing PLCs (Liou & Daly, 2014).

To collect data, the participants were asked how often and whom they would seek out
advice from about literacy (Liou & Daly, 2014); they were given a fixed choice list with
frequency measures to answer this question. Additionally, the researchers attended and observed
PLC meetings and administered surveys to evaluate the level of trust in the principal. Finally, the
interviews were conducted to evaluate perceptions of relationships, professional dialogue, and collaboration. Data were analyzed using NVivo 8 and SPSS Statistics to analyze interview and survey responses. The researchers created network maps to demonstrate the path information that could be exchanged to determine the level of connectivity of the individual players (Liou & Daly, 2014).

Liou and Daly (2014) made several observations in their work. Teachers in elementary schools with high-performing PLCs have close network relationships and seek advice through conversations with trusted staff members. The more years a teacher had worked in the building increases the likelihood that the teacher will seek advice from his or her peers. Trust in the principal was shown to have a greater impact on the success of a PLC than trust in colleagues (Liou & Daly, 2014).

In addressing trust through PLCs, Van Maele and Van Houtte (2009) investigated the manner in which teachers distinguish trust among students, parents, colleagues, and principals. The authors concluded that trust patterns are different between individual teachers. Trust in the principal is linked to the individual character traits of the principal. Faculty trust in colleagues is determined by teachers’ behavior, not the organizational structure. However, trust in students is directly related to organizational aspects of the school. The lower the socioeconomic status of the school is, the less trust will be demonstrated by the students, parents, and colleagues. When structures emphasize communication and collaboration, which are the backbones of PLCs, cooperation and trust between actors are more likely (Van Maele & Van Houtte, 2009).

Trust is built on relationships that develop from teachers and principals working together and discussing student performance and learning, and it is a required aspect of successful PLCs (Cranston, 2011). It has been shown that trust emerges when group norms and ground rules are
established to allow for difficult conversations to happen under an umbrella of respect (Cranston, 2011). The level of trust that principals have gained from the faculty before embarking on school reform greatly affects their ability to lead (Cranston, 2011). Liou and Daly (2014) argued that trust in the principal has a greater impact on the success of a PLC than trust for colleagues. Cranston (2011) contended that collective trust between the faculty and the principal is a critical factor in the success or failure of a PLC.

Regardless, a principal’s knowledge, expertise, and experience are meaningless if there relational trust has not been established (Cranston, 2011). It has also been shown that school leaders can create a culture of hope and trust among teachers and students by taking a more personal approach and allowing teachers to take big swings at student learning (Cherkowski, 2014). Teacher engagement within a PLC is connected to the trust and support built into sharing ideas and to expanding their professional knowledge (Liou & Daly, 2014). Principals must be accessible and provide pertinent, useful information and be flexible in their ability to help teachers when they are seeking guidance (Liou & Daly, 2014). Relational trust must be attended to and nurtured to sustain effective communication and foster collaboration (Cranston, 2011). In addition, principals must be cognizant of sustaining their perceived trustworthiness (Liou & Daly, 2014).

**Evaluation.**

Successful PLCs begin with professional development done by educators demonstrating techniques and clarified strategies for each other (Berger & Forgette-Giroux, 2012). The goal of a PLC is to change the model of professional development from a passive chore to an engaging, focused, outcome-driven endeavor (Cherkowski, 2014). In her study Woodland (2016) showed PLCs, when created for participants to learn through dialogue, give educators an opportunity to
transform schools and student learning. As an organizational improvement system, PLCs have become a widely recognized tool to establish and maintain school advancement (Woodland, 2016). According to Gajda and Koliba (2007), principals have to guide teachers in learning to collaborate in an appropriate and efficient manner. Hence, PLCs are often mandated improvement strategies that are implemented without a system based on research, making it difficult to evaluate their effectiveness and guide the practitioners’ work (Woodland, 2016). To evaluate and guide effective PLCs, organizations can utilize the Teacher Collaboration Assessment Rubric (TCAR) to gage the quality of the dialogue, decision making, action, and evaluation (Gajda & Koliba, 2007).

The TCAR is a tool to assess the characteristics associated with teacher collaboration (Gajda & Koliba, 2007) and can be used as a stand-alone tool or in combination with other evaluation tools to assess the collaboration efforts of PLCs (Zito, 2011). This assessment tool can be utilized for developmental evaluation, formative evaluation, outcome evaluation, or any combination of the three (Woodland, 2016). Zito (2011) used TCAR results and combined them with student achievement data to evaluate the correlation between PLCs and student learning outcomes. Investigating 20 PLCs in elementary and middle schools, Zito (2011) found a modestly statistically significant relationship between administrator PLC support and reading (.311, p<0.05) and student writing (.321, p<0.05) performance. These findings support the recommendations in the literature regarding established infrastructures such as time, location, group norms, and peer observations as a necessary component of successful PLCs (Cranston, 2011; Liou & Daly, 2014; Mullen & Hutinger, 2008; Zito, 2011). Zito (2011) also recommended that teachers and administrators be trained in the dialogue, decision making, action taking, and
evaluation (DDAE) process but with an emphasis on evaluating student data and learning outcomes.

**Leadership style.**

**Transformational leadership.**

Transformational leadership has been a frequently studied leadership principle (Hallinger, 2003; Hitt & Tucker, 2016; Robinson, Lloyd, & Rowe, 2008; Shatzer, Caldarella, Hallam, & Brown, 2014; Urick, 2016). Transformational leadership is driven by the leader’s organizational management of resources through hiring, creating, and maintaining an orderly climate (Leithwood, 1994; Urick & Bowers, 2014b). Transformational leadership has evolved into focusing on building the following capacities and understandings in teachers: school vision, intellectual stimulation, individual support, modeling professional practice, demonstrating high performance expectations, and providing structures to allow participation in school decisions (Leithwood, 1994; Leithwood & Jantzi, 2008; Leithwood & Sun, 2012). This style of leadership communicates more about the leader–staff relationship than about student outcomes (Hitt & Tucker, 2016; Robinson et al., 2008). Goal setting (clear vision) is vital for school operations but has little in the way of a direct impact on student learning. Clear goals keep the staff focused and decisions allow for more opportunities for student achievement (Robinson et al., 2008). However, transformational leadership affects teachers’ motivation and school environment but has little effect on student achievement (Shatzer et al., 2014).

Transformational leadership is measured by tasks being complete rather than influence gained through leadership (Urick, 2016). Under this style of leadership, school restructuring has included shared decision making and distributed leadership (Urick, 2016). Teacher leadership has become a more studied concept regarding sharing the authority for making decisions about
the operation of the school (Urick, 2016). Transformational leadership has been expanded to include the principal’s responsibilities for building capacity in the instructional practice of teachers, hence linking transformation leadership to instructional leadership (Hallinger, 2003, 2005; Urick & Bowers, 2014b).

*Instructional leadership.*

Hallinger (2003, 2005) identified two main differences in transformational leadership and instructional leadership. Teachers are responsible for performing instructional tasks, but the transformational principal does not get involved in curriculum decisions. Second, transformational principals focus on cultivating community support by manipulating school goals into personal goals (Hallinger, 2005; Urick & Bowers, 2014b).

Instructional leadership has been conceptualized into three goals: defining the mission of the school, management of the instructional program, and developing/promoting a positive school climate (Hallinger, 2003; Shatzer et al., 2014). Instructional leadership has been found to have both a direct (Shatzer et al., 2014) and indirect effect on student outcomes (Hallinger, Bickman, & Davis, 1996). Instructional leadership is three to four times more impactful on student achievement than transformational leadership (Robinson et al., 2008; Shatzer et al., 2014). When controlling for school and principal demographics, instructional leadership has a significantly larger influence when accounting for the variance in raw test scores (Shatzer et al., 2014). How often instructional leadership practices are being used is more meaningful than the extent to which they are being performed by those involved (Robinson et al., 2008). Monitoring student progress and providing incentives for learning have also been found to be significant dimensions of instructional leadership (Shatzer et al., 2014).
Shared instructional leadership (SIL).

Transformational leadership is the predecessor of shared instructional leadership (SIL; Marks & Printy, 2003; Printy, Marks, & Bowers, 2009; Urick & Bowers, 2014b). Transformational leadership is necessary for SIL, but transformational leadership characteristics alone do not ensure SIL (Marks & Printy, 2003; Robinson et al., 2008). SIL is a product of the critics of instructional leadership who saw the method as a top-down, principal-centered method (Hallinger, 2003; Rowan, 1990; Urick & Bowers, 2014b). SIL promotes the collaboration of leaders and teachers around instructional practices (Marks & Printy, 2003; Printy et al., 2009; Urick & Bowers, 2014b); indeed, the importance of the leader’s role does not diminish over time when leadership is distributed more evenly ( Heck & Hallinger, 2009).

Specific principals’ behaviors have been found to have higher levels of impact on student achievement, and these include monitoring student progress, protecting instructional time, providing incentives for learning, providing incentives for teachers, and making rewards contingent (Shatzer et al., 2014). An SIL-focused principal, when working from a position of authority, distributes responsibilities to teachers and directs the development of SIL through instruction and community building (Urick & Bowers, 2014b). Planning in larger high schools that is handled by staff such as department chairs and designated curriculum leaders is evident in students performing higher than expected (Shatzer et al., 2014; Urick, 2016).

SIL has been described as a higher order level of running a school (Robinson et al., 2008; Urick, 2016). SIL operates under the concept that neither the principal nor teachers can solely provide the systematic leadership needed to improve instruction or student achievement (Marks & Printy, 2003; Printy & Marks, 2006). Therefore, SIL relies on the tension created by teachers being recognized as the instructional experts and simultaneously being evaluated not only by the
principal, but also by their fellow teachers through collaboration (Printy & Marks, 2006). Productive interaction between adults to facilitate school improvement and seeking to learn from colleagues to improve professional practice are two key components that will allow teachers to integrate into SIL (Printy & Marks, 2006).

Two studies of different types of leadership provided essentially the same answer—the closer educational leaders get to the core business of teaching and learning, the more likely they are to have a positive impact on student outcomes (Robinson et al., 2008; Shatzer et al., 2014). Schools function at different levels, and leaders need to guide the school based on the need of the school. Focusing on instruction when teachers and students do not feel safe and supported will not produce the desired outcomes. However, when leaders focus on teacher learning, teaching, and student learning, positive impacts on student achievement have been seen (Robinson et al., 2008).

SIL cultivates collaborative efforts between principals and teachers who are focused on instruction (Urick & Bowers, 2014b). As learners in the school, administrators are active participants in teacher learning and development. These leaders are sought after for advice, regardless of their personal relationships with the staff (Robinson et al., 2008).

SIL creates an opportunity to disseminate duties normally seen as the principal’s responsibility to other administrators and teachers (Kaplan & Owings, 1999; Marks & Printy, 2003; Printy & Marks, 2006). Working with the principal, assistant principals and teachers are given a voice and empowered to communicate and share in the decision-making process to improve school performance (Marks & Printy, 2003; Printy & Marks, 2006). SIL creates accountability among teachers and administrators because of participants taking ownership of the decisions being made (Printy & Marks, 2006). Common practices here that lead to useful
feedback include visiting classrooms, evaluation of student work, and inclusion of teachers in the evaluation process (Robinson et al., 2008).

According to Printy and Marks (2006), effective schools foster a climate of social interaction between teachers in which colleagues become the leading basis of learning for educators. Classroom teaching then is followed by instructional leadership regarding their importance to student achievement outcomes (Berger & Forgette-Giroux, 2012). SIL requires mutual respect between leaders and teachers that is transparent and equitable (Printy & Marks, 2006), and collaboration requires shared leadership (Berger & Forgette-Giroux, 2012; Zhang et al., 2016).

SIL is directly tied to teacher and leader influence over resources as a practice of managing the school (Urick, 2016) and encompasses the contributions of both principal and teachers to the curriculum, instruction, and assessments (Printy et al., 2009). Through building capacity in teachers and SIL, principals can promote a two-way relationship of feedback and increase student outcomes (Urick, 2016). Leadership is developed with leaders and teachers, which is centered on focus, coherence, and consistency (Printy et al., 2009).

**SIL implications for high-needs schools.**

According to Jackson and Marriott (2012), the quality of leadership at low SES schools and urban schools is often perceived as poor. Schools in the South are also categorized as having a lower organizational leadership management rating (Jackson & Marriott, 2012). Shatzer et al. (2014) found that a negative relationship is present between student achievement and SES in their leadership study comparing instructional and transformational practices. Having a larger percentage of low SES students leads to decreased student achievement (Shatzer et al., 2014). Indeed, inequalities are found in poor leadership from principals, as well as teachers not feeling
as though they have an influence in the policy in dealing with high-needs schools and populations. The lack of influence leads these schools to be labeled as less desirable leadership positions (Jackson & Marriott, 2012). These results are not surprising. However, principals who are focused on SIL and who are student centered have been found to work effectively in economically disadvantaged settings (Urick & Bowers, 2014b). In these schools, leadership is distributed throughout the entire school organization, not just within the formal school leaders (Jackson & Marriott, 2012).

**Conclusion**

In summary, PLCs have been shown to enhance the work of teachers through dialogue, evaluation, and sharing (Brodie, 2014). When administrators lack an agenda that has a clear focus and plans, the work of the PLC is undermined; teachers lose their motivation and are reluctant to engage in meaningful change (Zhang et al., 2016). The principal’s involvement is required for success, and leadership should be shared among all of the members engaged in the work of the PLC (Berger & Forgette-Giroux, 2012). Principals are in a position to create, sustain, and foster teacher development through partnerships; therefore, principals are in a position to build capacity within teachers (Mullen & Hutinger, 2008). By providing a time and location for teachers to discuss and exchange information (Liou & Daly, 2014) that is supported by trusting the focused work of PLCs, principals have avenues with which they can improve school performance (Cranston, 2011). PLCs can change the perceptions and beliefs of the entire school environment (Berger & Forgette-Giroux, 2012). Without a foundation of two-way trust between administrators and teachers, PLCs have been shown to not bring about the results for which they are designed (Cranston, 2011; Liou & Daly, 2014). Finally, an assessment of the work being done is vital to create an understanding of what has been accomplished and what needs to be
done. If all of the previous is followed, educators and schools will reap the long-term benefits of working in PLCs for years (Ryoo et al., 2015).

As demonstrated in this literature review, there are numerous studies about PLCs. Of those studies, however, few have directly addressed PLCs in high-needs schools. In this context, too many district initiatives bog down the process for improvement and compete with the work of PLCs (Ylimaki et al., 2014). Systematic changes are necessary to get past what researchers call the “lone hero” in high-needs schools, that is, those who are trying to hang on long enough to impact student learning. Bringing in collective efforts and perspectives of all the stakeholders, including district and school leaders, teachers, parents, students, and community members, within the educational system is vital to the success of high-needs schools (Barrett, Ford, & James, 2016). With the proper leadership, PLCs in successful high-needs schools can make a positive impact on the school and the actions of the staff (Urick & Bowers, 2014a; Ylimaki et al., 2014).
REFERENCES


CHAPTER 2
EXAMINING PROFESSIONAL LEARNING COMMUNITIES

For years, educators in Georgia were required to complete a designated number of hours of professional learning to renew their teaching certificate (Georgia Professional Standards Commission, 2015). The core of professional learning in Georgia changed on July 1, 2017: educators were then mandated to participate in professional learning communities (PLCs) to fulfill certificate renewal requirements (Georgia Professional Standards Commission, 2016). The transition to professional development has placed more emphasis on job-embedded collaborative efforts for both principals and teachers. With this background, the purpose of the current study is to investigate the shared instructional leadership behaviors and teacher collaboration evident in established PLCs.

The recent calls for school improvement are consistent on the state and national level. The current study will provide new perspectives on the changing methods of teacher professional development. Indeed, recently, professional Georgia educators have been walking into the unknown, which in many ways is counterintuitive because the most direct way to improve schools is through professional development of the educators, who are in the trenches every day (Berger & Forgette-Giroux, 2012; Cranston, 2011; Robinson, Lloyd, & Rowe, 2008). Taking this leap of eliminating continuous structured professional learning could have disastrous effects, provide an avenue for drastic improvement, or have no change at all. Thus, the change in professional learning requirements should be evaluated and monitored to assess its possible benefits or impairments.

There are many methods and lenses with which to investigate PLCs (Liou & Daly, 2014; Riveros & Viczko, 2012; Wells & Feun, 2007; Zhang, Yuan, & Yu, 2016). Using the lens of
shared instructional leadership (SIL), data will be gathered, analyzed, and evaluated in the present study. Shared leadership is essential because the duties of leading a school are too complex to do alone (DuFour & Eaker, 1998); here, two key components for teachers to integrate into SIL their practice are productive interaction around school improvement between adults and pursuing the opportunity to learn from colleagues to improve trained practice (Printy & Marks, 2006). Looking at these two components, the questionnaire used in the current study will be used to analyze teacher perceptions of collaboration and administrator support, specifically addressing SIL.

SIL—inclusive leadership empowering teachers to participate in informal and formal roles to inspire others to learn together and improve practice (Marks & Printy, 2003)—has been found to have the largest effect on student academic growth (Urick & Bowers, 2014b). By including teachers in decisions on spending and hiring and providing a culture focused on the established mission and vision of the school, principals can improve teacher practice (Urick & Bowers, 2014b). In addition, SIL is the active collaboration of the principal and teachers in the building in addressing curriculum, instruction, and assessment practices. In an effort to expand the leadership capacity within schools, leaders should include teachers in decision making and dialogue (Marks & Printy, 2003). Dialogue and decision making are the first two categories measured by the teacher collaborative assessment survey (TCAS) and will inform the SIL dimension of the current study, along with selected questions from the first section of the teacher questionnaire, hence addressing the administrator’s role.

This research will identify SIL behaviors that are prominent in established PLCs. It will also add to the limited body of available research on shared instructional leadership in practice. Additionally, the current study aims to provide leaders with predictors for effective PLCs in one
high-needs high school by using a multiple regression analysis to identify statistically significant variables. Identifying these variables can assist in validating the state of Georgia’s implementation of a new professional learning policy for certificate renewal.

**Research questions.**

The following questions will guide the present study:

1. What SIL behaviors are prominent in established PLCs in one high-needs high school?
2. To what extent does teacher collaboration predict the effectiveness of PLCs?

**Methodology**

The data that inform this quantitative study come from questionnaire responses from PLC teachers in one Title I high school located in the middle of Georgia; this school aligns with the components of SIL, incorporates teacher collaboration structures, and contains administrative assessments of the work of the PLC. At the end of the 2017–2018 school year, the PLC teachers of Lincoln High completed a modified version of the TCAS (Woodland, Lee, & Randall, 2013), which is comprised of six sections. Teachers were asked to indicate their agreement to each statement on a 5-point Likert-scale-type questionnaire ranging from 1 (strongly disagree) to 5 (strongly agree; see Appendix B). This questionnaire assessed the teachers’ perceptions of the role administrators played, collaboration within the PLC, and changes in the practice of teachers (Zito, 2011). Finally, the school administration assessed each PLC using the Teacher collaboration assessment rubric (TCAR) (Woodland, 2016). The TCAR quantitatively assesses each PLC using four categories of collaboration: dialogue, decision making, action, and evaluation. The data collected are used in a multiple regression analysis to determine if teacher collaboration predicts the effectiveness of PLCs.
Table 1

*Shared Instructional Leadership Questions From the Teacher Collaboration Questionnaire*

<table>
<thead>
<tr>
<th>SIL Characteristic</th>
<th>Questions From Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialogue</td>
<td>All of section 2</td>
</tr>
<tr>
<td>Decision Making</td>
<td>All of section 3</td>
</tr>
<tr>
<td>Shared Vision, Mission, and Goals</td>
<td>Section 1, questions a, d, e, f, i</td>
</tr>
</tbody>
</table>

Descriptive statistics are used to address the first research question regarding the prominent behaviors associated with SIL, which provides opportunities for teachers to take leadership roles through interaction among colleagues, to have more of an influence over curriculum decisions, and to have more of an influence over instructional decisions (Printy & Marks, 2006; Urick, 2016). Teacher responses to questions directly related to SIL, such as the dialogue section and decision-making section of the TCAS, are evaluated. Responses to questions a, d, e, f, and i in section one of the teacher questionnaire address the role of the leader in sharing responsibility for instructional decisions. These responses are evaluated based on the mean, standard deviation, and range. The results are compiled and explicitly discussed to evaluate trends in the responses from the teachers. The data used to identify prominent SIL behaviors a were gathered from the questions listed in Table 1.

In response to the second research question, the current study uses a multiple regression analysis with the measures of collaboration, gender, highest degree earned, years at the school, years with the PLC, and years as an educator as the independent variables. As demonstrated in the literature review in the previous chapter, experience and collaboration influence the effectiveness of PLCs. The length of time a teacher has worked in a building has impact the level of trust and ability to lead within a PLC thus several measures of experience are included as independent variables (Liou & Daly, 2014; Ryoo, Goode, & Margolis, 2015). Collaboration is
Table 2

Description of Variables in the Regression Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variable</strong></td>
<td></td>
</tr>
<tr>
<td>Teacher Collaboration (TCAS Total)</td>
<td></td>
</tr>
<tr>
<td>- Dialogue</td>
<td>As measured by section two of the questionnaire</td>
</tr>
<tr>
<td>- Decision Making</td>
<td>As measured by section three of the questionnaire</td>
</tr>
<tr>
<td>- Action</td>
<td>As measured by section four of the questionnaire</td>
</tr>
<tr>
<td>- Evaluation</td>
<td>As measured by section five of the questionnaire</td>
</tr>
<tr>
<td>Gender</td>
<td>Male teachers coded as 0, female teachers coded as 1</td>
</tr>
<tr>
<td>Highest Degree</td>
<td>Bachelors coded as 1, masters coded as 2, specialist coded as 3, doctorate coded as 4</td>
</tr>
<tr>
<td>Years at the School</td>
<td>Number of years at Lincoln High</td>
</tr>
<tr>
<td>Years with the PLC</td>
<td>Number of years as a member of the PLC</td>
</tr>
<tr>
<td>Experience as Educator</td>
<td>Number of years as educator</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Effectiveness of the PLC</td>
<td>As measured by section six of the questionnaire</td>
</tr>
</tbody>
</table>

the foundation of PLCs (Berger & Forgette-Giroux, 2012; DuFour, 2003; DuFour, et al., 2004; DuFour & Eaker, 1998 Gajda & Koliba, 2008; Woodland, 2016; Woodland et al., 2013; Zito, 2011) and SIL (Marks & Printy, 2003; Printy et al., 2009; Urick & Bowers, 2014a, 2014b), therefore included as an independent variable. The dependent variable is the effect of the PLC as measured through the final section of the teacher questionnaire (see Appendix B). The variables used in the multiple regression are listed in Table 2. Outliers, normality, and variance inflation factors were assessed to check for the multicollinearity of the data.

**Validity and reliability.**

There were five sources of evidence for investigating the validity of the data-gathering instruments. Those sources included the test content, response process, internal structure, relations to other variables, and convergent and discriminant data (Woodland et al., 2013). The TCAS is designed to make teacher collaboration functional though dialogue, decision making, actions, and evaluation (DDAE; Woodland et al., 2013). Evidence was found from the survey
data, focus groups, interviews, and a study by Zito (2011) to support all five indicators for validity. Using the 2012 data from two districts, Woodland et al. (2013) reviewed the responses from 591 surveyed educators, who were from elementary, middle, and high schools and covered every educator role, including regular and special education teachers of all subjects, counselors, department heads, assistant principals, school psychologists, librarians, and other faculty members (Woodland et al., 2013). Evidence of validity based on the content was provided through a focus group rating of a 4.5 out of 5, meaning the focus group strongly agreed that the items were aligned with the purpose of the survey. Evidence based on the response process was gathered from pre- and post-administration interviews and confirmed that the respondent understood the TCAS items and instructions. Evidence of validity based on the internal structure of the instrument was provided by an overall outfit mean square of 1.07, meaning the items worked well together in defining their construct. Validity through evidence in relation to other variables was provided by the work of Zito (2011). Finally, convergent and discriminant evidence was provided by empirical correlation values (.27 – .83, p < .001), showing statistically significant relationships between dialogue, decision making, and action. The TCAR listed in the Center for Effective School’s database of valid and reliable measurement instruments for PLCs (Blitz & Schulman, 2016). The TCAR meets the standard expectation for content validity because the questions assess the DDAE process as described in the TCAS literature.

**Sampling.**

The current study employs a purposeful sample to investigate PLCs (Creswell & Poth, 2017). The selection criteria included a Title I high school with established PLCs with administrative support and documented success. Purposive sampling is used because the school administration has identified PLCs as the catalyst to the improvement in the school graduation
rate and improvement in overall state evaluation rating, allowing the school to be removed from the needs improvement list after 1 year (Gay, Mills, & Airasian, 2012).

The 4-year graduation rate for the state of Georgia was 79.0% in 2015 and remained relatively unchanged through 2017, when the rate was 80.6% (Georgia Department of Education, 2017). During the same time frame, one Title I high school in the middle of Georgia, referred to as Lincoln High, increased its graduation rate from 72.5% in 2015 to 88.4% in 2017. School improvement, defined by a positive school culture and strategic staff actions in high-needs schools, can be attributed to the actions in PLCs (Ylimaki, Brunderman, Bennett, & Dugan, 2014). The school’s administration has pointed to the current work of structured PLCs implemented during the 2012–2013 school year as a major contributor to the marked improvement in the graduation rate. The lack of literature addressing high-needs high school PLCs has led me to focus on this area.

At Lincoln High, every teacher is assigned to at least one PLC. Each PLC consists of two to seven teachers in designated content areas. Some of those PLCs meet outside of the regular school day, meaning before or after school. Each PLC has a selected teacher as the leader, who is part of the school’s leadership PLC. The school has 15 core content PLCs made up of 68 teachers who have common planning periods intentionally designed around their PLCs. These PLCs meet at least once a week in a specified location. For example, all the members of the geometry PLC have third period planning and meet in room 1601 every Thursday during that period. The current study will investigate the 15 weekly meetings of the PLCs dedicated to core content areas.

Lincoln High has an administrative team comprised of one principal and five assistant principals. The assistant principals share the responsibility of supporting the PLCs by
department. One of the assistant principals is designated as the assistant principal for instruction (API) and is charged with overseeing the general operation and consistency regarding the expectations of the teachers working in the PLCs. The API has been in this role for 10 years and provides weekly feedback to each PLC based on observations, their meeting notes, and student work samples as data sources. This assistant principal for instruction was responsible for completing the TCAR evaluation for each of the 15 core content PLCs.

Data Collection.

Collaboration has been credited with improving student achievement in high-needs schools (Woodland et al., 2013). After several years of PLC implementation at Lincoln High, data were collected through a teacher questionnaire made up of six sections that used a Likert scale (see Appendix B; Woodland et al., 2013; Woodland & Hutton, 2012; Zito, 2011). The Teacher Collaboration Assessment Survey (TCAS) was designed around the DDAE model to build capacity in teachers to make positive changes in their professional practice (Woodland et al., 2013), and it provides an operational evaluation tool to assess specific elements of collaboration. The details gained from using this instrument allow administrators to deliver a blueprint of data that can be duplicated, adapted, improved, and celebrated (Woodland et al., 2013).

Lincoln High administrators have used the TCAS to assess the collaboration efforts from the teachers’ perspective. This tool provides the same overall rating and four DDAE subcategory scores as the TCAR. The dialogue and evaluation sections contain 11 questions each. There are eight questions in the decision-making category and 10 questions evaluating action. Because of the limited sample size in this Title I school, each of the sections was calculated by taking the mean of the responses (Hair, Black, Babin, Anderson, & Tatham, 2006). The other two sections
of the questionnaire come from work done by Zito (2011); these two sections will inform the study by providing data on the effect of the PLC on their practice and the role administrators play in the PLC process from the teachers’ perspectives, specifically connecting work done in the PLC to SIL (Zito, 2011). These data were made available to the researcher by the school principal with district-level approval given for analysis.

Effectiveness is defined by the changes in professional practice, instructional practice improvement, and student learning (Darling-Hammond & McLaughlin, 2011; Labone & Long, 2016; Patton, Parker, & Tannehill, 2015). Educational change occurs when teachers rethink their practice (Patton et al., 2015). Therefore, creating powerful learning experiences that are grounded in social interaction generates the desired change in professional practice (Patton et al., 2015). Hence, the effectiveness of PLCs was measured by teacher responses to eight questions that assessed the change in practice in the sixth and final section of the teacher questionnaire (see Appendix B).

The second set of data was collected when the Lincoln High administration decided to use the TCAR to evaluate the work of their PLCs to assess the implementation of the new state requirements for certificate renewal (Woodland, 2016). The TCAR can be used as a formative assessment and/or outcome evaluation of PLCs (Gajda & Koliba, 2008; Woodland, 2016; Zito, 2011), and it assigns an overall numerical value to the PLC based on scores given in four categories: dialogue, decision making, action taking, and evaluation (DDAE) (Woodland, 2016). The TCAR was used as an observational tool by the designated API to evaluate each PLC, thus assigning each group of teachers a score to rate collaboration. Because of the limited data, the researcher was not able to include the TCAR results in the multiple regression model.
The TCAR consists of 26 items divided into four categories, with each item being assessed using a 3-point scale (0–2; Appendix A; Woodland, 2016). The four categories were dialogue, decision making, action, and evaluation. Dialogue is the foundation of the efforts associated with the PLC and states that conversations should be geared toward student learning outcomes (Berger & Forgette-Giroux, 2012; Liou & Daly, 2014). Next, the decision-making process decides the steps that should be taken to improve the instructional practices of both individuals and the entire group; these decisions are based on student learning outcomes and should be driving the PLC (Kelly & Cherkowski, 2015; Zhang et al., 2016). Moreover, content decisions, instructional strategies, and student engagement should also guide the decision-making process (Berger & Forgette-Giroux, 2012; Zhang & Sun-Keung Pang, 2016). Finally, PLC members must be able to move past trivial decisions, such as textbook selection and classroom procedures, to make the work meaningful and facilitate opportunities for improved learning outcomes (Woodland, 2016; Woodland & Mazur, 2015). Third, action taken based on data-driven decisions is the key to school improvement (Woodland, 2016). Without the action step, teachers are merely talking for collegiality. Lastly, evaluation of the action completes the cycle and starts the next discussion. The evaluation process requires a deliberate look at the data generated from the action step. Furthermore, the data need to be gathered from multiple sources to create reliability. Evaluation tools, such as the TCAR, are also required to provide feedback on the practices of the group to ensure fidelity and improvement of the PLC and the student learning outcomes (Woodland, 2016).

Results

Data analysis was conducted in two stages. The first stage consisted of analyzing the descriptive statistics generated by the teacher questionnaire and the TCAR evaluation of the
administration. The second stage consisted of a multiple regression analyses to identify if there were any statistically significant predictors of PLC effectiveness.

**Sample demographic statistics.**

To evaluate the school’s PLCs, teachers at Lincoln High responded to the TCAS in May of the 2017–2018 school year. Each responding teacher (N = 64) was part of one of 15 primary PLCs. The PLCs were made up of two to seven members who taught the same course; the proportions of these PLC groups are presented in Table 3.

Table 3

*Frequency Table for the Nominal Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC Category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10th/12th Literature</td>
<td>7</td>
<td>10.94</td>
</tr>
<tr>
<td>11th Literature</td>
<td>4</td>
<td>6.25</td>
</tr>
<tr>
<td>9th History</td>
<td>2</td>
<td>3.12</td>
</tr>
<tr>
<td>9th Literature</td>
<td>3</td>
<td>4.69</td>
</tr>
<tr>
<td>A&amp;P</td>
<td>2</td>
<td>3.12</td>
</tr>
<tr>
<td>Algebra</td>
<td>7</td>
<td>10.94</td>
</tr>
<tr>
<td>Algebra 2</td>
<td>4</td>
<td>6.25</td>
</tr>
<tr>
<td>Biology</td>
<td>5</td>
<td>7.81</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3</td>
<td>4.69</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
<td>4.69</td>
</tr>
<tr>
<td>Geometry</td>
<td>7</td>
<td>10.94</td>
</tr>
<tr>
<td>Physical Science</td>
<td>5</td>
<td>7.81</td>
</tr>
<tr>
<td>U.S. History</td>
<td>3</td>
<td>4.69</td>
</tr>
<tr>
<td>World History</td>
<td>4</td>
<td>6.25</td>
</tr>
<tr>
<td>World Languages</td>
<td>5</td>
<td>7.81</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>67.19</td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>32.81</td>
</tr>
<tr>
<td>Degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors</td>
<td>12</td>
<td>18.75</td>
</tr>
<tr>
<td>Masters</td>
<td>35</td>
<td>54.69</td>
</tr>
<tr>
<td>Specialist</td>
<td>16</td>
<td>25.00</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>1.56</td>
</tr>
</tbody>
</table>

*Note.* Because of rounding errors, percentages may not equal 100%.
Most of the teachers were female \((n = 43, 67\%)\). Furthermore, most of the teachers have master’s degrees \((n = 35, 55\%)\). An additional 17 respondents have a specialist or doctorate degree, meaning that 81% of the responding teachers completed education past a bachelor’s degree. The frequencies and percentages of the responding teachers are also presented in Table 3.

The means and standard deviations were calculated to describe the representation of the continuous traits of interest within the sample. Teachers at Lincoln High had an average of 8.89 years of experience working at the school and an average of 15.00 years as educators. Each teacher was a member of their primary PLC for an average of 4.55 years. The summary statistics are provided in Table 4.

### Summary Statistics for Interval and Ratio Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>(M)</th>
<th>(SD)</th>
<th>(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in the school</td>
<td>8.89</td>
<td>7.07</td>
<td>64</td>
</tr>
<tr>
<td>Years in primary PLC</td>
<td>4.55</td>
<td>2.91</td>
<td>64</td>
</tr>
<tr>
<td>Years as an educator</td>
<td>15.00</td>
<td>7.63</td>
<td>64</td>
</tr>
</tbody>
</table>

Descriptive statistics for administrative support.

The first section of the school’s administered teacher collaboration questionnaire was designed to assess the role administrators play in supporting the work of PLCs (see Appendix B). The administrative role responses had an average of 3.85 \((SD = 0.87, \text{Min} = 1.00, \text{Max} = 5.00)\). However, a closer look is given to the five specific questions addressing SIL practices that focus on shared vision, mission, and goals. The first question (1.a) asked teachers to rate how the school’s administration promoted a shared vision for teacher collaboration; the observations for shared vision of teacher collaboration had an average of 4.51 \((SD = 0.93, \text{Min} = 1.00, \text{Max} = 5.00)\). This vision question was the highest rated response to all the questions about the role of administrator and the second highest rated response of the entire questionnaire. The observations
for monitoring the PLC’s impact on student achievement (1.d) had an average of 4.00 ($SD = 1.13$, $Min = 1.00$, $Max = 5.00$). The observations for providing individual feedback for PLC improvement (1.e) had an average of 3.83 ($SD = 1.11$, $Min = 1.00$, $Max = 5.00$). The observations for providing group feedback for PLC improvement (1.f) had an average of 3.98 ($SD = 0.98$, $Min = 1.00$, $Max = 5.00$). The observations for effectively addressing resistant individuals (1.i) had an average of 3.41 ($SD = 1.15$, $Min = 1.00$, $Max = 5.00$). Table 5 lists the summary statistics for the identified administrative support questions and the administrative support overall.

Table 5

<table>
<thead>
<tr>
<th>Summary Statistics for Administrative Support Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables for administrative support</td>
</tr>
<tr>
<td>Shared vision for collaboration</td>
</tr>
<tr>
<td>Monitors PLC impact on student achievement</td>
</tr>
<tr>
<td>Provides individual feedback for PLC improvement</td>
</tr>
<tr>
<td>Provides group feedback for PLC improvement</td>
</tr>
<tr>
<td>Effectively addresses resistant individuals</td>
</tr>
<tr>
<td>Administrative support (overall rating)</td>
</tr>
</tbody>
</table>

**Descriptive statistics for dialogue.**

Summary statistics were calculated for the dialogue portion of the teacher questionnaire. This area of the questionnaire consisted of the 11 questions in the second section (see Appendix B). The dialogue and decision making sections of the TCAS and the TCAR evaluations provided further data for evaluating prominent behaviors in established PLCs.

The teachers’ responses for the dialogue portion (section 2) of the questionnaire had an average of 4.03 ($SD = 0.77$, $Min = 1.00$, $Max = 5.00$). All the responses to the questions in the dialogue section of the questionnaire were within one standard deviation of the dialogue mean, with averages between 3.59 and 4.61. The teachers’ responses for the decision-making portion (section 3) of the questionnaire had an average of 4.23 ($SD = 0.82$, $Min = 1.00$, $Max = 5.00$).
Similarly, all of the responses in this section also fell within one standard deviation of the mean, with averages between 4.38 and 4.05. Five of the 11 questions assessing dialogue were rated above the mean of 4.03. Of all the responses to the questionnaire, the teachers rated the purpose of collaboration highest having an average of 4.61 ($SD = 0.87$, Min = 1.00, Max = 5.00).

Table 6

*Summary Statistics for Dialogue Variables*

<table>
<thead>
<tr>
<th>Variable – Dialogue</th>
<th>$M$</th>
<th>$SD$</th>
<th>$n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose is to improve instruction; it increases student learning.</td>
<td>4.61</td>
<td>0.87</td>
<td>64</td>
</tr>
<tr>
<td>PLC has the appropriate group members.</td>
<td>4.30</td>
<td>1.06</td>
<td>64</td>
</tr>
<tr>
<td>PLC meetings are consistently attended.</td>
<td>3.95</td>
<td>1.15</td>
<td>64</td>
</tr>
<tr>
<td>Preplanned, accessible, written meeting agenda available.</td>
<td>3.85</td>
<td>1.23</td>
<td>62</td>
</tr>
<tr>
<td>Purposefully facilitated meetings to guide dialogue.</td>
<td>4.10</td>
<td>0.87</td>
<td>63</td>
</tr>
<tr>
<td>Accurate account of dialogue, decisions and intended actions.</td>
<td>4.25</td>
<td>0.89</td>
<td>64</td>
</tr>
<tr>
<td>Every member has access to running records.</td>
<td>3.59</td>
<td>1.23</td>
<td>64</td>
</tr>
<tr>
<td>Disagreements occur, are welcomed, and lead to new shared understandings.</td>
<td>3.62</td>
<td>1.05</td>
<td>64</td>
</tr>
<tr>
<td>There is equal participation in dialogue.</td>
<td>3.86</td>
<td>1.11</td>
<td>64</td>
</tr>
<tr>
<td>Dialogue is focused on examination of evidence related to performance and goal attainment.</td>
<td>3.94</td>
<td>1.01</td>
<td>64</td>
</tr>
<tr>
<td>Dialogue is focused on instructional practices.</td>
<td>4.22</td>
<td>0.90</td>
<td>64</td>
</tr>
<tr>
<td>Dialogue (overall rating)</td>
<td>4.03</td>
<td>0.77</td>
<td>64</td>
</tr>
</tbody>
</table>

The teachers strongly agreed that the purpose is to systematically improve instruction to increase student learning (2.a). The teachers agreed that the PLC was made up of the appropriate group members (2.b), with an average of 4.30 ($SD = 1.06$, Min = 1.00, Max = 5.00). Teachers’ beliefs that meetings were purposefully facilitated to guide dialogue (2.e) had an average of 4.10 ($SD = 0.87$, Min = 1.00, Max = 5.00). An accurate account of dialogue, decisions, and intended actions was maintained (2.f), having an average of 4.25 ($SD = 0.89$, Min = 1.00, Max = 5.00). The teachers also indicated that dialogue was focused on instructional practices (2.k), with an average of 4.22 ($SD = 0.90$, Min = 1.00, Max = 5.00). The lowest rated questionnaire items in the dialogue section were about agenda availability (2.d), access to meeting records (2.g), equal participation of members (2.i), and disagreements within the PLC (2.h). All of these items were
rated with an average between 3.59 and 3.86. The summary statistics for the dialogue portion of the TCAS are listed in Table 6.

**Descriptive statistics for decision making.**

Decision making, the next component identified as a prominent SIL behavior, came to the forefront. The decision-making section was the highest rated segment of the DDAE process when looking at the teacher responses to the TCAS. The teachers connected dialogue to decision making by agreeing that all decisions are informed by group dialogue (3.b) with an average of 4.20 ($SD = 0.98$, Min = 1.00, Max = 5.00). The three highest rated statements in this section were about the teachers’ ability to make decisions regarding instructional practice. The statement decisions were made about instructional practices to initiate, maintain, develop, or discontinue (3.a) was the highest rated question of this section, with an average of 4.38 ($SD = 0.93$, Min = 1.00, Max = 5.00). The statement that decisions are made directly related to improving instructional practice, and student learning (3.d) was the second highest rated question of this section, with an average of 4.36 ($SD = 0.95$, Min = 1.00, Max = 5.00).

Teachers also agreed with the ability to identify specific instructional practices to initiate or maintain to increase student learning (3.f) had an average of 4.28 ($SD = 0.88$, Min = 1.00, Max = 5.00). The statement that the PLC was able to determine what information about instructional practice and student learning needed to be obtained (3.h) had an average of 4.20 ($SD = 0.86$, Min = 1.00, Max = 5.00). The summary statistics for the decision-making portion of the TCAS are presented in Table 7.

**TCAR and TCAS comparison.**

The categories of collaboration being measured were dialogue, decision making, action, and evaluation (Woodland, 2016; Woodland et al., 2013; Woodland & Hutton, 2012).
Table 7

Summary Statistics for the Decision-Making Variables

<table>
<thead>
<tr>
<th>Variable – Decision Making</th>
<th>M</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decisions are made about instructional practices to initiate, maintain, develop, or discontinue.</td>
<td>4.38</td>
<td>0.93</td>
<td>64</td>
</tr>
<tr>
<td>All decisions are informed by group dialogue.</td>
<td>4.20</td>
<td>0.98</td>
<td>64</td>
</tr>
<tr>
<td>The process for making decisions is transparent.</td>
<td>4.17</td>
<td>0.87</td>
<td>63</td>
</tr>
<tr>
<td>Decisions are directly related to improving instructional practice and student learning.</td>
<td>4.36</td>
<td>0.95</td>
<td>64</td>
</tr>
<tr>
<td>The team uses a specific process for every decision.</td>
<td>4.05</td>
<td>1.03</td>
<td>64</td>
</tr>
<tr>
<td>Specific instructional practices are identified to initiate or maintain to increase student learning.</td>
<td>4.28</td>
<td>0.88</td>
<td>64</td>
</tr>
<tr>
<td>Strategies are identified to change or discontinue,</td>
<td>4.16</td>
<td>0.93</td>
<td>64</td>
</tr>
<tr>
<td>Determines information about instructional practice and student learning that needs to be obtained,</td>
<td>4.20</td>
<td>0.86</td>
<td>64</td>
</tr>
<tr>
<td>Decision making (overall rating)</td>
<td>4.23</td>
<td>0.82</td>
<td>64</td>
</tr>
</tbody>
</table>

The TCAS overall rating for teacher collaboration had an average of 3.94 (SD = 0.63, Min = 2.00, Max = 5.00). Prior to comparing the TCAR and TCAS (self-rated questionnaire) scores, the TCAR scores required adjustment for a visual comparison. The TCAR scores were calculated as the average of a series of rubric items on a scale from 0 to 2, while the TCAS scores were self-rated on a scale from 1 to 5. To compare the two, TCAR scores were calculated first as the average on this rating scale and then divided by 2 to create the ratio. This ratio was applied to the maximum score of 5 to determine what the TCAR scores would be on a scale with a maximum of 5. In doing so, the TCAR and TCAS scores could be compared more readily by assessing which of the two was higher while treating both as a score ranging from 1 to 5.

Dialogue was the second highest rated score by the administrative TCAR and the teacher-assessed TCAS. The TCAR equivalency score for dialogue was 2.95, and the TCAS average was 4.03. Likewise, the TCAR score of 3.28 and the TCAS average of 4.23 were both rated decision making highest among portions of collaboration measured by the two instruments. In general, the administrative TCAR score was lower than the teachers’ TCAS average for most of the PLCs. When analyzing the dialogue sections, only 4 out of the 15 PLCs were rated higher by the
administrative TCAR than the teachers rated on the TCAS. The same four PLCs were also rated higher by the administrator in decision making than they had rated themselves. The summary statistics showing the TCAR and TCAS scores for each of the 15 PLCs are listed in Appendix D.

**Descriptive statistics for the effect of PLC.**

Based on a scale of 1 (strongly disagree) to 5 (strongly agree), the teachers rated the overall effectiveness (Effectiveness_DV) of their PLC with an average of 4.09 (SD = 0.74, Min = 2.00, Max = 5.00), with a mean range from 3.81 to 4.53. The teachers’ perceptions were that the work in their PLC has changed the way they and their colleagues practiced teaching. The teachers strongly agreed that collaborating with their colleagues was an essential part of their jobs (M = 4.53, SD = 0.82, Min = 1.00, Max = 5.00). The teachers felt more satisfied with their jobs because of their PLCs (M = 4.11, SD = 0.94, Min = 1.00, Max = 5.00). The teachers describe their PLCs as a better working dynamic than most other groups (M = 4.00, SD = 1.07, Min = 1.00, Max = 5.00), and they found it intellectually stimulating (M = 3.97, SD = 1.02, Min = 1.00, Max = 5.00). Through their responses to three different questions, the teachers agreed that the instructional practice of them and their colleagues had improved because of their PLCs. The summary statistics for the effectiveness of PLCs are listed in Table 8.

<table>
<thead>
<tr>
<th>Table 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary Statistics for the Effects of the PLC Variables</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable – Effect of PLC</th>
<th>M</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>My instructional practice has substantially improved because of my PLC.</td>
<td>3.98</td>
<td>1.00</td>
<td>64</td>
</tr>
<tr>
<td>The instructional practice of my colleagues has substantially improved because of my PLC.</td>
<td>3.81</td>
<td>0.94</td>
<td>64</td>
</tr>
<tr>
<td>I have evidence that student leaning has increased because of my PLC.</td>
<td>3.81</td>
<td>0.94</td>
<td>64</td>
</tr>
<tr>
<td>I believe collaborating with my colleagues is an essential part of my job.</td>
<td>4.53</td>
<td>0.82</td>
<td>64</td>
</tr>
<tr>
<td>Working with my PLC has a greater positive effect on my instructional practice than working alone.</td>
<td>4.16</td>
<td>1.01</td>
<td>64</td>
</tr>
<tr>
<td>My PLC is intellectually stimulating.</td>
<td>3.97</td>
<td>1.02</td>
<td>63</td>
</tr>
<tr>
<td>I am more satisfied with my job because the collegial collaboration in my PLC.</td>
<td>4.11</td>
<td>0.94</td>
<td>64</td>
</tr>
<tr>
<td>The collaboration in my PLC is better than the dynamics of most other working groups.</td>
<td>4.00</td>
<td>1.07</td>
<td>64</td>
</tr>
<tr>
<td>Effectiveness_DV (overall rating)</td>
<td>4.09</td>
<td>0.74</td>
<td>63</td>
</tr>
</tbody>
</table>
Correlation analysis.

The relationships between each of the independent variables as well as their correlation to the dependent variable (effectiveness) using the Pearson correlation coefficient are listed in Table 9. The table shows the significant positive correlation between number of years at the school and number of years as a member of a specific PLC and as an educator. This correlation implies teachers are remaining at Lincoln High and there is consistency with membership of the same PLC. There are two significant correlations, one positive and one negative, verified in the subsequent multiple regression analysis. The correlation coefficient of -.249 indicates there may be a negative relationship between experience as an educator and the perceived effectiveness of PLCs. Further, the matrix indicates a strong correlation between PLC effectiveness and teacher collaboration as indicated by the coefficient of .798.

Regression analysis.

To answer the second research question, a multiple regression analysis was conducted to assess whether the number of years working as an educator, years working in the school, years as a member of the PLC, gender, highest degree completed, and teacher collaboration significantly predicted the effectiveness of the PLC based on the teachers’ perceptions.

Table 9

*Correlation Matrix for Regression Variables*

<table>
<thead>
<tr>
<th></th>
<th>1: Years in School</th>
<th>2: Years in PLC</th>
<th>3: Year as Educator</th>
<th>4: Gender</th>
<th>5: Degree</th>
<th>6: Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).*

**Correlation is significant at the 0.01 level (2-tailed).
The collaboration score was created using a composite of the mean of the four common categories of the TCAR and TCAS assessments. The “enter” variable selection method was chosen for the linear regression model, which included all the selected predictors.

Unstandardized Regression Equation: Effectiveness_DV = 0.85 + 0.01*YearsInPLC - 0.02*YearsEducator - 0.10*GenderMale - 0.09*DegreeMasters - 0.17*DegreeSpecialist + 0.90*TCAS TOTAL + 0.01*YearsInSchool_r.outliers

Before conducting the regression analysis, the assumptions of the lack of outliers, normality of residuals, homoscedasticity of residuals, and the absence of multicollinearity were assessed (Osborne & Waters, 2002). Univariate outliers were examined and included the years working as an educator, years working in the school, years as a member of the PLC, teacher collaboration composite score, and the PLC effectiveness rating. An outlier was defined as any value that fell outside the range of +/- 3.29 standard deviations from the mean. The number of years working in the school had one outlier (case: 45). Table 10 presents the number of outliers for each variable. For the purposes of the multiple regression analysis, the one outlier was eliminated, and a new variable for the number of years in the school was used, which did not have any outliers.

A Q-Q scatterplot compares the distribution of the residuals with a normal distribution (a theoretical distribution that follows a bell curve). In a Q-Q scatterplot, the solid line represents...
the theoretical quantiles of a normal distribution. Normality can be assumed because the points form a relatively straight line. The Q-Q scatterplot for normality demonstrated a satisfactory degree of normality. The assumption of homoscedasticity was met because the points appeared randomly distributed with a mean of 0 and had no apparent curvature. A scatterplot of the predicted values and model residuals, indicating that the data may have some slight funneling although points on the left of the plot are not numerous nor expected to contribute to a harmful level of heteroscedasticity. Thus, the assumption was met.

Finally, variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between the predictors. VIF greater than five are a cause for concern. However, all predictors in the regression model have VIFs of less than 2, indicating multicollinearity is not a concern. Table 11 presents the VIF for each predictor in the model.

Table 11

*Variance Inflation Factors*

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in PLC</td>
<td>1.55</td>
</tr>
<tr>
<td>Years as an educator</td>
<td>1.32</td>
</tr>
<tr>
<td>Gender</td>
<td>1.08</td>
</tr>
<tr>
<td>Degree</td>
<td>1.27</td>
</tr>
<tr>
<td>TCAS Total</td>
<td>1.18</td>
</tr>
<tr>
<td>Years in school (outliers removed)</td>
<td>1.84</td>
</tr>
</tbody>
</table>

The results of the linear regression model were significant, $F(7,53) = 15.64, p < .001$, $R^2 = 0.67$, indicating that approximately 67% of the variance in the effectiveness of PLCs is explainable by years working as an educator, length of time working in the school, years as a member of the PLC, gender, degree, and teacher collaboration. The $R^2$ value measures the percentage of variance in the dependent variable that can be explained by the independent variables in the model (Keith, 2015; Field, 2013). When using multiple regression for the
purpose of prediction, Keith (2015) recommends researchers maximize the $R^2$ value. To assess the validity of the calculated $R^2=0.67$, a residual plot was examined and the residuals were found to be randomly distributed demonstrating the $R^2$ did indicate a high model fit (Keith, 2015; Field, 2013). The analysis had a power of .99, which is based on the high effect size ($f^2 = 2.03$) evidenced by the $R^2$. This indicated that the small sample size did not limit the ability of the analysis to detect significance, and the results were likely to be a reasonable reflection of all significant trends in the data. The length of time working at the school or as a member of the PLC did not significantly predict the effectiveness of PLCs. However, the number of years working as an educator did significantly predict the effectiveness of the PLC, $B = -0.02$, $t(53) = -2.01, p = .049$. This indicated that on average, each year of experience will decrease the effectiveness of the PLC by 0.02 units. Gender and degree completed did not significantly

Table 12

Results of Multiple Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.85</td>
<td>0.46</td>
<td>[-0.07, 1.77]</td>
<td>0.00</td>
<td>1.85</td>
<td>.070</td>
</tr>
<tr>
<td>Years in PLC</td>
<td>0.01</td>
<td>0.03</td>
<td>[-0.04, 0.06]</td>
<td>0.04</td>
<td>0.44</td>
<td>.662</td>
</tr>
<tr>
<td>Years as an educator</td>
<td>-0.02</td>
<td>0.01</td>
<td>[-0.04, 0.00]</td>
<td>-0.18</td>
<td>-2.01</td>
<td>.049*</td>
</tr>
<tr>
<td>Gender: Male (ref: female)</td>
<td>-0.10</td>
<td>0.13</td>
<td>[-0.36, 0.15]</td>
<td>-0.07</td>
<td>-0.81</td>
<td>.421</td>
</tr>
<tr>
<td>Degree: Masters (ref: other)</td>
<td>-0.09</td>
<td>0.17</td>
<td>[-0.43, 0.24]</td>
<td>-0.06</td>
<td>-0.55</td>
<td>.586</td>
</tr>
<tr>
<td>Degree: Specialist (ref: other)</td>
<td>-0.17</td>
<td>0.18</td>
<td>[-0.53, 0.20]</td>
<td>-0.10</td>
<td>-0.91</td>
<td>.369</td>
</tr>
<tr>
<td>TCAS Total</td>
<td>0.90</td>
<td>0.10</td>
<td>[0.70, 1.10]</td>
<td>0.77</td>
<td>9.06</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Years in current school (outliers removed)</td>
<td>0.01</td>
<td>0.01</td>
<td>[-0.02, 0.04]</td>
<td>0.06</td>
<td>0.55</td>
<td>.586</td>
</tr>
</tbody>
</table>

$R^2 = 0.67$

$F = 15.64^{**}$

* $p < .05$. ** $p < .001$

Note. Unstandardized Regression Equation: Effectiveness_DV = 0.85 + 0.01*YearsInPLC - 0.02*YearsEducator - 0.10*GenderMale - 0.09*DegreeMasters - 0.17*DegreeSpecialist + 0.90*TCAS TOTAL + 0.01*YearsInSchool_r.outliers
predict PLC effectiveness. The TCAS total score for collaboration significantly predicted the effectiveness of the PLC, $B = 0.90$, $t(53) = 9.06$, $p < .001$. This indicated that on average, a one-unit increase in teacher collaboration will increase the value of effectiveness of the PLC by 0.90 units. Table 12 summarizes the results of the regression model.

These results provide information for conclusions to be drawn on SIL behaviors from teachers and administrators in the context of established PLCs. The data also provides information identifying significant predictors for effective PLCs allowing for discussions and conclusions to be made about this Title I school.

**Summary of Findings**

This study investigated SIL and teacher collaboration in established PLCs in a Title I high school. The guiding questions were to identify prominent shared instructional leadership behaviors in established PLCs and to investigate the extent teacher collaboration predicts the effectiveness of those PLCs. The data was collected from two connected sources made available to the researcher by the district in which the school was located and the building principal. The primary source of data was from teacher responses to a modified version of the TCAS consisting of six sections (Woodland, 2013; Zito, 2011). The second data source was collected from administrative evaluation of the PLCs using the TCAR (Woodland, 2016).

Data from the 64 teachers who responded to the TCAS was divided into six sections. The first section gave teachers’ perspective to the administrative support provided to PLCs. Overall teachers agreed that administrators supported their efforts to collaborate with an average of 3.85. This support for collaboration and the work of PLCs was focused on student achievement. The next four sections of the questionnaire comprised the collaboration portion of the TCAS and informed the study on the level of collaboration within the PLCs.
The collaboration portion had an overall average of 3.95 indicating the highest rating for collaboration in the areas of dialogue and decision making. The final section of the teacher questionnaire assessed the effectiveness of the PLCs from the teachers’ perspective with an average of 4.09. This effectiveness rating demonstrates teachers believe PLCs impacted their work, especially their instructional practice, and provided evidence of increased student learning. According to the results at Lincoln High, the teachers strongly felt collaborating in a PLC was an essential part of their job, that working with a PLC had a positive effect on their instructional practices, and that teachers were more satisfied with their jobs because of collegial collaboration.

This study also surveyed teachers to find the extent to which teacher collaboration could predict the effectiveness of PLCs. The effectiveness rating served as the dependent variable while experience (at the school, within the PLC, and overall), gender, degree, and collaboration served as the independent variables. A multiple regression analysis determined a significant relationship between the independent variables and the dependent variable of effective PLCs. Teacher collaboration and overall teaching experience were the only variables that significantly predicted PLC effectiveness. Collaboration demonstrated that an increase of one unit in measured collaboration would deliver a 1 to .9 return in the effect of PLCs on teachers’ practice. However, a small but significant negative relationship was determined between overall teaching experience and teachers’ perceived effectiveness of PLCs.

**Theoretical implications.**

The theory of SIL guided this study while exploring a high school application of established PLCs. SIL focuses on instructional collaboration between teachers and principals (Marks & Printy, 2003; Printy, Marks, & Bowers, 2009; Urick & Bowers, 2014a) and helps to create a working environment built around a positive climate supported by professional
development, shared decision making, and communication of the mission within the teacher community (Urick & Bowers, 2014a). Furthermore, SIL supports innovation and change (Printy & Marks, 2006; Printy et al., 2009; Urick & Bowers, 2014a). Although instructional leadership follows a top-down approach from the principal to teachers, SIL adds the element of teacher decision making and leadership in instructional decisions (Hallinger, 2005; Printy et al., 2009; Urick, 2016; Urick & Bowers, 2014a). Although many of the principles guiding the implementation of PLCs, such as shared decision making, collaboration, dialogue based on instructional data, and improved student achievement (Berger & Forgette-Giroux, 2012; DuFour, DuFour, Eaker, & Karhanek, 2004; DuFour & Eaker, 1998; Lambertson, 2014; Liou & Daly, 2014; Zhang & Sun-Keung Pang, 2016) are common to concepts of SIL very little research directly connects the two concepts.

This study connects SIL to the work done in established, effective PLCs. Printy and Marks (2006) found five themes of SIL when studying schools where the practice is highly developed, and the results of the current study will focus on three of those themes. The first observation was that interaction is the basis for learning and leadership, meaning that dialogue among teachers, as well as between teachers and administrators, is imperative. The next two themes identify and separate the vital roles of the administrator and the teacher in instructional leadership, reinforcing the idea that leadership should be shared. The last two themes expand on the outcomes associated with SIL. To answer the first research question, summary statistics were calculated for selected questions from the teacher questionnaire that assessed the teachers’ perceptions of dialogue, decision making, and administrative behaviors in supporting PLCs. Data from the teacher questionnaire, designed to assess teacher collaboration in PLCs (Woodland, Lee, & Randall, 2013), directly address the first three, actionable themes.
Through establishing a vision of collaboration at Lincoln High, administrators encourage, and teachers practice SIL. Regression analysis demonstrated teacher collaboration predicted PLC effectiveness at a high rate. The teacher collaboration in this study rated two SIL behaviors (Printy et al., 2009; Urick, 2016), dialogue and decision making highest in the evaluation of established PLCs.

This study demonstrates a natural connection between SIL and PLCs. PLCs are predicated on educators communicating with each other and making instructional decisions based on data to improve teacher and student learning (DuFour et al., 2004; DuFour & Eaker, 2005). SIL uses dialogue, decision making and shared leadership practices to guide instruction (Printy & Marks, 2006; Printy et al., 2009; Urick, 2016). Administrators must be willing to relinquish control of instructional decisions and allow teacher to innovate and experiment through dialogue to foster effective professional learning through PLCs. PLC leadership should be a shifting concept to allow the most capable member to temporarily assume the leadership role between different topics (DuFour et al., 2004).

**Practical implications.**

Ongoing professional development through PLCs is mandated through the state of Georgia. With the passing of Rule 505-2-.36, the focus of certificate renewal is no longer an individual responsibility to document professional growth through professional development credits. Instead, the major emphasis is on PLCs within school systems, hence implementing job-embedded professional development that is collaborative, ongoing, and relevant to improve teaching and learning. Effective schools foster a climate of social interaction between teachers in which colleagues become the primary source of learning for educators (Printy & Marks, 2006). Teachers need the freedom to make curricular and instructional decisions (Printy et al., 2009),
and administrators should build capacity in teachers by creating an environment of collaborative decision making, developing instructional strategies through the use of data, and building a culture of experimentation based on informal accountability (Berger & Forgette-Giroux, 2012).

Based on SIL, administrators should communicate the vision of collaboration (Printy & Marks, 2006) to the school, gaining the understanding and support of the teachers. As demonstrated in this study, the teachers strongly agreed that the purpose of collaboration was to improve instruction and that the administration promoted a shared vision for teacher collaboration. This study supports the literature, by demonstrating dialogue was focused on in instructional practice (Printy & Marks, 2006; Urick, 2016) and not on operational topics (Zhang & Sun-Keung Pang, 2016). The administrative team supported the efforts and dialogue of the PLCs by placing the correct teachers in the groups (Urick, 2016; Zhang & Sun-Keung Pang, 2016). The PLC also reported examining evidence of student performance around the stated school goals.

For mandatory PLCs, leading to certificate renewal to be effective, teachers have to be willing and able to change their practice (Liou & Daly, 2014; Zhang & Sun-Keung Pang, 2016). Effective PLCs can be predicted by teacher collaboration therefore narrowing the focus of the PLCs from a shared vision, proper group membership, and assessments to teacher collaboration. The collaborative piece rated highest by the PLC teachers and the administrative assessment was decision making. More specifically, teachers responded in agreement with all three of the questions that identified their ability to make decisions to maintain, improve, change, or discontinue instructional practices as they saw fit. These decisions were based on PLC dialogue and not made from top-down protocols. High school teachers are content experts and should be both trusted (Liou & Daly, 2014) and empowered to make instructional decisions within the
context of PLCs. To facilitate collaboration, administrators should facilitate the infrastructure to provide the opportunity to create successful PLCs. The results of the multiple regression analysis demonstrates a small but significant negative relationship between the numbers of years experience as a teacher and effectiveness of the PLC. Administrators should be cognizant of this relationship when determining the make-up of the PLC ensuring the most veteran teachers do not create a negative environment within the group and limit its effectiveness.

Following the SIL model, teachers share the responsibility for change at the organizational level and for leadership around instructional decisions (Urick & Bowers, 2014). Teachers are experts in content, and the principal and teacher leaders need to ensure actions are aligned to the mission of the school. Principals lead the collaboration of teachers, including teacher leaders and other administrators; they focus on curriculum, instructional strategies, and the stated goals of student learning that will positively influence student achievement (Leithwood & Sun, 2012; Robinson, Lloyd, & Rowe, 2008).

**Policy implications.**

The state of Georgia has embraced PLCs has the tool to promote professional learning through its implementation of new certification renewal requirements in 2017. Policy makers on the district and school level have to make the PLC policy work. This study provides two avenues to facilitate this implementation. First, the characteristics of SIL are a part of the foundation for effective PLCs. Second, teacher collaboration can help to predict effective PLCs in a Title I high school. Teacher attrition is a real concern, especially in high needs, southern high schools where leadership positions are viewed as less desirable (Jackson & Marriott, 2012). Teachers in this study reported more satisfaction in their jobs because of the PLCs.
One of the largest challenges for districts is making the structural and cultural changes to create and maintain effective PLCs (Archbald, 2016). Districts and schools can demonstrate support for PLCs by dedicating resources specifically to support teacher collaboration and drive PLCs for the state required certification renewal. District and school leaders provide the infrastructure such as time, professional development, and supporting the building level leadership in ensuring their understanding of solid PLC practice. This should happen through face to face meetings and evaluation of artifacts at the district level (Archbald, 2016). Developing teacher collaboration in PLCs at the school and district level can help teachers avoid feelings of isolation (Olivier & Huffman, 2016) and, as this study demonstrates, increase effectiveness. Traditional operation of schools are set up to be hierarchies; however, instruction, culture, and teachers are fragmented and difficult to control with a flow chart (Archbald, 2016); SIL separates the roles and blurs the lines allowing for decisions to be made by content experts with support from the administration (Urick & Bowers, 2014). Leaders at the district level have the ability to mold shared leadership practices by getting input from school personnel, administrators, and teachers from all levels (Olivier & Huffman, 2016).

Finally, the state focus on professional development through certificate renewal is laying the foundation for incorporating PLCs into teacher evaluation as suggested by Woodland & Mazur (2015). Teachers in the state of Georgia are required to be active members of PLCs to continue teaching. The results of this study connect SIL to the work being done in PLCs and provides a predictor for effective change in teaching practice. Educators are required to participate in PLCs, researchers should help set them up for success by providing avenues leading to effective PLCs. The current evaluation process relies on administrative evaluation of the work being done in classrooms and state standardized testing. Now, teachers are required to
participate in ongoing professional development, but their evaluation is not connected to that requirement. Teacher learning is vital to school improvement (DuFour & Eaker, 1998, 2005) making PLCs part of their evaluation will make that learning a focus every year, not every five years.

**Limitations**

By examining SIL through PLCs and teacher collaboration, the results have provided a connection between a type of leadership and professional learning in practice. This study offers practitioners and researchers a different way to connect effective change in practice with school leadership to refine actions moving forward. However, this study, like almost all, offers positive information with limitations which can be opportunities for future study.

Various limitations exist in this study and the reader should interpret the results with thoughtfulness. The researcher was an administrator at the school in the study. The study will be limited by the truthfulness and willingness of the participants to assess their own work and that they did not simply choose the most socially acceptable answer (Gay, Mills, & Airasian, 2012). Due to the nature of the quantitative studies, teachers were not given the opportunity to elaborate or explain their responses. The data for the current study relies on the teachers’ perspectives of their own work. The study is also limited by the proper and consistent use of the TCAR by the assigned administrative evaluator. Here, the TCAR was only used one time by one member of the administrative staff. This study not provide an opportunity to gain the perspective of the multiple school leaders. The sample size of 15 weekly meeting PLCs being evaluated by one administrator does provide a glimpse of PLCs in one Title I high school but is not large enough to draw statically significant data. Also, there are only 64 teacher responses to the questionnaire.
The sample size means that the current study is not generalizable and only assesses one high-needs high school.

An appropriately sized sample for the research was calculated in G*Power by comparing sample size requirements from the analyses proposed for the present study. A regression with six predictors set the baseline requirement for the study. Because there was no research to indicate what strength of relationship the variables would exhibit, a medium strength relationship was expected based on Cohen (1988) recommendations. Based on the assumption that there would be a medium strength relationship between the predictor variables and the outcome, a medium effect size was specified in G*Power. Additionally, the power and alpha were set to .80 and .05, respectively, to balance Type I and Type II errors, per Cohen’s recommendations. The specifications of these parameters for the proposed regression with six predictors returned a sample size requirement of 98. Failure to meet this sample size does not invalidate the study but may decrease the ability to detect significance for any weak relationships (Faul, Erdfelder, Buchner, & Lang, 2013). However, a post hoc power analysis was conducted and had a power of .99 (.80 is considered sufficient) based on the high effect size ($f^2 = 2.03$) evidenced by the $R^2$.

This indicated that the small sample size did not limit the ability of the analysis to detect significance and that the results are likely to be a reasonable reflection of all significant trends in the data.

This study does connect SIL to PLCs but does not address if one caused the other. Are effective PLCs a product of SIL behaviors or does the PLC create the environment to facilitate SIL? Additionally, the data provided in this study is gained from established PLCs in one high school located in middle Georgia. The change in the state policy for teacher certification renewal was put into effect in July of 2017 and therefore is a new initiative. This study addressed
established PLCs with teachers being a member of their assigned PLC for an average of 4.55 years but does not address newly established PLCs.

**Suggestions for Future Inquiry**

To my knowledge, this study is the first to make a direct connection between established, effective PLCs and SIL. These findings and research observations can be uses as an example for the following future research suggestions:

1. This study relied on quantitative data collection and analysis and is restricted as such. A qualitative study should be conducted to generate a wider perspective of teacher collaboration and a deeper understanding of PLC effectiveness.

2. Expanding the study by using more than one school or district in different areas of the state would offer additional data for possible generalization. Also, additional samples would provide the opportunity to examine both established and new PLCs.

3. Measuring effectiveness of PLCs from a different perspective such as administrative view or student achievement could provide a different outcome and should be considered.

4. Future study should explore the connection of SIL to PLCs from the perspective of student achievement.

5. A follow up study should be considered to verify these findings. A longitudinal study to examine SIL behaviors in PLCs overtime may expand the connection between this leadership style and this type of professional development.

6. Connecting district leadership through SIL to PLCs would also provide additional insight to the state’s certification plan.

7. Building on these findings, an additional study may investigate the small negative correlation between years of experience in education and PLC effectiveness. More
research should be conducted to find if this issue is pervasive and if so how to counter this belief for veteran teachers.

8. With a few exceptions, the administration rated the PLCs lower than the teachers rated the PLCs. This indicates that more research should be conducted to find the source of this incongruence between teachers’ and administration’s perspectives of PLCs.

Conclusions

Effective PLCs are the foundation for successful professional development (Cherkowski, 2014; DuFour & Eaker, 1998, 2005; Ylimaki et al., 2014). More importantly, an SIL method allows a school system to implement education policies through teacher input, administrative support, and a shared dialogue about instructional practices. SIL provides opportunities for the PLC to come together to collect, analyze, and evaluate data. Moreover, the PLC will then have the freedom to interpret and make decisions on educational practices that will ultimately lead to the implementation of educational practices.

For the foreseeable future, PLCs are here to stay, and these findings connect effective PLCs to SIL. Thus, it becomes practical and necessary for schools to discover the best practices and roles of the PLCs. In the case of Lincoln High, incorporating SIL allowed for all faculty members to be productive in interacting and participating in school improvement, as well as in providing opportunities for colleagues to collaborate and grow in their profession based on collegial interactions. The positive take away from the PLCs is that when enacted correctly, the teachers felt empowered to make instructional decisions to innovate, continue, or change their practice and improve. Vision, job satisfaction, and a positive effect on teacher practice in a Title I school are all evident in the current study. There is a significant impact from teacher
collaboration on PLC effectiveness. Schools and districts should consider this predictor when implementing the state-mandated policy change of PLCs for teacher certificate renewal.
REFERENCES


APPENDICES

APPENDIX A¹

Teacher Collaboration Assessment Rubric (TCAR)

Name of Team/Group: ____________________________________________

Team Members: ________________________________________________

Date: __________________________________________________________

Group/Person Completing the Assessment: __________________________

DIRECTIONS:
1. Choose a process(es) for administering the TCAR (see below).
2. Review the criteria for Dialogue, Decision-Making, Action and Evaluation on the following pages.
3. Circle one response per row that most accurately reflects the current quality/attributes of team functioning.
4. Total the scores for each section and summarize results on the cover page.
5. Use findings for developmental and/or formative assessment purposes and for resource allocation.

Process Used for Administering the TCAR: (check all that apply):

☐ recollection and reflection by a team member
☐ observation of team meeting(s) (via video)
☐ observation of team meeting(s) (in person)
☐ review of meeting agendas/plans
☐ review of meeting running record/minutes
☐ administrator consultation with team member(s)
☐ other __________________________

<table>
<thead>
<tr>
<th>Team - Collaboration Assessment Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Dialogue</td>
</tr>
<tr>
<td>II. Decision-making</td>
</tr>
<tr>
<td>III. Action</td>
</tr>
<tr>
<td>IV. Evaluation</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Areas of Strength:

Areas for Improvement:

Resources Needed:

Figure 2. The Teacher Collaboration Assessment Rubric.

## Dialogue

<table>
<thead>
<tr>
<th></th>
<th>Circle one box per row</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>An agenda for team dialogue is pre-planned and accessible to all in advance of every team meeting.</td>
<td>1</td>
<td>There is no pre-planned agenda for group dialogue/team meetings.</td>
</tr>
<tr>
<td>3</td>
<td>The team meets regularly and all meetings are attended by all members.</td>
<td>0</td>
<td>The team meets sporadically, or full attendance at team meetings is rare.</td>
</tr>
<tr>
<td>4</td>
<td>Team meetings are always structured. Protocols are used to facilitate and guide team dialogue.</td>
<td>5</td>
<td>Team dialogue/meetings are generally improvised, unstructured, and not purposely facilitated.</td>
</tr>
<tr>
<td>6</td>
<td>Team dialogue consistently addresses essential questions of instruction, instructional quality, and student learning.</td>
<td>7</td>
<td>Team dialogue does not address essential questions of practice, instructional quality, and student learning.</td>
</tr>
<tr>
<td>8</td>
<td>Inter-professional disagreements about issues of practice are typical. These disagreements are expected, openly examined and thoughtfully discussed.</td>
<td>9</td>
<td>The group avoids conflict, tends to confirm present practices, or inter-professional disagreements are said not to exist.</td>
</tr>
<tr>
<td>10</td>
<td>Team members participate equally in group dialogue; there are no hibernators or dominators.</td>
<td>11</td>
<td>Most team members contribute to the dialogue, but there are some hibernators and dominators.</td>
</tr>
<tr>
<td>12</td>
<td>An accurate record of team dialogue, decisions, and subsequent actions is recorded and accessible to all members.</td>
<td>13</td>
<td>No accurate or accessible record of team dialogue, decisions, and subsequent actions exits.</td>
</tr>
</tbody>
</table>

**Dialogue Total** 7/14

## Decision Making

<table>
<thead>
<tr>
<th></th>
<th>Circle one box per row</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Team members regularly identify and determine specific actions that they will take to improve instructional practice and student learning.</td>
<td>3</td>
<td>Team members occasionally identify and determine actions that they will take to improve instructional practice and student learning.</td>
</tr>
<tr>
<td>4</td>
<td>The team uses a specific process for every decision it makes (e.g., consensus, majority, or some other decision-making structure).</td>
<td>5</td>
<td>Team members do not identify or determine specific actions that they will take to improve instructional practice and student learning.</td>
</tr>
<tr>
<td>6</td>
<td>Decisions made by the team are clearly and directly related to the improvement of instructional practice and student learning.</td>
<td>7</td>
<td>Team members are not related to the improvement of instructional practice and student learning.</td>
</tr>
<tr>
<td>8</td>
<td>The team regularly makes decisions about what specific instructional practices it will initiate, maintain, change and discontinue.</td>
<td>9</td>
<td>The team does not make decisions about instructional practices to initiate, maintain, change and/or discontinue.</td>
</tr>
<tr>
<td>10</td>
<td>All team decisions are informed by full group dialogue.</td>
<td>11</td>
<td>Most team decisions are informed by some level of group dialogue.</td>
</tr>
<tr>
<td>12</td>
<td>All team decision-making is transparent: Each member knows what the decisions are and how and why they were made.</td>
<td>13</td>
<td>Team decisions are not informed by group dialogue.</td>
</tr>
<tr>
<td>14</td>
<td>The team regularly determines what specific instructional practice and student learning information it intends to obtain and analyze.</td>
<td>15</td>
<td>Group decision-making is not transparent; members are not aware of how group decisions were made.</td>
</tr>
</tbody>
</table>

**Decision-Making Total** 7/14

---

**Figure 2.** (continued)
<table>
<thead>
<tr>
<th>ACTION - Circle one box per row</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Team members know the specific individual actions that they should take as a result of group dialogue and decision-making.</td>
<td>Most team members know the specific individual actions that they should take as a result of group dialogue and decision-making.</td>
<td>Team members are unaware of specific actions that they should take as a result of group dialogue and decision-making.</td>
<td></td>
</tr>
<tr>
<td>b Intended actions to be taken by team members are high leverage (i.e. team members believe their actions will directly improve instructional practice).</td>
<td>Intended actions are somewhat high leverage (i.e. team members believe their actions could contribute to the improvement of instructional practice).</td>
<td>Intended actions are not high leverage (i.e. team members don’t know how or if their actions will improve instructional practice).</td>
<td></td>
</tr>
<tr>
<td>c Team members actions are specific and measurable/observable.</td>
<td>Team members actions are specific or measurable/observable.</td>
<td>Team members actions are not specific, nor measurable/observable.</td>
<td></td>
</tr>
<tr>
<td>d Team member actions are coordinated and interdependent.</td>
<td>Team member actions are coordinated or independent.</td>
<td>Individual team member actions are independent and coordinated with one another.</td>
<td></td>
</tr>
<tr>
<td>e Action-taking is equitable among members (i.e. every member acts to improve individual instructional practice and group performance as a result of team decision making).</td>
<td>Action-taking is somewhat equitable (i.e., most members regularly take steps to improve individual instructional practice and group performance.)</td>
<td>Action-taking is not equitable (i.e., some members take most of the action, some take very little or none.)</td>
<td></td>
</tr>
<tr>
<td>f The group has clear, continuous, and accessible documentation of the instructional practices that they have stopped, started and/or changed over time.</td>
<td>The group has some documentation of the instructional practices they have stopped, started and/or changed over time.</td>
<td>Little, if any, documentation exists of the practices that the group has stopped, started and/or changed over time.</td>
<td></td>
</tr>
</tbody>
</table>

**Action Total** /12

<table>
<thead>
<tr>
<th>EVALUATION - Circle one box per row</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Team members collect/have access to data about the quality of their instructional practices and their students’ learning.</td>
<td>Team members collect some/have some access to data about their instructional practices and their students’ learning.</td>
<td>The team does not have access to data about quality of their instructional practices and/or student learning.</td>
<td></td>
</tr>
<tr>
<td>b The team regularly analyzes the quality of their students’ actual work (i.e. work completed by their students in response to their instruction).</td>
<td>The team infrequently examines the quality of their students’ actual work (i.e. work completed by their students in response to their instruction).</td>
<td>The team does not examine the quality of their students’ actual work (i.e. work completed by their students in response to their instruction).</td>
<td></td>
</tr>
<tr>
<td>c The team regularly analyzes the quality of their classroom-based instructional practice.</td>
<td>On occasion the team will analyze the quality of their classroom-based instructional practice.</td>
<td>The team does not analyze the quality of their classroom-based instructional practice.</td>
<td></td>
</tr>
<tr>
<td>d Team members regularly observe each other’s classroom instructional practices, either in person or indirectly via technological means.</td>
<td>Team members occasionally observe each other’s classroom instructional practices, either in person or indirectly via technological means.</td>
<td>Team members do not observe each other’s classroom instructional practices, either in person or indirectly via technological means.</td>
<td></td>
</tr>
<tr>
<td>e The team consistently generates targeted, specific, and timely feedback for team members about how to improve instructional practice and student learning.</td>
<td>The team occasionally generates some ideas for how team members might improve quality of instructional practice and student learning.</td>
<td>The team does not generate targeted, specific, and timely feedback about quality of instructional practice and student learning.</td>
<td></td>
</tr>
<tr>
<td>f The group has clear, continuous, and accessible documentation and substantiation of how their instructional practice affects their student’s learning.</td>
<td>The group has some documentation of how their instructional practice affects their student’s learning.</td>
<td>The team does not document or substantiate the effects of their actions on student learning.</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluation Total** /12

Figure 2. (continued)
Appendix B

High School PLC Collaboration Questionnaire

Strongly disagree    Disagree    Neutral    Agree    Strongly Agree

1. Role of the administrator (principal/asst. principal)
   a) My administration promotes a shared vision for teacher collaboration.
   b) My administration observes my PLC participation.
   c) My administration monitors the actions and achievements of my primary PLC.
   d) My administration monitors how the work of my primary PLC impacts student achievement.
   e) I have received individual feedback from my administration about how I could improve my contribution to my primary PLC.
   f) Our group has received feedback from the administration about how to improve the quality of collaboration in our primary PLC.
   g) I understand how to use Teacher Collaboration Assessment Rubric (TCAR) as a tool to improve the quality of collaboration in my primary PLC.
   h) My administration helps my primary PLC to set clear and measurable goals for student learning.
   i) My administration helps my primary PLC figure out how to monitor our progress and achievements on a continuous basis.
   j) My administration celebrates the achievements of my PLC.
   k) My administration uses evidence to identify areas that need improvement in my primary PLC.
   l) My Administration effectively addresses individuals who are resistant to or disruptive of the development of high quality teacher collaboration.

Teacher Collaboration Assessment Survey DDAE scale items (sections 2–5)

2. Dialogue
   a. The purpose of our collaboration is to systematically improve instruction to increase student learning.
   b. The membership configuration of my primary teacher team is appropriate—the right people are members of the group.
   c. Team meetings are consistently attended by ALL members.
   d. Agenda for team dialogue is preplanned, written, and accessible to all in advance of the meeting.
   e. Team meetings are purposefully facilitated and employ the use of protocols to structure and guide dialogue.
   f. A thoughtful, thorough, and accurate account of team dialogue, decisions, and intended actions is recorded.
g. Every member has access to running records of team dialogue decisions and subsequent actions to be taken.
h. Interprofessional disagreements occur regularly; these disagreements are welcomed, openly addressed, and lead to new shared understandings.
i. Team members participate equally in group dialogue; there are no “dominators” or “hibernators” in the group.
j. Our dialogue is consistently focused on examination of evidence related to performance and the attainment of goals.
k. The topic of the dialogue is focused on our instructional practices and not other issues (e.g., school schedules, textbook purchases, fund raising, discipline, students’ family issues, chaperoning).

3. Decision making

a. My team regularly makes decisions about what instructional practices to initiate, maintain, develop, or discontinue.
b. All of our decisions are informed by group dialogue.
c. The process for making any decision is transparent and adhered to—everyone knows what the decisions are/were and how and why they were made.
d. The decisions we make are clearly and directly related to the improvement of instructional practice and the improvement of student learning.
e. The team uses a specific process for every decision it makes (e.g., consensus, majority or some other decision-making structure).
f. Team members regularly identify specific instructional practices that they will initiate or maintain to increase student learning.
g. Team members regularly identify strategies they will change or discontinue.
h. Our group regularly determines what information about instructional practice and student learning needs to be obtained.

4. Action

a. Each group member takes actions related to individual/team learning as a result of team decision making.
b. As a result of group decision making, each one of us makes meaningful (pedagogically complex) adjustments to our instructional practice.
c. Actions are directly related to student learning.
d. Each member knows what actions (related to learning) to take next at the end of the meeting.
e. Team member actions are coordinated and interdependent.
f. Each individual teacher employs specific instructional strategies that will increase student learning.
g. Each individual teacher discontinues less effective strategies.
h. Actions that are taken after or between meetings are distributed equitably among team members (i.e., every member takes steps to improve individual or team learning).
i. Each member can name some aspect of instruction that we have stopped/started or changed as a result of the group decision making.
j. Each member of the team commits to carrying out team actions.

5. Evaluation

a. As a group, we regularly collect and analyze quantitative data (e.g., numbers, statistics, scores) about member teaching practices.
b. As a group, we regularly collect and analyze qualitative data (e.g., open-ended responses, interviews, comments) about member teaching practices.
c. As a group, we regularly collect and analyze quantitative data (e.g., numbers, statistics, scores) about student learning.
d. As a group, we regularly collect and analyze qualitative data (e.g., numbers, statistics, scores) about student learning.
e. We observe the classroom instruction of our colleagues.
f. We collect information on the quality of the instruction during our observation.
g. We analyze data collected through peer observation of classroom instruction.
h. We use student performance data to evaluate the merit of our instructional practices.
i. We regularly share evaluation data on the effect of our instruction in our primary team.
j. The accomplishments of our team are publicly recognized.
k. Our team can accurately and thoroughly articulate and substantiate its accomplishment related to student learning over time.

6. Effect of Your Primary PLC

a) My instructional practice has substantially improved as a result of participating in my primary PLC.
b) The instructional practice of my colleagues has substantially improved as a result of participating in our primary PLC.
c) I have evidence that student learning is increasing as a result of the work of my primary PLC.
d) I believe that collaborating with colleagues is an essential part of my job.
e) Working in my primary PLC has a greater positive effect on my instructional practice than working independently.
f) My primary PLC is intellectually stimulating.
g) I am more satisfied with my job as a result of being able to collaborate with colleagues in my primary PLC.
h) The quality of collaboration in my primary PLC is better than the dynamics of most other working groups that I've been part of at my school/in my district.
Appendix C

Re: TCAR/TCAS

Rebecca Woodland <rebeccawoodland@gmail.com>
Thu 7/20/2017 7:37 PM

To: Wynn, Scott <scott.wynn@ndbc.net>

Hello Scott,

Exciting news - Great to hear of about the launch of your journey into the study of PLCs. You have my permission to use the TCAR (with full attribution). You can find the most recent version in the following publication: Woodland, R. (2015). Evaluating PK–12 Professional Learning Communities: An Improvement Science Perspective. American Journal of Evaluation. DOI: 10.1177/1088214916634203

All best,

- Rebecca Woodland

Rebecca H. Woodland, Ph.D.
Chair, Department of Educational Policy, Research and Administration
Co-Director, Center for Education Policy
College of Education | University of Massachusetts Amherst
Purcell N-112 OFFICE | 413-545-1751 PHONE | [Woodland@umass.edu] EMAIL
https://www.umass.edu/education/faculty-staff/fellows/fellows/woodland

See my latest publications here:
http://www.ploS.org/doi/10.1371/journal.pone.0141772
Appendix D

Table 8

*Summary Statistics Table for TCAR and TCAS Scores Split by PLC Category*

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Note. Because of the nature of the TCAR (i.e., only one rater), there is no standard deviation for the rubric scores. The rubric scores were adjusted to a 5-point scale for interpretability.