

The Influence of Professional Learning Communities on Student Achievement in Elementary Schools

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Abstract

The Professional Learning Community (PLC) process has been cited by researchers and professional organizations as having potential to impact student achievement in a positive manner. As the current era of high-stakes accountability has left teachers struggling to improve the quality of teaching and learning, PLCs have been recommended to foster collaboration and make teacher practices public. Therefore, the purpose of this study was to examine elementary teachers' descriptions of their PLCs to determine if practice of the principles had an effect on student academic performance. A quantitative research design was implemented to explore the extent to which teacher training in PLC principles, the actual practice of PLC principles, and student achievement were related. A survey was utilized to collect data regarding 194 teachers' perceptions of the existence of four dimensions of PLCs within their schools, 4 years of CRCT data was examined to measure student achievement, and descriptive and inferential statistics were used to look for possible relationships between the factors. Statistical examination indicated PLC members who observed peers, provided feedback on instructional practices, worked with colleagues to judge student work quality, and collaboratively reviewed student work to improve instructional analysis were more likely to improve their quality of teaching. Further results indicated positive correlations between teacher level of education and observing peers, and between level of education and providing feedback on instructional practices. Positive correlations were also identified between student achievement on standardized assessments and teacher practice of collaboratively reviewing student work, working with colleagues to judge the quality of student work, and discussing student-centered educational issues.

Key Words: Professional Learning Communities; Student Achievement; Elementary Schools; Teaching and Learning; Instructional Practices

1. Introduction

The introduction of student learning standards and increased levels of academic expectations created a need for educators to become more intentional in their study of teaching strategies (Hord, 2008).

To meet this need, communities of teachers began to work together to improve teaching and learning by examining assessment data from multiple sources and pinpointing strengths and weaknesses within their students' learning. From these findings, educators began to consider which skills and strategies they must acquire in order to more effectively teach what their students needed to learn (Hord, 2008).

The Professional Learning Community (PLC) concept has been cited by researchers and professional organizations as having great potential to impact student achievement in a positive manner (DuFour & Eaker, 1998; DuFour & Marzano, 2011; Farkas, 2003; Jackl & Lougée, 2012). As the current era of high-stakes accountability has left many teachers struggling to improve the quality of teaching and learning, PLCs have been recommended to foster collaboration and to make teacher practices public (Wood, 2007).

1.1 Related Literature

R. P. DuFour and R. B. DuFour (n.d.) wrote about the term PLC in the 1960s as an alternative to the inherently isolated nature of the teaching profession in the United States. Hord (2008) concurred that teachers throughout history worked mainly in isolation, closing their classroom doors and teaching from their knowledge of curriculum and instruction. This state of isolation began to disappear in the 1980s as educators started to teach in open classrooms and collaborative teams (R. P. DuFour & R. B. DuFour, n.d.; Hord, 2008). As this shift led to the removal of physical barriers and isolation, educators began to come together to share their work, resulting in significant improvement in motivation and morale (Hord, 2008).

As team teaching and collaborating on instructional strategies and programs grew from teachers' meetings, school districts began to see the value in teacher collaboration. Some teacher learning resulted from this type of collaboration, so many educators thought of working collaboratively as the main focus of PLCs (Hord, 2008). However, DuFour and DuFour (n.d.) insisted that, to become a true PLC, the focus of the relevant question had to shift from teachers' *teaching* of content to the students' *learning* of content.

With the introduction of student learning standards, teachers and administrators discovered a need to become more intentional in their study of strategies to enable learners to reach increased levels of expectations (Hord, 2008). As a result, communities of professional educators began to develop for the purpose of improving learning. These early PLCs examined assessment data from multiple sources to pinpoint areas of strength and weakness in student learning. From these findings, educators began the work of determining what they must learn in order to become more effective teachers for their students (Hord, 2008).

Researchers with AISR (2004) described PLCs as "groups of educators... and other stakeholders who collectively examine and improve their own professional practice" (p. 2). These small groups met regularly; focused on data, standards, instruction, and results; expanded participants' knowledge; and encouraged innovation and excellence. Striving for continual growth, PLC participants desired to change the nature of their schools by encouraging the evolution of teaching and learning (AISR, 2004).

Similarly, Pirtle and Tobia (2014) found that where teachers felt encouraged by their leaders, they supported one another's practice in PLCs, felt more confident in themselves, developed a stronger sense of self-efficacy, and believed in their ability to influence student learning and achievement. As a result, teachers were more committed to their collaborative work to meet students' individual learning needs.

In a review of research examining the impact PLCs have on teachers and students, Vescio, Ross, and Adams (2008) reviewed 10 empirical studies of teacher collaboration in learning communities within the United States and one large multi-site research report published in England. All of these studies reported data documenting the impact of PLCs on teaching practice and/or student learning. The authors examined what the studies conveyed about how educators changed their teaching practices and found that PLC participants' practices became more student-centered over time. Some teachers increased flexibility in their classroom arrangements, some varied their lesson pacing to meet the needs of learners, and others improved classroom pedagogy to use higher order thinking strategies. The researchers found all 11 studies cited data supporting fundamental shifts in the schools' professional cultures and the habits of mind teachers brought to their classrooms, as well (Vescio et al., 2008).

Vescio et al. (2008) noted that the most successful PLCs shared four common characteristics: the teachers participated in open collaboration, the groups focused on student learning, the participants exercised some authority over their own learning and various aspects of school governance, and the members participated in continuous teacher learning to accomplish their goals.

The researchers found that eight of the 11 studies examined the connection between PLC participation and student achievement and documented improvement in test scores and other measures of student achievement. The researchers concluded that student achievement increased most where PLCs were highly involved and teachers focused persistently on student learning and achievement data. Another large study was conducted by North Carolina's Wake County Public School System (WCPSS). WCPSS implemented PLCs in 2003 in an effort to improve graduation rates and better prepare students for post-secondary education and the workforce (Jackl & Lougée, 2012). In 2006-2007, PLC implementation became a key strategy for achieving the district mission, and evaluation specialists began to collect data to determine the impact on teachers and student achievement.

Jackl and Lougée (2012) reported that more than 80% of WCPSS teachers agreed or strongly agreed that their work in PLCs positively impacted their teaching performance and their students' academic achievement. WCPSS schools with high-performing PLCs had lower percentages of failing grades, and those with high-performing PLCs had markedly lower rates of student retention. Finally, statistical analyses of the relationship between high-performing PLC indices and student end-of-grade and end-of-course assessment data indicated that student performance improved over time.

To investigate a possible link between PLCs and student achievement, Passi (2010) surveyed 365 ELA teachers in three suburban New York high schools concerning their PLC practices and examined their students' 3-year average mastery rates on the New York State ELA Regents Exam. The researcher found that teachers from high-performing schools expressed a higher focus on learning, a greater agreement with a shared vision, higher rates of peer collaboration, and increased levels of supportive structures in their schools when compared with teachers from low- and moderate-performing schools. Furthermore, Passi's (2010) findings indicated that all four of the PLC dimensions studied were related to student achievement.

2. Purpose of the Study

The purpose of this study was to examine whether elementary level teachers in a sampling of Georgia's Focus, Highest Progress, and Highest Performing schools differed in the implementation of PLC dimensions, how their education level compared to their practice of PLC principles, and if their practice of the PLC principles had an effect on student academic performance.

3. Research Questions

The study was guided by three research questions.

Research Question 1: Does the implementation of PLC dimensions differ among Focus, Highest Progress, and Highest Performing elementary schools?

Research Question 2: Does a significant relationship exist between teacher level of education and practice of PLC dimensions?

Research Question 3: Does a significant relationship exist between teacher practice of PLC dimensions and student performance on the Georgia CRCT?

4. Methods

This quantitative study examined the relationship between teachers' training in PLC principles and their practice of PLC principles, as well as whether student performance was impacted by the practice of the PLC dimensions. Survey data were collected to examine teachers' perceptions of the existence of the four dimensions of a PLC (focus on learning, shared vision, collaborative culture, and supportive conditions) within their schools.

4.1 Participants.

The population for this study was elementary schools in a Georgia RESA District. Seven elementary schools from the RESA district were selected as Focus, Highest Progress, and Highest Performing schools. These Georgia public schools were identified as low-performing, progressing, or high-performing by the GaDOE based on CRCT data from 2009 to 2013. One of the identified schools served only 6th grade, and one did not have PLCs, so these schools were eliminated from the study because they did not meet study population parameters. The remaining five identified schools served as the sample for this study. Schools A and B were classified as Highest Performing Schools by the GaDOE, so they were among the 5% of Georgia Title I schools with the highest performance for the "All Students" group ($n \geq 30$) over 3 years, and they made Adequate Yearly Progress in 2011.

School C was classified as a Highest Progress School, so it was among the 10% of Georgia Title I schools with the highest progress in performance for the “All Students” group ($n \geq 30$) over 3 years. Schools D and E were classified as Focus Schools, so they were among the Georgia Title I schools with the largest within-school gaps between the highest-achieving subgroups and the lowest-achieving subgroups (GaDOE, 2012).

All teachers involved in PLCs within the five schools were given the opportunity to participate in the study. A total of 194 teachers completed the self-administered surveys; all 194 surveys were returned, resulting in a return rate of 100%. Of the respondents, 184 (95%) were female, 8 (4%) were male, and 2 (1%) had missing data. When asked their level of higher education, 57 (29%) reported having a Bachelor’s degree, 73 (38%) reported a Master’s degree, 54 (28%) reported a Specialist’s degree, 5 (2.5%) reported a Doctor of Education degree, none reported a Doctor of Philosophy degree, and 5 (2.5%) had missing data. Permission was obtained from the superintendent of each district and the principal of each school prior to the distribution of the survey instrument.

4.2 Survey Instrument

The instrument utilized, based on the survey used in Passi’s (2010) study, consisted of 40 statements concerning the four dimensions of PLCs, as well as 10 additional statements to rate the level to which teachers had been trained in the various PLC dimensions and the level to which these dimensions were being practiced in their schools. Participants were asked to read each statement and indicate their personal degree of agreement with each statement based on a 5-point Likert scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

4.3 Procedures and Data Analysis

A completed application for the use of human participants in research was submitted to an Institutional Review Board (IRB) in January 2015. After reviewing the application packet, the Review Board determined the research protocol to be exempt from IRB oversight. A face-to-face meeting was scheduled with each school’s faculty during February and March of 2015 to ask teachers to take part in the survey. No compensation was employed to recruit participants. Completion of the survey served as each teacher’s voluntary agreement to participate in this research project and certification that he or she was 18 or older. To protect participants’ privacy, the nature of the project was explained, and then the teachers were given the opportunity to complete the self-administered surveys on their own. Participants were asked to place their surveys in a manila envelope as they exited the room. No personally identifiable information (name of the respondent, school affiliation, etc.) was collected through the use of the survey.

To maintain participants’ anonymity, survey responses were input into an electronic database, and the original survey forms were placed into a locked file cabinet to be retained for a period of 3 years. All electronic data were kept confidential and stored on a password protected computer. Only those involved in the research project had access to the data. Student achievement data for 3rd, 4th, and 5th grade students in each of the selected Focus, Highest Progress, and Highest Performing schools were collected in the form of grade level averages from the Georgia Governor’s Office of Student Achievement (GOSA) Report Card (GOSA, n.d.a). Percentages of students scoring in the *Meets* and *Exceeds* ranges on the Reading, English Language Arts, and Mathematics sections of the CRCT from 2011 through 2014 were examined.

5. Limitations

The schools involved in this study were not randomly selected; they were purposively selected based on their designation as a Focus, Highest Progress, or Highest Performing elementary school in the RESA District. Similarly, only elementary level teachers in rural Georgia were included, so the results may not be generalizable to other grade ranges or demographic areas of the country. The absence of classroom observational data to validate teachers’ self-reported survey responses further limited the generalizability of the study.

Varying levels of training in PLC practices, years of classroom experience, or length of tenure in a current position could have impacted teachers’ responses and limited the extent to which conclusions might apply to all public schools in general. Additionally, self-reported data gathered through the use of the survey instrument may have been adversely influenced by participants’ negative feelings toward required PLC meetings during or after the school day (Woodland & Mazur, 2015). Furthermore, teachers were only surveyed one time for this study; an annual follow-up survey would improve the validity of the measure of implementation of PLC principles (Pallant, 2005).

6. Results

Research Question 1 sought to determine if implementation of PLC dimensions differed among the Focus, Highest Progress, and Highest Performing elementary schools which were selected for the study. Results of ANOVA and *post hoc* comparisons indicated statistically significant differences among teachers' implementation in four of ten PLC dimensions investigated. Collaboratively reviewing student work to improve instructional practice was found to be statistically significant, indicating a difference in school performance level, Welch's $F(2, 87.609) = 5.040, p = .008$. Games-Howell *post hoc* analysis revealed an increase from 3.46 ± 1.0 in the Highest Progress group to 3.91 ± 0.7 in the Highest Performing group, an increase of 0.45 (95% CI, 0.31 to 1.17), which was statistically significant ($p < .0005$). Wood (2007) found that PLC participants reported having more collegial conversations and receiving more feedback focused on student work samples and classroom practices after participation in PLCs compared to before PLC implementation. The current study of PLC dimensions confirms that these practices can improve teacher instruction and school performance levels, as well.

Similarly, working with colleagues to judge the quality of student work was statistically significant, indicating a difference in school performance level, Welch's $F(2, 89.934) = 10.945, p < .0005$. Games-Howell *post hoc* analysis revealed an increase from 3.34 ± 0.9 in the Highest Progress group to 4.04 ± 0.7 in the Highest Performing group, an increase of 0.70 (95% CI, 0.29 to 1.10), which was statistically significant ($p < .0005$).

Koenigsberger (2015) reported that PLC members must develop authentic learning tasks for students and study the effects of teaching critical thinking skills. The researcher stated that high-performing PLCs must eliminate unnecessary material to make room for pertinent new material. To prepare students for a competitive world beyond schooling, PLC members must present problems in novel situations and ensure that assessments encompass essential knowledge and higher-order thinking skills. Results of the current study further demonstrate the importance of working with colleagues to ensure an appropriate level of rigor and quality of student work.

The practice of observing peers was found to be statistically significant, as well, indicating a difference in level of school performance, $F(2, 180) = 21.348, p < .0005$. Observation of peers increased from the Focus group (2.8 ± 1.1) to the Highest Progress group (3.6 ± 0.7). Turkey's *post hoc* analysis revealed that the increase (0.83, 95% CI [0.38 to 1.28]) was statistically significant ($p < .0005$).

Lieberman and Miller (2011) suggested that successful PLC members should build open, trusting relationships among all participants and focus collectively on problems of practice. The researchers further encouraged PLC participants to create routines and rituals to support honest discussion and disclosure, including observation, problem solving, and peer teaching and learning activities. The current PLC study demonstrates further support for the practice of peer observation.

Finally, providing feedback to peers related to instructional practices was statistically significant, indicating a difference in level of school performance, $F(2, 179) = 6.027, p = .003$. Data revealed that this PLC practice increased from the Focus group (2.9 ± 1.1) to the Highest Progress group (3.5 ± 0.7). Tukey's *post hoc* analysis indicated that the increase (0.58, 95% CI [0.07 to 1.09]) was statistically significant ($p = .021$). Researchers with the AISR (2004) indicated that PLCs meet regularly for the purpose of improving instruction, student outcomes, and participants' knowledge. As the researchers noted, PLCs require educators to be open and honest with themselves and members of the group as they seek ways to improve their work. The current PLC study supports the finding that providing feedback to peers helps teachers grow professionally and change the culture of their schools.

Research Question 2 asked if a significant relationship existed between teacher level of education and practice of PLC dimensions. A Pearson's Product Moment correlation analysis indicated a small statistically significant positive correlation between teachers' levels of education and two of the ten PLC dimensions studied. Correlations matrices indicated small positive correlations between teacher education level and the PLC practices of observing peers, $r = .164$, providing feedback to peers related to instructional practices, $r = .165$, sharing results of instructional practices, $r = .037$, working together to assess policies that encourage student learning, $r = .037$, working together to produce instructional materials, $r = .094$, discussing one another's teaching methods, $r = .081$, and discussing substantive student-centered educational issues, $r = .108$.

Further examination of the levels of statistical significance (p -values) revealed a small statistically significant positive correlation between teachers' levels of education and observing peers, $r(178) = .164, p = .028$, as well as between teachers' levels of education and providing feedback to peers related to instructional practices, $r(178) = .165, p = .027$.

Strahan (2003) found that teachers and administrators in elementary schools identified priorities for improvement, used assessment data to target areas for enhancement in teaching practices, and began school-based professional development to improve classroom instruction. Over time, students became more successful, PLCs grew stronger, and a culture developed to communicate high expectations to new teachers and new students. Strahan (2003) further reported that PLC members depended on their colleagues for suggestions and support when they were unsure of how to meet students' needs. In turn, this set the stage for continued improvement, and a renewable source of energy for PLC participants ensued. Results of the current study suggest that forming mentoring relationships between educators with higher degrees and those with lower levels of post-graduate work improves teacher quality.

Research Question 3 sought to determine the relationship, if any, between teacher practice of PLC dimensions and student performance on Georgia's CRCT as measured by each selected school's designation as a Focus, Highest Progress, or Highest Performing elementary school. A Pearson's Product Moment correlation was utilized to answer this question, and a partial correlation analysis was used to test if training was a moderating variable. The correlation coefficient, indicating the degree to which the variables were linearly related, was squared (R^2) to determine the amount of variance contributed by each variable. These procedures revealed a small statistically significant correlation between the practice of PLC dimensions and student achievement on the CRCT in three of the ten PLC dimensions studied.

Correlations matrices indicated small positive correlations between student CRCT performance as indicated by school designation and collaboratively reviewing student work, $r = .186$, sharing results of instructional practices, $r = .068$, working together to assess policies related to student learning, $r = .053$, working with colleagues to judge the quality of student work, $r = .242$, working together to produce instructional materials, $r = .112$, discussing teaching methods, $r = .085$, and discussing substantive student-centered educational issues, $r = .159$. Small negative correlations were identified between student performance and observing peers, $r = -.181$, providing feedback on instructional practices, $r = -.068$, and peer coaching, $r = -.017$.

An examination of the levels of statistical significance (p -values) revealed a small statistically significant positive correlation between student performance on the CRCT and collaboratively reviewing student work, $r(185) = .186$, $p = .011$, working with colleagues to judge the quality of student work, $r(186) = .242$, $p = .001$, and discussing substantive student-centered educational issues, $r(182) = .159$, $p = .031$. Further, a small statistically significant negative correlation was found between student performance and observing peers, $r(181) = -.181$, $p = .014$.

A partial correlation analysis controlling for training on the relationship between working with colleagues to judge the quality of student work and student achievement indicated that the first-order correlation was statistically significant, $r(164) = .205$, $p = .008$. Controlling for training on the relationship between discussing substantive student-centered educational issues and student achievement proved to be statistically significant, $r(160) = .168$, $p = .032$, and controlling for training on the relationship between observing peers and student achievement revealed a small statistically significant negative correlation, $r(165) = -.182$, $p = .018$.

Analysis of the coefficients of determination indicated the practice of observing peers accounted for 3% of the variance in student performance when controlling for teacher training in the PLC practices. Working with colleagues to judge the quality of student work accounted for 4% of the variance, and discussing substantive student-centered educational issues accounted for 3% of the variance. Vescio et al. (2008) examined how educators changed their teaching practices as a result of PLC participation. The researchers found that participants' practices became more student-centered over time. For example, some teachers varied their lesson pacing to meet the needs of learners while others used higher order thinking strategies. The researchers found data supporting fundamental shifts in the schools' professional cultures and the habits of mind teachers brought to their classrooms. Vescio et al. (2008) noted that the most successful PLCs shared four common characteristics: the teachers participated in open collaboration, the groups focused on student learning, the participants exercised some authority over their own learning and various aspects of school governance, and the members participated in continuous teacher learning to accomplish their goals.

Finally, Vescio et al. (2008) found that PLC participation resulted in improvement in student learning as measured by increases in test scores and other measures of student achievement. The researchers concluded that student achievement increased the most where PLCs were highly involved and teachers focused persistently on student learning and achievement data. These findings are closely related to the current study of PLCs.

It is interesting to note that although observing peers shared a small negative correlation with student achievement when controlling for teacher training in PLC dimensions, peer observation shared a small positive correlation with teacher level of education. Perhaps this is because, as Talbert (2010) found, it is often difficult for teachers to allow peer observers to come into their classroom and provide feedback, and teachers are often uncomfortable discussing how their teaching affects student learning. However, studies have indicated (Learning Forward, 2011; Mindich & Lieberman, 2012; Passi, 2010; Vescio et al., 2008) that these are important practices to develop when schools seek to improve teaching quality and student outcomes.

7. Discussion

At first glance, many results of the statistical analyses within this study appear to be small, non-significant, and even unimportant. However, closer examination suggests that this may not be true at all. For example, the sample size for the study was problematic. According to Privitera (2012), increasing the sample size increases the value of test statistics in hypothesis testing and can lead a researcher to reject a null hypothesis when it might not have been rejected based on a smaller sample size. Therefore, the results of the current study may have been statistically different if a larger sample size had been selected (Field, 2009).

Secondly, careful inspection of the mean values for implementation of PLC dimensions among the three groups of schools (Focus, Highest Progress, and Highest Performing) indicated a relatively small range within each category of PLC practice. These score ranges are presented in Table 1.

It is worth noting that the vast majority of these mean score ranges fall at the *Somewhat Agree* to *Agree* level on the Likert scale. The results may be so similar in part because the five schools studied are located within the same RESA District. The consultants work closely with their member schools to offer many training opportunities, so it is likely that the teachers and administrators of the schools in the current study have participated in many of the same workshops offered by RESA staff. For this reason, implementation of the PLC dimensions could be fairly uniform throughout the schools within the RESA district.

Furthermore, a look beyond the numbers found within this study reveals agreement with many findings from the review of literature. For example, study results indicate that PLC members who reported observing peers, providing feedback related to instructional practices, working with colleagues to judge the quality of student work, and collaboratively reviewing student work to improve instructional analysis were more likely to improve the quality of their teaching. These practices were found to improve learning outcomes for students, as well.

Many researchers provide data to support this observation of improved quality of teaching and learning through the implementation of PLC practices. AISR (2004), Borko (2004), Chaseling et al. (2014), Datnow (2011), Fairfield (2011), Jackl and Lougée (2012), Owen (2014), Pirtle and Tobia (2014), Prater (2010), Strahan (2003), and Wood (2007) used varied combinations of teacher and administrator surveys, interviews, observations, and assessment data to document the use of PLC principles to significantly impact classroom instructional practices and student achievement. In fact, Voelkel (2011) described a sense of collective efficacy among members of one PLC team that helped its school improve from lowest in the district to outperforming the district and state in ELA and mathematics achievement.

Similarly, teacher collaboration and increased student learning could lead to a school receiving a higher designation by a State Department of Education. For example, Georgia schools could move from being categorized as Focus schools to Highest Progress schools or from Highest Progress schools to Highest Performing schools. As in Voelkel's (2011) study highlighted in the preceding paragraph, Strahan (2003) reported on a school that significantly improved its performance level and state ranking after adopting PLC practices.

Results from the study further indicate a positive correlation between teacher level of education and observing peers, as well as between the level of education and providing feedback to peers related to instructional practices (Vescio et al., 2008). These results suggest that relationships between teachers with higher levels of education and those with lower levels of post-graduate education are important in improving teacher instructional quality and student learning outcomes (Learning Forward, 2011; Mindich & Lieberman, 2012; Woodland & Mazur, 2015).

Likewise, results of this study indicate positive correlations between student achievement on standardized assessments with teacher practice of collaboratively reviewing student work, working with colleagues to judge the quality of student work, and discussing substantive student-centered educational issues (Fairfield, 2011; Odden, 2011).

These results suggest that teachers who meet regularly in PLCs to participate in activities such as examining student work, monitoring student progress, creating exemplars of student work, and improving inter-rater reliability could improve outcomes for students as measured through summative assessments (Owen, 2014; Stoll et al., 2006; Wood, 2007). The conclusions drawn from this study indicated the PLC practices which appeared to improve teaching and learning were:

1. Participation in continuous, job-embedded teacher training.
 2. Conducting peer observations and providing feedback on classroom instruction.
 3. Holding collegial conversations on student work, achievement data, and classroom practices.
 4. Working with colleagues to appropriate levels of rigor and quality of student work.
 5. Collaboratively reviewing student work to improve instructional analysis and teaching quality.
 6. Forming mentoring relationships between teachers with varying level of education.
- 8. Recommendations for Action**

Based on a review of the literature and the present study of PLCs, the following actions are recommended for current practitioners in the field of education. Educators should devote time and resources to the development of PLCs within their schools. Teams of teachers should be encouraged to work collaboratively in an ongoing, job-embedded process of inquiry and action research to achieve better learning outcomes for their students (Fairfield, 2011; Learning Point Associates, 2009; Lieberman & Miller, 2011; Vescio et al., 2008). As schools begin this important work, PLC participants should develop a shared vision to articulate what is most important to the school community. This vision must become a guidepost for making all decisions about teaching and learning (Chaseling et al., 2014; Hord, 1997).

As administrators begin to transform their schools into learning communities, they must set aside resources and put supportive structures into place (Prater, 2010; Voelkel, 2011). Resources may include time for collaboration and peer observations, substitute teachers to cover classes, materials for professional learning, and stipends for work completed outside of the regular work day or school year (DuFour, 2014; GaDOE, 2013). Supportive structures may include common planning time for teachers built into the daily schedule, proximity of colleagues' classrooms, and a common meeting area where educators can share ideas, review student work, and analyze achievement data (DuFour et al., 2008; Passi, 2010).

Most importantly, schools must implement strategies to ensure that all students learn at high levels (Borko, 2004; Jackl & Lougée, 2012; Koenigsberger, 2015). To accomplish this goal, PLCs must support teachers as they shift from a focus on teaching to a focus on student learning (Stoll et al., 2006; Wood, 2007). Throughout this process, teachers must monitor student progress and provide interventions or enrichment to meet the individual needs of all learners (Learning Forward, 2011; Mindich & Lieberman, 2012). Administrators must lead this charge, ensuring that all members of the learning community understand that they are collectively accountable for the achievement of all students (DuFour et al., 2008; Owen, 2014; Pirtle & Tobia, 2014).

9. Recommendations for Future Research

Based on a review of the literature and the present study of PLCs, the following recommendations might be considered for further research:

- Expand the work described in this study to include a larger sample size of teachers within more elementary schools. This research was limited to only one RESA district within the state of Georgia.
- Conduct a similar study at the preschool, middle school, high school, or post-secondary level. This study was limited to the elementary level.
- Replicate this study using different measures of student achievement. For example, a study could be conducted using the recently-implemented Georgia Milestones, Partnership for Assessment of Readiness for College and Careers (PAARC), or Smarter Balance assessment when one of these assessments is fully operational as an online evaluation instrument.
- Conduct a similar study using a qualitative research design. This method could provide an opportunity to closely investigate teacher and leader PLC training and practices.
- Expand the work outlined in this paper to include a deeper examination of online learning communities (OLCs). OLCs are becoming increasingly valuable for teacher collaboration, especially with the implementation of national learning standards across our country.

10. Conclusion

Results of this study indicate that educators who participate in collaborative PLC practices such as observing peers, providing feedback on instructional practices, analyzing student work, and discussing student-centered educational issues are more likely to improve the quality of classroom instruction. Furthermore, PLC participation and improved instructional practices are likely to result in increases in student learning outcomes. As stated by Learning Forward (2011), collective responsibility in PLCs increases teacher effectiveness through collaboration, communication, and relationships to support student learning. The resulting high expectations enable educators to bridge the knowing-doing gap and implement deep change for individual students, teachers, and school systems.

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TablesTable 1: *Mean Score Ranges for Implementation of PLC Dimensions*

PLC Practice	Range of Means
Observe peers	2.4 to 3.6
Provide feedback to peers related to instructional practices	2.8 to 3.5
Collaboratively review student work to improve instructional practice	3.46 to 3.9
Peer coach	2.6 to 2.9
Share the results of instructional practices	3.6 to 3.8
Work together to assess policies that encourage student learning	3.6 to 3.8
Work with colleagues to judge the quality of student work	3.3 to 4.0
Work together to produce instructional materials	3.72 to 3.9
Discuss one another's teaching methods	3.3 to 3.7
Discuss substantive student-centered educational issues	3.3 to 3.7