Changing the Game: Reculturing Professional Learning

A PCG White Paper

By Julie McEachin, M.S.Ed. and Peter Seidman, M.A.Ed.

August 2017

PCG | Education

Introduction

Since 2011, America's K–12 educators have been deeply engaged in the transformation of curriculum, assessments, and instructional practices to align with rigorous college- and career-ready (CCR) standards. These changes have prompted a renewed sense of urgency regarding improvements in teacher learning that aim to result in improved educator practice and, in turn, student achievement. This PCG White Paper delineates an approach to comprehensive, differentiated, and sustained professional learning that maximizes educators' engagement in the critical knowledge and skills needed to raise student achievement. The goal of professional learning is to strengthen and enhance aligned educator practice that, in turn, results in improved student proficiency.

Current Challenges

"*The implicit theory of action behind professional learning is that if education leaders support teachers' engagement in high-quality learning experiences, then teachers will improve their classroom practice, and in so doing, increase student learning and overall success. For this theory of action to be realized by school leaders…it must be tied to a pathway that maps out how these goals will be achieved*" (Tooley and Connally, 2016, p.4).

Most Professional Learning Is Not Aligned to CCR Standards

Over the past decade, states, districts, and schools throughout the country have adopted more rigorous learning standards emphasizing critical thinking skills, deep conceptual understanding, and rigorous analysis of complex text. However, most professional learning does not align intently to CCR standards and, thus, does not contribute to improved teaching practice or student achievement. The National School Board Association's Center for Public Education (CPE) found in its 2013 report that many current professional learning opportunities do not currently "emphasize practices that will turn students into critical thinkers and problem solvers.…While almost all of the participating teachers managed well-behaved, on task classes, the following practices were rarely seen: students participating in meaning making and reasoning, investigation and problem-based approaches, questioning strategies, and student generation of ideas and questions—the exact kind of teaching the [CCR standards] called for" (Gulamhussein, 2013, p. 3-7). A 2016

> *"Most professional learning does not align intently to college and career ready standards and, thus, does not contribute to improved teaching practice or student achievement."*

Harvard study confirmed these findings. Of the 1,500 teachers surveyed, the overwhelming majority (67%) "reported feeling only partially prepared to help students perform well on the new [CCR standards-aligned] assessments" (Kane, Owens, Marinell, Thal, & Staiger, 2016, p. 13).

Today, there continues to be a disconnect between CCR expectations and the work of many classrooms. "Research suggests that the paradigm of instruction needed to prepare students for college and 21st century careers is not the paradigm of instruction most teachers currently use in their practice" (Gulamhussein, 2013, p. 6). Professional learning, thus, is a critical tool for preparing teachers and, in turn, students, to meet the expectations of the CCR standards.

Most Professional Learning Is Not Intensive or Sustained Over Time

In addition to the lack of alignment to CCR standards, one of the foremost challenges of professional learning today is the lack of sustained opportunities for teachers to learn, try out, and ultimately adopt new instructional practices. In 2014, the Bill and Melinda Gates Foundation (p. 9) surveyed over 1,200 teachers and found that the vast majority of participants (80%) reported that "workshops" were the predominant format of professional learning they received (p. 9).

> *"Most teachers receive less than 30 hours of professional development…primarily in... a single workshop...and often without opportunities to practice and discuss learning with other educators." (Mike & Kepp, 2014)*

Problematically, this format generally consists of a series of disconnected professional learning experiences, often detached from daily practice and with minimal expectation for application, observation and feedback. Less than half the teachers reported having participated in more rigorous and sustained formats for professional learning like courses, coaching, and intensive summer training. Indeed, as a brief by the New Teacher Center (NTC) highlights, "most teachers in the U.S. receive less than 30 hours of professional development in a school year, primarily in the form of conferences or single workshops, rarely within the school day, and often without opportunities to practice and discuss learning with other educators" (Mike and Kepp, 2014, p.4). Thus, the workshop, the predominant format for professional learning, is often ineffective due to its lack of relevance to everyday practice; lack of opportunities for collegial discussion and knowledge sharing; and its limited ability to actively engage teachers in adopting instructional practices that are sustained over time.

Solutions: What the Research Tells Us About Impactful Professional Learning

High-Quality Sustained Professional Learning Positively Impacts Student Achievement

Even with the challenges of today's educational landscape, professional learning nonetheless has the potential to significantly impact teaching and learning. Research has shown that high-quality, sustained professional learning can both strengthen teacher practice and positively impact student achievement. In its review of over 1,300 studies on professional learning, Institute of Education Sciences (IES) researchers found when teachers engaged in well-designed professional development for an average of 49 hours spread over six to 12 months, they increased student achievement by as much as 21 percentile points (Yoon, Duncan, Lee, Scarloss, & Shapley,

> *"When teachers engaged in well-designed professional development for an average of 49 hours spread over six to 12 months, they increased student achievement by as much as 21 percentile points." (Yoon, et. al, 2007)*

2007, p. iv). Conversely, professional learning experiences lasting 14 hours or less over the course of a year—a much more common time allocation among single workshops— "showed no statistically significant effect on student achievement" (Yoon et al., 2007, p. iv). Thus, for professional learning to be impactful it must be sustained over time.

Coaching Is Essential to Improving Teacher Practice

In addition to involving sustained support, for professional learning to impact teaching practice, it also requires that it contain opportunities for application and feedback, and be applicable to specific content or pedagogy. To this end, coaching—the process of learning a skill or content, practicing and applying it, and receiving substantive feedback in structured cycles—is essential to improving teaching practice and,

in turn, student outcomes. (Lewis & Hurd, 2011; Matsumura, Garnier, & Spybrook, 2012; Showers, 1984; Sailors & Price, 2010). A recent Gates study reaffirmed this finding, concluding that "coaching has been shown to improve teachers' abilities to adopt and implement new teaching practices" (Bill and Melinda Gates Foundation, 2014, p. 14).

Not only does coaching have the potential to strengthen student outcomes, it also provides the means to make good practice stick. Since a primary goal of professional learning is to provide teachers with new knowledge and skills, teachers need substantial support as they practice applying in their classrooms the new skills learned in professional development. In examining a study that compared teachers who received coaching support to those that did not after attending an initial workshop, researchers found that those who received coaching were more likely to use their learning and transfer it to their teaching practice. Those who only attended the workshop without coaching were more likely to "lose interest" and "not continue to use [the skill] in their classrooms" (Gulamhussein, 2013, p. 16).

Blended Learning Provides Added Flexibility

The advent of blended professional learning (leveraging both independent online work and in-person experiences), has provided educators with new found flexibility to meet their individual time needs, and in the case of most districts, cost constraints. Moreover, research indicates that when it is executed well, blended professional learning can be just as impactful as face-to-face experiences, particularly when supported with coaching. A 2013 study in the Journal of Teacher Education highlighted the advantages of blended professional learning: "It can accommodate teachers' busy schedules, it can draw on powerful resources that are not available locally, and it holds the promise of creating a "path toward providing real-time, work-embedded support" (Fishman, Konstantopoulos, Kubitskey, Vath, Park, Johnson, & Edelson, p. 3). Additionally, researchers found no significant differences in the impact of blended and face-to-face professional learning delivery models. That is, when high-quality sustained professional learning experiences were provided to teachers via different modalities (e.g. face-to-face or through an online blended format supplemented with online coaching), the impact on teacher knowledge and beliefs, teacher classroom practice, and student learning outcomes were similarly positive regardless of delivery format (Fishman, et al., p. 2).

PCG's Approach to Professional Learning

The research is clear: high-quality, sustained professional learning improves teaching practice and student achievement. Given the potential of professional learning to significantly improve teaching and learning, PCG has developed an approach to professional learning intended to maximize schools' and districts' impact and investment in adult learning.

PCG's approach to professional learning addresses the pervasive challenges of sustaining high-quality, rigorous professional learning that results in improved teaching practice and, in turn, student achievement. PCG customizes professional learning to vary in scale, intensity, and delivery model to meet each client's unique needs.

Regardless of delivery model (i.e., in-person or blended), the following six elements are foundational to PCG's approach to effective and impactful professional learning:

1. Sustained and continuous
2. Focused on specific content and pedagogy
3. Consistent with daily practice
4. Supported by coaching with modeling, observation, and feedback
5. Actively collegial and collaborative
6. Differentiated to support a range of diverse and unique needs

Sustained and Continuous

Teachers need time to learn and apply new knowledge and skills before they become rooted in instructional practice. In order for professional learning to create sustained impact, teachers need to engage in regular professional learning over the course of most of the school year or longer. Spacing professional learning hours out over weeks or months, as opposed to learning in a compressed time period, can help teachers retain and apply what they learn.

Effective professional learning programs build upon the premise that learning doesn't stop. Research suggests that teachers need to apply a skill more than 20 times in order to gain mastery (Joyce & Showers, 2002). Support, collaboration, community, peer feedback, and practice should remain ongoing. If teaching and student learning doesn't stop, support for teachers shouldn't stop either.

Figure 1. Six elements of impactful professional learning

Focused on Specific Content and Pedagogy

Programs that focus on teachers' knowledge of specific content, curriculum, and ways in which students learn that content demonstrate greater impact on student achievement than do programs that focus on

> *"Research suggests that teachers need to apply a skill more than 20 times in order to gain mastery" (Joyce & Showers, 2002)*

generic instructional practices (e.g., collaborative learning). Moreover, teachers are most satisfied with professional development when they see it benefit their day-to-day work. The 2014 Gates study found that the type of professional development teachers most often requested centered on practices directly applicable to their work in the classroom—planning, reflecting on instruction, and collaboration and knowledge sharing with colleagues (Bill & Melinda Gates Foundation, 2014). Key professional development activities that teachers found to be of most benefit were knowledge sharing and troubleshooting among colleagues, lesson and unit planning, developing teaching skills and content, reviewing student data, and aligning curriculum and expectations. Professional learning should thus align with teachers' specific content and pedagogy and be tied to ongoing professional collaboration with colleagues in similar content areas.
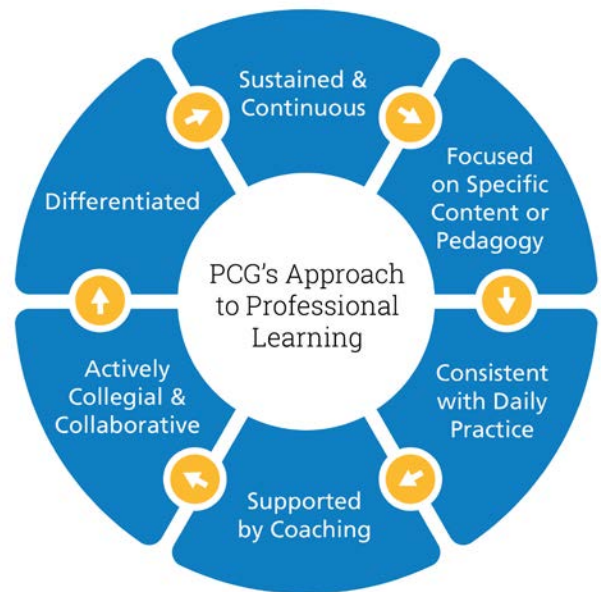
Consistent with Daily Practice

For professional learning to impact practice, it needs to be explicitly relevant to teachers' professional lives and daily responsibilities. Adult learning theory posits that the most effective professional learning for teachers focuses on specific instructional strategies relevant to teachers' content areas, grade level(s), college and career-ready standards, assessments, and specific problems of practice. While face-to-face professional learning provides rich opportunities for educators to meet together and gain new knowledge and skills, online and blended professional learning offerings provide teachers with greater flexibility in time management, as well as collaborative opportunities for teachers who are doing similar work. Additionally, online offerings can provide training in specific knowledge and skills that might not otherwise be practical for a district to offer. For example, online offerings can bring subject-specific learning and opportunities for collaboration to schools with small departmental faculties, as well as provide mentors to a new teacher in a remote rural school.

Supported by Coaching with Modeling, Observation, and Feedback

Professional learning that is most likely to improve teacher practice and student achievement includes modeling of strong instructional practices and provides opportunities for participants to apply learning, receive feedback, and refine their own practice accordingly. A meta-analysis conducted by the Council of Chief State School Officers (CCSSO) found that the most impactful professional learning programs included extended periods of content-focused learning followed by ample application and follow-up support (Blank & de las Alas, 2009). Through structures like these, teachers are more likely to feel supported to try new things and receive ongoing feedback grounded in data that reflect changes in practice and impact to student learning over time.

Actively Collegial and Collaborative

Effective professional learning programs not only allow for peer-to-peer learning and collaboration, they include it by design. Research has shown that teachers improve at greater rates when they work in schools with strong collaborative cultures (Jackson & Bruegmann, 2009; Ronfeldt, Farmer, McQueen, & Grissom, 2015). Groups of teachers that share and critically interrogate their practices in an ongoing, reflective, collaborative, inclusive, learning-oriented, and growth-promoting environment mutually enhance teacher and student learning (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). Professional learning programs that rely on peer collaboration not only increase the human capital of teachers by helping to reinforce and institutionalize the content and pedagogy learned in workshops, but they also increase the social capital of schools by fostering a community that values peers' experiences in classrooms and uses those experiences to continuously strengthen teaching practice and improve student learning.

Differentiated

Lastly, improving professional learning means recognizing that teachers learn in different ways, at different speeds, and using different modalities. Impactful professional learning provides high-quality options and is differentiated based on teacher need and interest. Effective use of technology not only provides teachers with more options to suit their interests and needs, but it also deepens and extends face-to-face learning experiences while significantly streamlining time and cost. The best programs accommodate for self-pacing and allow for questioning, reflection, and exploration. A recent report by Learning First found evidence that several other nations and provinces—British Columbia, Hong Kong, Shanghai, and Singapore, among others—have had success employing a combination of these elements (Jensen, Sonnemann, Roberts-Hull, & Amélie Hunter, 2016). Unfortunately, in the U.S. this is not the case. According to the recent study conducted by the Gates Foundation, only one out of every three

teachers (30%) reported the ability to explore or make choices regarding their own professional learning, and nearly one in five (18%) reported having no say at all.

Just as in classroom teaching, effective professional development differentiates learning and moves between instruction, data-gathering, group work, independent practice, and collaborative problem solving to ensure that everyone is learning what they need. Technology can make such active, customized learning far easier, with more experts available, more videos, sample lessons and other learning objects accessible, and more styles of learning and interaction possible according to each learner's preferences.

Examples of PCG's Professional Learning Delivery Models

Using the principles described above, PCG designs and delivers high-quality face-to-face and online blended professional learning initiatives for states, districts, and schools. Below are several recent examples illustrating how PCG applied this approach to meet the diverse professional learning needs of educators across the country.

Face-to-Face Professional Learning and Intensive Coaching for School Improvement
New York City Department of Education

NYC Department of Education

PCG is in its fifth year of supporting New York City's public high schools with Common Core State Standards implementation for English Language Arts (ELA) and Literacy. Most recently, PCG designed and delivered a yearlong face-to-face professional learning program for NYCDOE renewal schools' educators. (Renewal schools are designated most in need of improvement in the city.) Professional learning experiences supported renewal schools' teachers, coaches, and leaders to effectively implement the EngageNY grades 9-12 ELA curriculum and the Standards.

To meet teachers' varying needs, professional learning content was differentiated for novice and more experienced curriculum users. PCG provided team-based experiences to foster collaboration and knowledge sharing, develop teacher leadership, and spread strong practice. Over the course of the school year, PCG's and NYCDOE's expert coaches worked shoulder-to-shoulder with teachers to strengthen their daily planning and instruction. The work focused on supporting teachers to learn the curriculum's content and to master pedagogical practices to ensure successful implementation. Additionally, the work provided a critical space for teachers to share their implementation experiences and resources collegially and professionally.

Figure 2. Change in student outcomes after one year of sustained, job-embedded professional learning

To ensure impactful, continuous support for curriculum implementation, PCG provided intensive and sustained expert coaching to one of the participating schools. A PCG coach met monthly with teachers at one Renewal High School to observe instruction, provide modeling, feedback, and coaching to ensure effective curriculum implementation. Through the coaching process, PCG built trust and buy-in for the curriculum while delivering differentiated support consistent with teachers' daily needs and practices.

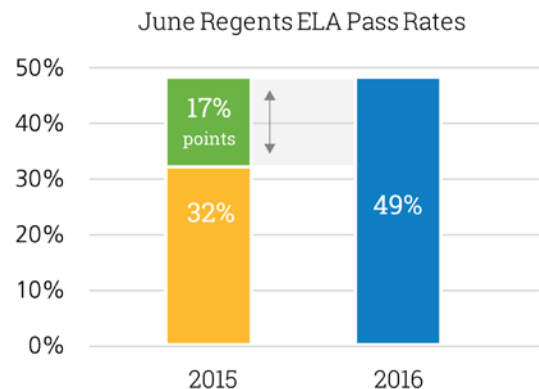The results were staggering; after one year, New York State Regents ELA pass rates increased 17 percentage points, from 32% passing in June 2015, to 49% passing in June 2016, representing a greater than 50% improvement. The impact was sustained, too. The following year 59% of students passed the January 2017 exam, compared to 35% in January 2016, representing a 69% increase.

Perhaps most strikingly, teaching practice began to shift as a result of the coaching. By the end of the school year, instructional task complexity increased by up to four grade levels, and text complexity increased by multiple grade levels across classrooms as well. As teachers learned to incorporate the standards into their daily planning and instruction, student performance improved as students gained proficiency in skills aligned to grade-level standards.

Blended Professional Learning Model

Florida Department of Education

Florida Department of Education

PCG led a yearlong blended professional learning program for teachers, administrators, and leadership teams from both large, urban and rural school districts throughout the state of Florida. Professional learning was delivered to educators in day-long face-to-face sessions throughout the state, as well as in a series of e-learning courses. PCG's Blended Learning Model paired completion of an online learning experience with customized onsite coaching. The goal of this project was to provide educators with the training and resources they needed to transition to full implementation of the new CCR standards in mathematics, ELA, and content literacy in grades K–12.

PCG's blended professional learning model consisted of professional learning modules in both e-learning and face-to-face formats. Content and delivery format were differentiated to provide teachers and school leaders with flexibility in scheduling as well as tailored content for educators' individualized roles and learning needs. Ongoing implementation support throughout the year provided sustained technical assistance, feedback, and coaching as well as opportunities for both face-to-face and technology-based collaboration.

A comprehensive evaluation study was conducted to examine the impact of professional learning on student achievement, teaching practice, and school culture (Ohlson, Donis-Keller, 2017). Schools in the study showed noteworthy gains in student achievement and documented changes in practice. In 93% of schools in the study, student achievement gains were higher than the state average across all subject areas. Engagement in professional learning was also associated with improvements among the most struggling students: 63% of participating schools demonstrated gains in reading for the lowest quartile students; 38% of schools showed growth of 17 points or more in mathematics for the lowest quartile students. Attendance also improved in almost all schools (75%) participating in the study (p. 14).

Qualitative results demonstrated substantive changes in teaching practice resulting from the professional learning. Participants spoke clearly to the importance of the face-to-face coaching sessions as well as the flexibility inherent in the blended model. More specifically, participants felt that the customized approach and the regularity of the visits played a particularly important role in supporting the growth in their schools' collaborative cultures, their understanding of the standards, and in taking a strategic approach to implementation of the state standards. Participants also emphasized the impact of multiple encounters with the same professional learning coaches: repeated onsite sessions with the same PCG coaches enabled school staff to reflect and build on work initiated in previous sessions together and then apply that work immediately in their classrooms.

Teachers also reported an increase in student engagement and improved writing instruction because of the professional learning. Teachers across the study schools reported teaching writing differently—requiring students to work with complex text, looking for specific evidence, and learning how to integrate that into their writing—attributable, in part, to support from professional learning, coaching, and resource sharing.

Blended Professional Learning Model

Connecticut State Department of Education

Connecticut State Department of Education

PCG partnered with the Connecticut State Department of Education to create a rigorous and sustained professional learning program for educators across the state to increase their expertise in teaching foundational reading skills, identifying student skill gaps, and monitoring students' progress toward proficient reading by the end of third grade.

PCG staff applied their expertise in the Standards to create a blended professional learning initiative that resulted in a coherent, ongoing and supported adult learning experience. PCG developed a blended program of online modules and in-person experiences for a cohort of approximately 80 teams including teachers, literacy leaders, and administrators. Key components of PCG's blended professional learning program included:

- **Regional team-based convenings** focused on critical components of foundational reading, oral language development, fluency, academic language, and reading comprehension. Additionally, the regional convenings provided the opportunity for school-based teams to collaboratively problem solve implementation challenges to ensure success for all students.
- **Online modules** offered participants opportunities to study in depth the content introduced in the in-person regional convenings. Some teams leveraged these modules in collaborative professional learning community meetings, while others worked at their own pace and met in PLCs to share their learning and gain feedback on their efforts to try techniques in the classroom.
- **Virtual collaboration** guided literacy leaders' support of teachers as they implemented classroom practices consistent with the content of the modules. This included synchronous and asynchronous virtual team meetings with literacy leaders from several schools as well as a specialist. Collaboration among this group was designed to support teachers' daily implementation as well as to support the literacy leaders' growth and development as instructional coaches.
- **Principal webinars** ensured that school leaders are knowledgeable about the instructional practices that were the focus of the regional convenings and online modules.

Conclusion

Teacher development plays a critical role in ensuring current and future generations of students are adequately prepared for 21st century economic and civic life. Now that nearly every state in the nation has adopted more rigorous learning standards, the work of preparing teachers to teach to those standards has only just begun. As districts and schools seek to ready students for college and careers, professional learning, too, must keep pace. Teachers require ongoing, sustained, high-quality support aligned to CCR standards, delivered in ways that are consistent with their daily lives and teaching practices. The professional learning approach presented here, the six research-based principles, create dynamic adult learning experiences that deeply transform teaching and learning. When professional learning is sustained, collaborative, differentiated, and supported by coaching, teachers are empowered, students succeed, and education systems benefit from impactful, lasting change.

References

Bill & Melinda Gates Foundation (2014). *Teachers know best: Teachers' views on professional development.* Seattle, WA: Author. Available from http://k12education.gatesfoundation.org/resource/teachers-know-best-teachers-views-on-professional-development/

Blank, R. K. & de las Alas, N. (2009)*. Effects of teacher professional development on gains in student achievement: How meta-analysis provides scientific evidence useful to education leaders.* Washington, DC: Council of Chief State School Officers. Retrieved from http://www.ccsso.org/Documents/2009/Effects_of_Teacher_Professional_2009.pdf

Coughlan, S. (2016, December 6). Pisa tests: Singapore top in global education rankings. *BBC News.* Retrieved from http://www.bbc.com/news/education-38212070

Fishman, B., Konstantopoulos, S., Kubitskey, B. W., Vath, R., Park, G., Johnson, H., & Edelson, D. C. (2013). Comparing the impact of online and face-to-face professional development in the context of curriculum implementation. *Journal of teacher education, 64*(5), 426-438.

Gulamhussein, A. (2013). *Teaching the teachers: Effective professional development in an era of high stakes accountability*. Alexandria, VA: Center for Public Education. Retrieved from http://www.centerforpubliceducation.org/teachingtheteachers

Jackson, C., & Bruegmann, E. (2009). Teaching students and teaching each other: The importance of peer learning for teachers. *American Economic Journal: Applied Economics, 1*(4), 85-108.

Jaquith, A., Mindich, D., Wei, R. C., & Darling-Hammond, L. (2010). *Teacher professional learning in the United States: Case studies of state policies and strategies.* Oxford, OH: Learning Forward. Retrieved from https://learningforward.org/docs/pdf/2010phase3technicalreport.pdf?sfvrsn=0

Jensen, B., Sonnemann, J., Roberts-Hull, K., & Hunter, A. (2016). *Beyond PD: Teacher professional learning in high-performing systems*. Washington, DC: National Center on Education and the Economy. Retrieved from http://www.ncee.org/wp-content/uploads/2015/08/BeyondPDWeb.pdf

Joyce, B. & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Kane, T.J., Owens, A. M., Marinell, W. H., Thal, D.R C., & Staiger, D.O. (2016). *Teaching higher: educators' perspectives on common core implementation*. Cambridge, MA: Center for Education Policy Research, Harvard University. Available from https://cepr.harvard.edu/publications/teaching-higher-educators-perspectives-common-core-implementation

Lewis, C. C., & Hurd, J. (2011*). Lesson study step by step: How teacher learning communities improve instruction.* Portsmouth, NH: Heinemann.

Matsumura L. C., Garnier H. E., & Spybrook J. (2012). The effect of content-focused coaching on the quality of classroom text discussions. *Journal of Teacher Education, 63*(3), 214–228.

Mike, A. & Kepp, L., (2014). *Harnessing the power of technology to optimize professional developmen*t. New Teacher Center. Presented at 2014 Learning Forward Annual Conference. Retrieved from https://proposals.learningforward.org/handouts/Nashville2014/C20/NTC%20Harnessing%20the%20Power%20of%20Technology%20to%20Optimize%20PD%2012_2014.pdf

Ohlson, M., & Donis-Keller, C. (2017). Chartering new leadership: A study of professional learning and established best practices of principals in charter schools in urban districts. *Charter Schools Resource Journal, 11*(1). Retrieved from Central Michigan University: https://www.cmich.edu/colleges/ehs/program/edlead/Documents/NEW%20TCSRJ,%20Vol.%2011,%20No.%201.pdf

Ronfeldt, M., Farmer, S. O., McQueen, K., & Grissom, J. A. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal, 52*(3), 475-514.

Sailors, M., & Price, L. R. (2010). Professional development that supports the teaching of cognitive reading strategy instruction. *The Elementary School Journal, 110*(3), 301-322.

Showers, B. (1984). *Peer coaching: A strategy for facilitating transfer of training.* A CEPM R&D Report. Oregon University, Center for Educational Policy. Retrieved from http://files.eric.ed.gov/fulltext/ED271849.pdf

Stoll, L., Bolam, R., McMahon, A., Wallace, M., & Thomas, S. (2006). Professional learning communities: A review of the literature. *Journal of Educational Change, 7*(4), 221-258.

Tooley, M., & Connally, K. (2016). No Panacea: Diagnosing What Ails Teacher Professional Development Before Reaching for Remedies. New America. Retrieved from https://www.newamerica.org/education-policy/policy-papers/no-panacea/

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from https://eric.ed.gov/?id=ED498548

About Public Consulting Group

Public Consulting Group, Inc. (PCG) is a leading public sector management consulting and operations improvement firm that partners with health, education, and human services agencies to improve lives. Founded in 1986 and headquartered in Boston, Massachusetts, PCG has nearly 2,000 professionals in more than 50 offices around the US, in Canada and in Europe. PCG's Education practice offers consulting services and technology solutions that help schools, school districts, and state education agencies/ministries of education to promote student success, improve programs and processes, and optimize financial resources. To learn more, visit www.publicconsultinggroup.com/education or contact an education subject matter expert directly at pcgeducation@pcgus.com or (800) 210-6113.