TEACHER COLLABORATION IN PERSPECTIVE

A GUIDE TO RESEARCH

A joint project of the Spencer Foundation and Public Agenda

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Teacher Collaboration In Perspective: A Guide to Research

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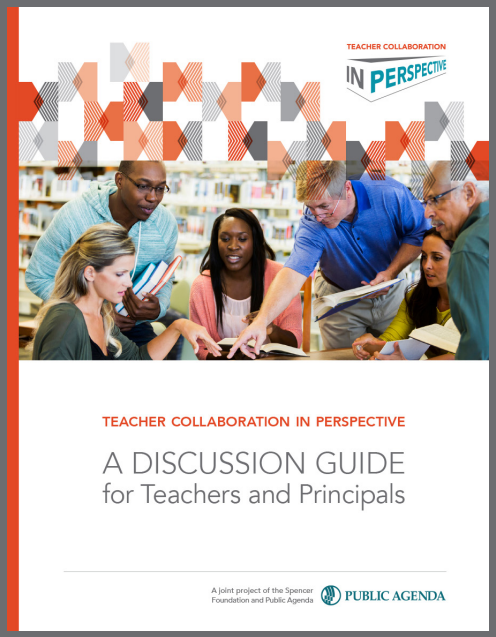
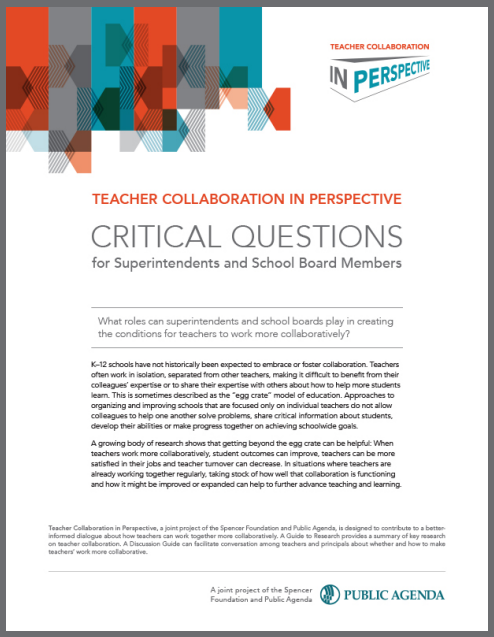
Teacher Collaboration In Perspective, a joint project of the Spencer Foundation and Public Agenda, is designed to contribute to a better-informed dialogue about how teachers can work together more collaboratively. A Discussion Guide can facilitate conversation among teachers and principals about whether and how to make teachers' work more collaborative. A set of Critical Questions can help superintendents and school board members begin to understand how teachers currently work and think critically about how to make teachers' work more collaborative.





TEACHER COLLABORATION IN PERSPECTIVE

A GUIDE TO RESEARCH

Introduction

- Why focus on teacher collaboration?
- How does fostering collaboration differ from traditional ways of organizing teachers' work?
- Using this Guide to Research

Why focus on teacher collaboration?

Teachers in most American schools work in isolation, separated from other teachers, making it difficult to benefit from their colleagues' expertise or to share their expertise with others about how to help more students learn. This way of structuring schools has often been referred to as the "egg crate" model: compartmentalized, lonely and not optimal for students or teachers. While collaboration is routine in professions such as scientific research, health care, architecture and the performing arts, most schools are not structured so that teachers can learn from one another, coordinate lessons, discuss data or share ideas.

However, a growing body of research shows that when teachers work more collaboratively, student outcomes can improve, teachers can be more satisfied in their jobs and teacher turnover can decrease. A focus on advancing teaching and learning by fostering collaboration stands in contrast to a focus on improving and assessing teachers solely as individuals. How can teachers, principals, superintendents and school boards begin to understand what collaboration might mean for their schools, districts and students?

Teacher Collaboration In Perspective, a joint project of Public Agenda and the Spencer Foundation, is designed to contribute to a better-informed dialogue about how teachers can work more collaboratively. This Guide to Research provides a nonpartisan, nonideological and easily digestible summary of key research on teacher collaboration, including studies that are typically accessible only to academics.

Understanding research on how teachers work collaboratively can be challenging for several reasons. Collaboration is not a goal in itself or a specific prescription for change. Instead, collaborative practices take many different forms and go by many different names. Schools, districts or individual departments do not necessarily institute only one collaborative practice but may foster collaboration in various ways, making it difficult to tease out the effects of any single approach to collaboration. These challenges highlight the value of getting a handle on the big picture from multiple studies, rather than focusing only on findings from a single piece of research.

Key questions about collaboration remain unanswered. For example, questions remain about how enhancing collaboration compares with and can be used together with other strategies to bolster student learning. There is limited research on how to build collaboration in school settings where teachers do not already collaborate. While a growing body of research shows what happens when teachers work more collaboratively and how teachers learn by working more closely with their peers, research thus far provides only limited details about how the complex process of teachers' growth leads to changes in their work with students. Researchers have also not determined which approaches to collaboration or elements of those approaches are most effective.

Much of the research, but not all of it, focuses on identifying and examining schools that are already collaborative, rather than studying how to transform schools from isolated to collaborative environments. Therefore, questions remain about how to foster collaboration where it does not already exist and how long it may take for collaboration to yield results. In addition, questions remain about the costs for schools and districts to implement various collaborative practices, how to sustain collaboration over time and whether making teachers' workplaces more collaborative can inadvertently marginalize some teachers and students.

Fostering collaboration among teachers requires changing how schools operate. It is difficult to do well and therefore is not a guaranteed path to improved outcomes. Nonetheless, this Guide to Research presents evidence that shows fostering a more collaborative workplace for teachers does hold promise for schools and districts as they seek to advance teaching and learning.

This Guide to Research as well as the other resources developed for this project—a **Discussion Guide for Teachers and Principals** and a set of **Critical Questions for Superintendents and School Board Members**—are designed to help educators and leaders begin to understand collaborative practices among teachers and weigh decisions about why, whether and how to foster more collaboration in their schools and districts.

How does fostering collaboration differ from traditional ways of organizing teachers' work?

Interest in teacher collaboration grows out of the perceived shortcomings of the prevailing "egg crate" model of schools. Sociologist Dan Lortie used the term to emphasize the heavily individualistic structure and culture of teaching in his classic 1975 book, *Schoolteacher*. Lortie described how teachers had to contend with uncertainties about curricula, instruction and assessment largely on their own.[1] He described teachers retreating into their own classrooms and defending themselves from outsiders such as principals, parents and other teachers. Lortie characterized teachers as lacking a "shared technical culture" that would provide both motivations to work together and resources for doing so.[2]

Since then, the metaphor of the "egg crate" has been used to describe and criticize the prevailing organization of American schools. Physically, many schools are arranged like egg crates, with students and teachers compartmentalized in classrooms arranged along corridors. The egg crate metaphor extends to how teachers in many schools work: separated from other teachers. It also describes how some school leaders and reformers think about teachers: as easily swappable or removable.

The egg crate model remains predominant today in schools across the country, across regions and grade levels. This means that collaborative approaches to organizing teachers' work are relatively scarce, particularly at the secondary level. For instance, in an extensive four-year study by researchers with the Center for Research on the Context of Teaching, only three out of 16 secondary schools—including private and public, ranging in size, student demographics and urbanicity—across seven districts in two states were found to have school-level structures in place to foster collaborative learning and a strong professional community.[3] On the department level, the study found the same of only two out of 32 departments studied across the 16 schools.[4]

Changing to a collaborative model is likely difficult. Some even argue that it is not ideal or even natural for teachers to work in a more collaborative model. Michael Huberman made the case that teachers are "independent artisans," asserting that teachers and their methods are and should be individual and improvisational. As a result, he argued that collaboration among groups of teachers at the schoolwide level is not only unnecessary, but nearly impossible to force teachers to do.[5]

Joan E. Talbert and Milbrey W. McLaughlin sought to determine if there was merit to Huberman's cautionary message about collaboration's potential to interfere with teacher artisanship. In reexamining data from earlier research, they found that in high schools with *weak teacher communities*, innovative teachers did not exercise as much independence and were demoralized by their colleagues' lack of investment in improving learning for all students, especially those who are underperforming. In schools with *strong traditional communities*, innovative teaching ideas tended to get pushed aside by narrowed curricula, increased testing and persistent academic tracking. But in *strong collaborative teaching communities*, teachers were able to generate and try out new ideas with the aim of helping more students better engage with school and content. Instead of being an impediment to teacher artisanship, collaborative teaching communities allowed it to flourish.[6]

Yet according to Susan Moore Johnson's perspective on what the literature has shown, the typical "atomized" egg crate way of organizing schools does not serve students or teachers, whose "experiences and opportunities for learning are limited because they fail to benefit from the varied models of instruction practiced by their colleagues or to adjust their teaching in response to what students learn or fail to learn in other grades and classes. When schools are organized like egg crates, important information about the challenges that teachers encounter, the problems that puzzle them, and the expertise they might offer their peers remains limited by the confines of the classroom."[7] Working together may make it easier for teachers to identify and address problems in students' progress, share information about individual students from grade to grade or develop curricula and approaches to teaching that are consistent and coherent across grades and subject areas.

While autonomy and privacy may sound appealing, more than two-thirds of both older and younger teachers in a national survey said they prefer a school characterized by collaboration among teachers and where they get help from instructional administrators over a school with "less collaboration, but where teachers are freer to design their own lesson plans."[8] But K–12 schools have not historically been expected to embrace or foster collaboration. Research by Susan J. Rosenholtz suggests the egg crate model creates uncertainty about how to help more students learn and about how to determine whether teaching is successful—a problem for teachers at many levels of the profession but particularly for new teachers.[9] Education reforms and accountability models that assess and reward each teacher based on his or her effectiveness at raising students' test scores build on and may reinforce the view of teaching as an individualistic, isolated activity.[10]

Because the egg crate model is so predominant, much of the research that we describe in this guide involves identifying or introducing some collaborative practices into what remain fundamentally isolated and isolating settings for teachers. Little is known about schools organized to be collaborative from the ground up, or what such schools would be like for students, teachers and communities over the long term. However, while collaboration may be scarce, research is continually strengthening the case that quality collaboration leads to better teaching. For example, at "Railside,"* an urban California high school serving a diverse, low-income student body with many English-language learners, quality collaboration among the teachers in the math department led to the development, implementation and refinement of a ground-breaking equity-focused pedagogy that transformed student learning and achievement and received national renown.[11]

Collaboration may be scarce, but research is strengthening the case that quality collaboration leads to better teaching.

* Railside is a pseudonym given to the high school by the authors.

Using this Guide to Research

This research guide synthesizes research on teacher collaboration. Its goal is to help teachers, principals, superintendents and school board members reflect upon whether and how creating conditions for teachers to work more collaboratively might benefit students and teachers in their schools and districts.

"Collaboration" includes a broad category of practices, often used in conjunction with other school improvement efforts. It is not one specific intervention whose effects can be neatly isolated. Researchers have therefore defined it in many different ways. When possible, we try to explain how the research we summarize in this guide defines and measures collaboration. However, we found in preparing this guide that not all researchers clearly define what collaboration means in their studies or specify what collaborative practices teachers are using in the schools they studied.

We therefore encourage readers to bear in mind that many questions about teacher collaboration have been addressed in only one or two studies or have not been addressed at all. The final section of the guide highlights some particularly important unanswered questions.

ENDNOTES

[1] Dan C. Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975).

[2] Ibid.

[3] Milbrey W. McLaughlin and Joan E. Talbert, *Professional Communities and the Work of High School Teaching* (Chicago: University of Chicago Press, 2001): 95.

[4] Ibid.

[5] Michael Huberman, "The Model of the Independent Artisan in Teachers' Professional Relations," in *Teachers Work: Individuals, Colleagues and Contexts*, eds. Judith Warren Little and Milbrey Wallin McLaughlin (New York: Teacher's College Press, 1993), 11–50.

[6] Joan E. Talbert and Milbrey W. McLaughlin, "Professional Communities and the Artisan Model of Teaching," *Teachers and Teaching: Theory And Practice* 8, no. 3 (2002): 325–43.

[7] Susan Moore Johnson, "Will VAMs Reinforce the Walls of the Egg-Crate School?" *Educational Researcher* 44, no. 2 (2015): 119.

[8] Jane Coggshall, Amber Ott, Ellen Behrstock and Molly Lasagna, *Retaining Teacher Talent: The View from Generation Y* (New York: Learning Point Associates and Public Agenda, 2010), 15, http://www.aft.org/pdfs/teachers/genyreport0411.pdf.

[9] Susan J. Rosenholtz, *Teachers' Workplace: The Social Organization of Schools* (New York: Longman, 1989).

[10] Johnson, "VAMs," 2015.

[11] Na'ilah Suad Nasir, Carlos Cabana, Barbara Shreve et al., eds., *Mathematics for Equity: A Framework for Successful Practice* (New York: Teachers College Press, 2014).

Does teacher collaboration improve student learning?

- Schools that are more collaborative have been shown to have stronger student academic outcomes than schools that are less collaborative.
- When it comes to specific approaches to fostering collaboration, studies have found different degrees of effectiveness in improving student achievement.
- Strong social connections among teachers may benefit students.
- Collaborative approaches to using student test score data might improve the effectiveness of data-informed school improvement efforts.

Most American schools are organized following some version of the egg crate model, with teachers tending to work in isolation and without structures to support collaborative improvement.[12] Research on the impacts of working more collaboratively tend to be studies of variations on that essential egg crate model rather than studies of schools organized in wholly collaborative ways. This may be because most instances of establishing or improving collaboration are themselves modifications rather than holistic reforms. As noted by Katrien Vangrieken and colleagues, "It is more difficult to change the whole school culture and structure than it is to create interventions for teachers and groups of teachers."[13]

Bearing in mind the realities of reform and the limitations of the research, studies have been undertaken using various types of data focused on school-level collaboration. This research has shown that schools in which teacher collaboration is encouraged tend to have higher student achievement than less collaborative schools. These studies typically use standardized test scores to measure achievement. They assess how collaborative schools are in various ways, including analyzing schools or districts that have made specific efforts to encourage collaboration or using surveys that ask teachers how collaborative their schools are.

Schools that are more collaborative have been shown to have stronger student academic outcomes than schools that are less collaborative.

Analysis of nearly a decade of data from schools in an urban North Carolina district, one of the largest in the country, showed that teachers achieved greater increases in their students' standardized test scores in schools with supportive professional environments—especially those with more peer collaboration and a positive school culture—than did teachers in schools with less supportive professional environments.[14] Other research analyzing two years of data on more than 9,000 teachers in 336 Miami-Dade County public schools showed that schools with better-quality collaboration—meaning teachers reported that their collaboration in instructional teams was both "extensive" and "helpful"—had higher student achievement gains in math and reading.[15] This held true even controlling for other characteristics of those schools' students and teachers, meaning the researchers could be more confident that the difference was related to the quality of collaboration at the school and not to differences in the students and teachers themselves.[16]

Further evidence of how a collaborative teacher workplace can improve student achievement comes from the extensive longitudinal research by the University of Chicago Consortium on School Research, led by Anthony Bryk, in hundreds of Chicago elementary schools. This team developed a model of essential school supports in order to better understand why some schools improve outcomes for students whereas other schools do not. One of these essential supports is a school's "professional capacity," which includes several elements: the quality of its human resources, the quality of its professional development, norms of continuous improvement and "professional community." Professional community, as Bryk and colleagues explain it, refers to a new arrangement for teachers, one dependent on collaboration. It makes their work public to their colleagues, requires critical questions and relies on a normative commitment to student improvement.[17] (For more on this topic, see the **subsection on professional communities**.)

Bryk and colleagues' research provides insight into how the different elements of professional capacity and other essential supports interact in ways that impact student achievement. For instance, Bryk and colleagues found that schools in their study characterized by a strong professional community were about four times as likely to see a substantial improvement in students' reading and math scores than schools that had a weak professional community.[18] Further, they found that even more schools had gains in reading and math where a strong professional community was paired with other elements of other essential supports, such as an aligned curriculum: Between half and two-thirds of schools with a strong professional

community and an aligned curriculum saw substantial improvements in student reading scores, and 40 percent saw substantial improvements in math scores.[19] Not a single school in their study that reported weakness in those two areas saw improvements in either reading or math.[20]

These studies confirm similar conclusions from earlier case studies. For example, a case study of elementary schools in a large Midwestern school district found that schools with higher levels of teacher collaboration "for school improvement" were associated with higher student achievement on math and reading tests. This held true even when controlling for student demographics, school size, proportion of low-income and minority students and other factors.[21]

Teachers whose student teaching took place in more collaborative schools have actually been shown to raise student achievement in math more when leading their own classrooms than teachers who student-taught in less collaborative schools.[22]

When it comes to specific approaches to fostering collaboration, studies have found different degrees of effectiveness in improving student achievement.

Much of the research discussed above focuses on understanding schools that are already characterized by collaboration or in which teachers already have strong social connections and comparing them with less collaborative environments. However, research on specific approaches to fostering collaboration has found them to have different degrees of effectiveness in improving student achievement.

The approaches to collaboration described below are not the only ways in which teachers work together, and some of these approaches have attracted more attention than others from researchers. For more detail on these and other approaches to fostering collaboration, see the **section on how teachers collaborate**.

Evidence is mixed for the effectiveness of mentoring on improving student achievement.

One specific approach to fostering collaboration is teacher-to-teacher mentoring. (For more on this topic, see the **subsection on mentoring**.) Evidence is mixed for the effectiveness of mentoring on improving student achievement. Two large randomized controlled studies found contradictory results. An on-the-job peer mentoring intervention in 16 schools in a low-income Tennessee school district found that student achievement improved under mentored teachers and across the schools overall where mentoring took place.[23] Yet a study of two comprehensive mentoring programs used in a random set of 418 elementary schools across 17 urban school districts found no difference in student achievement after one or two years of the mentorship programs, although it did find a small increase in student achievement in reading and math after three years, only if the teacher participated in the program for two full years.[24]

Another approach to fostering collaboration is professional communities or professional learning communities (PLCs). (For more on this topic, see the **subsection on professional communities**.) Professional communities or PLCs vary in a number of ways, such as how rigorously they are implemented, the contexts in which they are implemented and who joins them. These variations may lead to differences in PLCs' effectiveness. A review of 11 studies of schools that used PLCs concluded that achievement improved when teachers in PLCs shared an explicit goal of focusing on student learning.[25] It also concluded that the percentage of students performing at grade level often increased after schools adopted PLCs and that the percentage of students performing at grade level was often higher in schools that adopted PLCs than in schools that did not.[26] That review highlighted the need for PLCs to be "well developed" in order for them to have positive impacts on teaching practice and student achievement.

Variations may lead to differences in PLCs' effectiveness.

Finally, creating shared leadership among principals and teachers is another specific approach to fostering collaboration. (For more on this topic, see the **section on principals**.) Principals can play key roles in fostering teacher collaboration that improves student learning and achievement. For example, a randomized controlled trial of a program in rural Midwestern elementary schools showed a strong association between increasing shared instructional leadership between principals and teachers and increased collaboration among teachers themselves. That increased teacher collaboration was in turn associated with increases in students' math and reading achievement.[27]

Principals can play key roles in fostering collaboration that improves student learning and achievement.

Strong social connections among teachers may benefit students.

Under the traditional egg crate model of teaching, a teacher's effectiveness would be attributed solely to his or her independently held knowledge and skill. But some studies suggest that teaching effectiveness can depend on teachers' opportunities to learn by working together and sharing ideas. These studies highlight the importance of how teachers might work together to solve problems that occur in their classes but that also likely extend beyond any individual classroom. They additionally highlight the importance of building trust among teachers across departments and of structuring opportunities for teachers to establish a shared vision for their school and students.

Based on further analysis of their 2009 research across a representative sample of 130 urban public schools with more than 1,000 fourth- and fifth-grade teachers who were using the same math curriculum in their classrooms, researchers Carrie R. Leana and Frits K. Pil published findings on the Shanker Institute blog in 2014. They found that these teachers' "social capital"—which the researchers defined as the resources and skills teachers could access through social connections with other teachers—was more strongly related to student achievement than these teachers' "human capital"—which the researchers defined as teachers' formal education, grade-level experience and ability to interpret students' mathematical thinking. Students of teachers identified as having high social capital but lower human capital performed as well as students of teachers with average human capital and average social capital.[28]

An earlier study by the same researchers also found promising results when examining the relationship between social capital and student achievement. That study of 88 schools (including elementary, middle and high schools) across a low-income, urban district included a focus on the level of "internal social capital"—in this study, a composite score based on teachers' self-reported sense of the level of trust, information sharing and shared vision within their school. The study explored the relationship between internal social capital and student achievement. It found that higher levels of internal social capital were a predictor of improvement of student achievement on test scores in both reading and math and that higher levels of internal social capital were a predictor of higher instructional quality, even when taking student socioeconomic status and other factors into account. The researchers also found a significant relationship between teachers' human capital, which in this study they measured using years of teaching experience in the subject matter, and students' reading achievement, but they did not find a significant relationship between teachers' human capital and students' math achievement. They concluded that their findings suggested "little support for the human capital explanations of school performance."[29] Overall, measures of schools' internal social capital explained more of students' performance gains than measures of teachers' human capital.[30]

Collaborative approaches to using student test score data might improve the effectiveness of data-informed school improvement efforts.

Collaboration among teachers in interpreting and using student test score data might make such data more useful and therefore advance school improvement efforts. The focus on teacher use of assessment data to improve instruction has increased in the context of state standards and student testing, yet efforts to facilitate the use of that data have largely focused on teachers as individuals. For instance, an explanatory study documenting district-mandated use of data by math teachers in nine elementary schools across two districts in Pennsylvania concluded that the structures in place to provide individual teachers with analyses of their students' scores on interim assessments were not sufficient on their own to facilitate teacher understanding of interim assessment data in order to lead to changes in instruction.[31]

However, some researchers—such as Judith Warren Little in her 2012 review of the literature—have pointed out that studies on data use have failed to focus on how teachers collaborate around data and how that relates to teachers' understanding and use of data.[32] A 2012 review by Alan J. Daly showed that many studies have found positive results related to collaborative data use in various contexts and at various educational levels.[33] One such study looked at data use by teachers in five low-income urban high schools and found that collaboration among teachers was important to improvement. It improved teachers' capacity to understand data, helped them maintain a focus on student achievement, and facilitated learning across administrators, guidance counselors and teachers, providing context for the instructional improvements.[34]

That study and others make clear that collaboration alone is not a sufficient condition for improving data use for instructional improvement. While collaboration is seen as an important component of such efforts, other important components include having user-friendly data systems in place[35] as well as leadership that supports work routines around data interpretation and even ongoing data literacy development.[36]

There has been an increased focus on funding more comprehensive studies on data use.[37] However, some researchers have cautioned about the overemphasis on data use in collaborative settings, arguing that instruction should be data informed but driven by professional judgment that is able to interpret data in context and make decisions responsive to the needs of students.[38]

ENDNOTES

[12] Anthony S. Bryk, Penny Bender Sebring, Elaine Allensworth et al. *Organizing Schools for Improvement: Lessons from Chicago* (Chicago: University of Chicago Press, 2010).

[13] Katrien Vangrieken, Filip Dochy, Elisabeth Raes and Eva Kyndt, "Teacher Collaboration: A Systematic Review," *Educational Research Review* 15 (2015): 36.

[14] Matthew A. Kraft and John P. Papay, "Can Professional Environments in Schools Promote Teacher Development? Explaining Heterogeneity in Returns to Teaching Experience," *Educational Evaluation and Policy Analysis* 36, no. 4 (2014): 488, 494.

[15] Matthew Ronfeldt, Susanna Owens Farmer, Kiel McQueen and Jason A. Grissom, "Teacher Collaboration in Instructional Teams and Student Achievement," *American Educational Research Journal* 52, no. 3 (2015): 475–514.

[16] Ibid., 501.

[17] Bryk et al., *Organizing Schools for Improvement*, 2010, 54–56.

[18] Ibid., 113.

[19] Ibid., 116–17.

[20] Ibid., 117.

[21] Yvonne L. Goddard, Roger D. Goddard and Megan Tschannen-Moran, "A Theoretical and Empirical Investigation of Teacher Collaboration for School Improvement and Student Achievement in Public Elementary Schools," *Teachers College Record* 109, no. 4 (2007): 877–96.

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[26] Ibid., 86.

[27] Yvonne L. Goddard, Robert Miller, Ross Larson et al., "Connecting Principal Leadership, Teacher Collaboration, and Student Achievement," paper presented at the Annual Meeting of the American Educational Research Association, Denver, CO, May 2010, 16, http://files.eric.ed.gov/fulltext/ED528704.pdf.

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[30] Ibid.

[31] Margaret E. Goertz, Leslie Nabors Olah and Matthew Riggan, "Can Interim Assessments Be Used for Instructional Change?" CPRE Policy Briefs (Philadelphia: Consortium for Policy Research in Education and University of Pennsylvania Graduate School of Education, 2009), http://repository.upenn.edu/cpre_policybriefs/39.

[32] Judith Warren Little, "Understanding Data Use Practice Among Teachers: The Contribution of Micro-Process Studies," *American Journal of Education* 118, no. 2 (2011): 143–66.

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[36] Ibid.; Daly, "Data, Dyads and Dynamics," 2012.

[37] See the Spencer Foundation's Data Use and Educational Improvement initiative, http://www.spencer.org/data-use-and-educational-improvement.

[38] Amanda Datnow and Vicki Park, *Data-Driven Leadership* Vol. 12 (San Francisco: John Wiley & Sons, 2014).

Does teacher collaboration improve teacher retention, satisfaction or instructional practice?

- Schools with lower teacher turnover tend to be more collaborative.
- There is some limited evidence of a relationship between teacher job satisfaction, teacher collaboration and student achievement.
- Collaboration among teachers may do more to advance teachers' instructional practices than do learning opportunities for individual teachers.
- Teachers have been found to value collaboration for a variety of reasons, including moral support, but sometimes voice concerns and report experiencing conflict.
- Collaboration involves vulnerability and difficult discussions among teachers.

Teasing out the effects of a specific collaborative practice on teacher retention and satisfaction can be difficult. Schools that provide positive, healthy working environments for teachers probably do so in a variety of ways. Therefore, while there is evidence that schools with lower teacher turnover tend to be more collaborative, those schools are likely also doing many things to retain and develop teachers that may be unrelated to collaboration per se.

In their vast review of 82 studies focused on teacher collaboration and its potential outcomes in the United States and other countries, Katrien Vangrieken and colleagues concluded that while the literature they reviewed demonstrated positive outcomes of collaboration for students, teachers and entire schools, teachers "appear to profit most from collaboration."[39] They concluded that collaboration is associated with teachers progressing in their job performance and on a personal level in terms of feeling more motivated, experiencing less isolation and having better morale. They noted that these positive consequences for teachers can be connected to positive effects on student achievement.[40]

Schools with lower teacher turnover tend to be more collaborative.

Turnover—meaning how many teachers leave a school for other schools or for other professions entirely—can be costly and damaging for several reasons. Hiring new teachers requires time and money. New hires take time to adapt and respond to a school's climate and procedures. When teachers leave a school, professional expertise and collegial connections can be lost. Turnover may also reduce trust among teachers and between teachers and administrators.

Collaboration is one factor that can help teachers feel more committed to their school and to teaching.

Collaboration appears to be one of several factors that can help make teachers feel more committed to their school and to teaching as a profession, according to a review of several studies of teacher collegiality.[41] But researchers have not necessarily tried to capture the effects of collaboration alone on teacher turnover. Nor have they compared collaboration with other factors that could be important in reducing turnover. Instead, researchers often look at collaboration as part of a larger picture of what can help reduce turnover.

For example, researchers in one study found that New York City public middle schools that were rated more highly on a combination of factors—school safety, academic expectations for students, principal or administration leadership, as well as teacher relationships and collaboration—retained more teachers annually.[42] Similarly, in Massachusetts schools with "favorable work environments"—defined in the study as collegial relationships among teachers, good principal leadership and a school culture of trust, respect and openness—teachers were more satisfied in their jobs and less likely to leave their school or to leave teaching entirely than colleagues in schools with less favorable climates.[43]

Turnover is particularly high among teachers who are just beginning in the profession.[44] But according to a nationally representative survey of beginning teachers, shared planning time and mentorship, as well as other types of collaboration, are associated with reductions in leaving a particular school and reductions in leaving the teaching profession.[45] According to researchers who conducted in-depth interviews with teachers in their first four years of work, beginning teachers felt more comfortable at schools where they received more support from their colleagues.[46] Having a mentor in one's field and being part of a network of teachers outside one's own school have also been found to be associated with reduced turnover among beginning teachers.[47] (For more on this topic, see **the subsection on mentoring**.)

Although turnover is disruptive to schools, one case study of a rural high school described an instance in which the introduction of collaboration, rather than its absence, appeared to contribute to an increase in teacher attrition. After the principal initiated new collaboration-focused reforms, 18 teachers—roughly half of the school's faculty—left the school before the start of the next year. The principal herself noted that the turnover gave her "the opportunity to hire a team of teachers committed to our kids"—and presumably to the collaborative reforms as well.[48] The school saw significant increases in student achievement after implementing those reforms. Anthony Bryk and colleagues also note that Hancock Elementary, one Chicago elementary school in their large-scale longitudinal study, experienced teacher turnover during the principal's efforts to build professional capacity and a professional development structure, along with other collaborative reforms and instructional improvements. According to the researchers, the teachers who left were those "who did not come on board with reform efforts." Eight years after the principal began her tenure, Hancock Elementary ranked as one of the most improved schools in reading and math in the city.[49]

There is some limited evidence of a relationship between teacher job satisfaction, teacher collaboration and student achievement.

Research in other fields has found that job satisfaction can have a positive impact on job performance. Limited research has examined the extent to which job satisfaction among teachers has an impact on student achievement.

Neena Banerjee and colleagues examined the extent to which the existence of collaboration among teachers and of a professional community at a school—defined in the study as school spirit, a sense of collegiality, continuous learning and sharing of ideas among teachers, agreement on school mission and better communication from school administrators regarding a central mission—mediates the relationship between teacher job satisfaction and student achievement. The study drew data from more than 5,800 public school students, who were surveyed from kindergarten through fifth grade as part of the National Center for Education Statistics' Early Childhood Longitudinal Survey, and their teachers.[50]

Corroborating previous research, Banerjee and colleagues found a modest but positive relationship between teacher job satisfaction and student growth. However, this relationship was seen only in reading growth, not math growth. In addition, the researchers found that students gained in math and reading achievement in elementary schools characterized by a strong professional community even if they had been assigned over multiple years to different teachers reporting low job satisfaction. Professional community in the school was hypothesized to lessen at least some of the presumably adverse consequences of having a teacher who reported low job satisfaction.[51]

Future research on collaboration should further investigate the relationship between teacher job satisfaction and types of teacher collaboration, and the combined effect on student achievement.

Collaboration may do more to advance teachers' instructional practices than do learning opportunities for individual teachers.

Education reform efforts often try to improve student learning and achievement by changing teachers' instructional practices. But within the prevailing egg crate model, these attempts—such as introducing new curriculum materials, establishing learning standards, or providing professional development through in-service training—are often aimed at changing instruction by individual teachers. A growing body of research explores how collaborating might lead to changes in teachers' instructional practices.

A case study using surveys of teachers across 30 elementary schools in a southeastern U.S. urban school district found that the frequency of collaborative discussion with peers had one of the largest significant effects on teachers' self-reported changes in instruction, in both math and reading, compared with various formal learning opportunities as well as with other "on the job" learning opportunities.[52]

Evidence from 19 European Union countries included in the 2013 Teaching and Learning International Survey indicates that teachers who collaborate are more likely to report using innovative teaching methods. It also found that collaborative teachers report more confidence in their teaching and greater job satisfaction.[53]

Teachers have been found to value collaboration for a variety of reasons, including moral support, but sometimes voice concerns and report experiencing conflict.

Some teachers value the moral support that comes from collaboration.[54] Teachers in several studies say it is helpful knowing that they are not alone in facing challenges or uncertainty.[55] They have described the frequent contact with their colleagues in collaboration as an accountability mechanism similar to having a workout buddy.[56] In a study of teachers at four Australian schools that were trying to implement more collaborative practices, some teachers felt collaboration improved morale, made the school environment warmer and reduced isolation and workload. However, this same study found that other teachers were negative about the collaborative practices, citing larger workloads, pressure to conform and a feeling of lost autonomy.[57]

Research on what teachers gain from collaboration may be limited in part because collaborative practices thus far tend to be add-ons to schools that remain fundamentally isolating, making it difficult to know what the more far-reaching effects of sustained and systematic collaboration may be for teachers or for students. However, teachers may feel emboldened by knowing that other teachers will take risks and try new strategies, according to a small case study of teacher collaboration.[58] In that study, teachers explained that knowing that their colleagues were also trying new activities and were willing to discuss successes and failures inspired them to take risks that they would not have taken otherwise.[59] Another study described teachers challenging one another, raising questions and sharing ideas during "data-driven decision-making" meetings about student achievement.[60]

Teachers describe collaboration as an accountability mechanism similar to having a workout buddy.

Case studies of two urban public middle schools found that collaborating revealed differences of opinion and led to conflict—but that those conflicts created a context for learning and growth.[61] Similar benefits of conflict emerged in a study by Pam Grossman, Sam Wineburg and Stephen Woolworth that evaluated a project to establish a professional community among an interdisciplinary group of teachers at an urban U.S. high school. In that study, coming to terms with differences and disagreements was part of what enabled the group to move from "pseudocommunity" to something more robust. In that study, coming to terms with differences and disagreements was part of what enabled the group to move from "pseudocommunity" to something more robust.[62]

Collaboration involves vulnerability and difficult discussions among teachers.

School climates or educational reforms that treat teachers as lone individuals—who either do their jobs well or are "bad eggs" needing to be replaced—may leave teachers unable to be open, trusting and vulnerable enough to seek or provide support. Asking for help or admitting a struggle in such climates may be seen as signs of weakness, incompetence or inefficiency.[63] Even if they want help, teachers have been shown to avoid asking for it in climates where there is a stigma attached to doing so.[64]

Teachers have been shown to avoid asking for help in climates where there is a stigma attached to doing so.

Collaborative practices can flounder if teachers are unable to be vulnerable. For example, researchers Roger A. Stewart and Jonathan L. Brendefur studied groups of teachers that they were encouraging and working with to collaborate around lesson study. (For more on this topic, see **the subsection on lesson study.**) In each of the groups, teachers were reticent to volunteer to be observed or videotaped while teaching or to share student work, which were key elements of the researchers' proposed intervention that was designed to help teachers

work together. The researchers attributed this fear to the fact that the teachers' school cultures were characterized by isolation and were not collaborative. While most groups were successful in overcoming this fear, one group in particular could not get past it and ended up disbanding.[65] Similarly, a case study described the need for teachers to have uncomfortable conversations and "name elephants in the room," something the study noted school leadership can help teachers do.[66] (For more on this topic, see **the section on principals**.) Teachers' unwillingness to have these difficult conversations may reflect the constraints created by schools that treat teachers as autonomous but replaceable. Teachers who seek to foster a more nourishing, inventive professional environment may even be seen as threats.[67]

Ilana Seidel Horn and Judith Warren Little closely observed two collaborative, improvement-oriented groups of teachers. When those teams of teachers came together, the nature of their conversations differed. The two groups developed different norms regarding how much to disclose to one another, how to reassure one another that the challenges they faced were normal and how much they discussed why those challenges were occurring. Horn and Little concluded that these differences in how the groups of teachers talked with one another explained the different degrees of progress they made on their shared goals, with the group that was more successful at discussing and normalizing problems making more progress.[68]

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How do teachers collaborate?

- Teacher collaboration refers to a family of practices, defined and described by researchers in many different ways.
- Existing teacher teams can leverage their time together to establish deeper collaboration.
- In professional communities, teachers work together with a shared vision for the benefit of all students.
- Evidence for mentoring's effectiveness at improving student achievement is mixed. But mentoring may reduce turnover.
- In lesson study, teachers collaboratively design lessons and observe one another teaching in order to better understand how students learn and to improve instruction.
- Professional development is not typically designed to create long-term collaboration but can lead teachers to support one another.
- Collaborative practices tend to be more successful when teachers have shared goals to achieve.

"Collaboration" includes a broad category of practices. It is not one specific intervention whose effects can be neatly isolated. Researchers have therefore defined it in many different ways. In addition, schools, districts or individual departments do not necessarily institute only one collaborative practice but may foster collaboration in various ways. Researchers have not yet determined which approaches to collaboration or elements of those approaches are most effective. Effective collaboration likely takes shape in a variety of ways across contexts.

A typology of collaborative activities and structures:

Vangrieken and colleagues proposed a typology of collaborative activities and structures:

- A "group" is defined simply as a collection of individuals who share a common goal or identity.
- A "team" is a group with shared goals for which they hold themselves mutually accountable, and team members are interdependent in tasks and outcomes.
- A "community of practice," a term coined by Jean Lave and Etienne Wegner in 1991, refers to "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly."
- A "professional community" or "professional learning community" is a collaborative culture characterized by shared values and a vision that is overarching across all teams or other forms of teacher groupings in a school or network across schools.[69]

Teacher collaboration refers to a family of practices, defined and described by researchers in many different ways.

Describing the specific ways in which teachers collaborate is surprisingly difficult. The terms used to define different forms of collaboration are not universally understood to mean the same thing. For example, what one researcher may call "peer coaching" might fall under another's definition of "mentoring" or "induction." The most recent comprehensive literature review of studies on teacher collaboration by Katrien Vangrieken and colleagues concluded there was a lack of coherence in the research about terms used to describe types of collaboration.[70]

Furthermore, as with other educational practices, a particular approach to collaboration can be implemented differently in terms of purpose, scope, quality and depth. It is therefore important to be cautious when drawing conclusions based on research about the impact of any specific approach to collaboration if that research does not make clear how that type of

collaboration was implemented. Vangrieken and colleagues concluded that "superficial collaboration"—such as planning teacher activities or the nature and content of testing—was much more common than "deep collaboration"—such as participating in peer observations or discussing common problems and their causes.[71] For example, an induction program for teachers new to a school might consist merely of a single week's orientation at the beginning of the school year, followed by infrequent and unstructured meetings with a colleague. But a more comprehensive induction program might continue over multiple years and incorporate frequent peer mentoring, regular collaborative planning, quarterly feedback following observations of instruction and repeated opportunities to observe master teachers' instruction.

Moreover, no educational practice is used in isolation. A school that encourages a collaborative approach to induction may also be characterized by more collegial relationships between teachers and principals or by greater coordination of curricula across grade levels. Therefore, it can be hard, though not necessarily impossible, for researchers to isolate any one approach to collaboration from the broader context and character of a school.

The approaches to collaboration described below are not the only ways in which teachers work together. Rather, they are the ways of working together that thus far have been reasonably well documented by researchers.

Existing teacher teams can leverage their time together to establish deeper collaboration.

Even in schools where most of teachers' work occurs in isolation, teams of teachers may nonetheless already be meeting in subject-area or grade-level teams to coordinate curricula and assessment, plan events or discuss community engagement activities, or for a variety of reasons as part of their union contracts. Working in teams does not automatically imply that any collaborative activities take place.[72] Yet existing teams could become opportunities for collaboration aimed at goals such as school improvement or enhancing teacher learning. Research has focused both on naturally occurring, routine types of teamwork[73] and on collaboration that is arranged or developed in the context of a specific improvement-oriented intervention from school leaders, district or state policymakers or other administrative actors.[74]

Working in teams does not automatically imply that any collaborative activities take place.

Establishing shared goals and effective leadership can help teacher teams collaborate, leading to improvements. Researchers conducted an exploratory interview study with 142 teachers, administrators and staff in six high-poverty, high-minority, high-achieving elementary and middle schools in one city. Five of the six schools used teacher teams, devoting large blocks of time for team meetings. These meetings were used to discuss specific lesson plans, the curriculum more broadly and students' achievement and behavior, both as individuals and in groups. Teams' effectiveness was related to regularly scheduled meeting times, facilitation by trained teacher leaders and support from administrators. Teachers who agreed with the teams' purpose were more motivated to work with their teams. Teachers generally valued their teams, saying they felt less isolated as a result

and that the teams helped create "coherence across classrooms" and "shared responsibility for students." The researchers found that both teachers and administrators credited teachers' work in teams for individual teachers' improvement in instruction, for students' improvement on state achievement measures and for schoolwide improvement more generally.[75]

In professional communities, teachers work together with a shared vision for the benefit of all students.

Professional communities, or professional learning communities (PLCs), are an approach to school improvement that includes teamwork. Professional communities emerged in the 1960s and are one of the collaborative models that some policymakers have recently called for in schools.[76] Professional communities are usually understood to constitute a group of people across a school who are engaged in common work; share a set of values, norms and orientations toward teaching, students and schooling; and "operate collaboratively with structures that foster interdependence."[77]

This approach to school improvement is undergirded by two broad ideas. The first is that if teachers share knowledge and learn actively with one another, this will benefit their instruction and their students' achievement. The second is that structure and support are required for these exchanges to occur at the frequency and depth that are necessary for them to be beneficial.[78]

Research by the University of Chicago Consortium on School Research, led by Anthony Bryk, on school organizational features and student achievement outcomes in Chicago public elementary schools has particularly moved the concept of "professional community" forward. Bryk and colleagues acknowledge that work in a professional community represents a very new arrangement for teachers, one dependent on collaboration. It makes their work public to their colleagues, requires critical questions and relies on a normative commitment to student improvement.[79] Yet their findings suggest that a strong professional community is an integral component of what they deem a school's "professional capacity," which helps account for a school's trajectory of improvement.[80] (For more on this topic, see the **section on student achievement**.)

Professional communities require teachers to make their work public to their colleagues.

The term "professional learning community" (PLC) is sometimes used as a variant of or even in place of the term "professional community."[81] PLCs can be polarizing: A survey funded by the Bill & Melinda Gates Foundation found substantial dissatisfaction among teachers with PLCs as a form of professional development in their schools, but it found substantial support among educational leaders for devoting more resources to PLCs.[82] The survey—which did not specify what types of teachers or leaders were surveyed or how representative those samples were—did not explore why teachers expressed dissatisfaction with PLCs. But even Rick DuFour, whose company consults on the establishment of PLCs and other educational reforms, acknowledged that the term "PLC" has been inaccurately applied to poorly structured meetings rather than to "authentic" PLC processes.[83]

A 2008 review of 11 studies suggests that PLCs can increase collaboration among teachers and that a focus on student learning in PLCs is key to their potential to improve student achievement.[84] (For more on this topic, see the **section on student achievement**.) But PLCs can be instituted in ways that vary in their effectiveness at improving student achievement. For example, a study compared nine elementary schools that received an intervention meant to foster PLCs with six control schools in the same large urban school district that did not receive that intervention. Teachers in both the intervention and the control schools met a few times a month in grade-level groups to work together.[85] The study found that teachers in intervention schools canceled fewer meetings and tended to have structured agendas for their meetings.[86] But student achievement in the intervention schools did not improve relative to control schools until teacher leaders were trained on using protocols for meetings and other ways of making teamwork work.[87] Ultimately, whether a school creates PLCs or other collaborative teams may be less important than how the practices used in those collaborative configurations are implemented.

Evidence for mentoring's effectiveness at improving student achievement is mixed. But mentoring may reduce turnover.

Teacher-to-teacher mentoring can be hierarchical—with a teacher regarded as highly skilled mentoring a newer or struggling teacher. But mentoring need not be reserved for teachers construed to be in need of help. It may be carried out for the sake of continuous improvement. Mentors may observe their mentees teaching and provide feedback, or mentors may invite their mentees to watch them teach and then discuss what each observed.[88] Some schools make mentoring a part of induction for faculty who are either new to teaching entirely or who are new to that school.[89]

Evidence for the effectiveness of mentoring at improving student outcomes is mixed. Of two randomized controlled studies, one showed mentoring to be effective at improving student achievement and the other did not. The first study, a randomized controlled study led by Steven Glazerman at Mathematica Policy Research and in partnership with the U.S. Department of Education Institute of Education Sciences, found that the two mentorship programs it examined did not improve student achievement.[90] The study was conducted with 418 elementary schools in 17 urban school districts assigned by lottery to implement a comprehensive induction and mentorship program for new teachers or to implement their district's standard, less comprehensive induction program. Based on student achievement data and surveys with teachers and mentors, the researchers found that while teachers in the comprehensive program reported receiving more support than teachers in the standard program for their first year, there was no significant difference in teacher instruction, teacher retention or student achievement after either the first or second year. They did find that among teachers in the comprehensive program for two years there was a small but significant increase in student math and reading scores in the third year.[91]

By contrast, John Papay and colleagues explored the impact of mentoring in a study of 16 schools—elementary, middle and high—in a low-income, high-minority Tennessee district.[92] State-mandated performance evaluations had rated some teachers as more accomplished than others in specific instructional skills. The researchers believed that the more skilled teachers might be able to help their less skilled colleagues build their instructional capacities. The researchers therefore randomly selected eight "intervention" schools in which teachers who had been rated as more skilled in a specific instructional area (such as "managing student behavior," "teacher content knowledge" and many others) mentored their colleagues who had been rated as less skilled in that same area. The researchers compared student achievement in these eight "intervention" schools with eight "control" schools in which teachers were not paired with mentors. Achievement increased for students of the less skilled teachers who had been mentored by their more highly skilled colleagues. In fact, student achievement in the intervention schools increased overall compared with achievement in the control schools overall.[93] Because the schools were randomly selected to get the intervention, it is more likely that the improvements in achievement were due to the collaboration rather than to some other factor.[94]

Mentoring may reduce teacher turnover.

While evidence for mentoring's effectiveness at improving student achievement is mixed, mentoring may reduce teacher turnover. One nationally representative study suggests that a more comprehensive approach to induction, one that includes mentoring, can reduce turnover.[95] In this study, the combination of mentoring and support from an administrator, principal or department chair had no effect on teacher turnover. However, a seminar with other new teachers and shared planning with teachers in their subject area as well as having a mentor and support from an administrator, principal or department chair did reduce the chances of teachers leaving their school or the profession.[96]

Research from New York City public schools also showed that mentoring can reduce turnover. In 2004, in compliance with a new state law requiring mentoring for all new teachers, the city's Department of Education tried to assign mentors for all teachers in elementary, middle and high schools with less than one year's teaching experience. Teachers whose mentors had worked in the same school were less likely to transfer schools or to leave teaching with the city's Department of Education entirely.[97] Teachers who received more hours of mentoring also had higher student achievement in both math and reading.[98]

It is possible that a school organized with significant levels of coordination in curriculum and teaching methods, within and across grades, may have a better chance at making mentoring work for new teachers. Since few schools in the United States are organized with such significant levels of coordination, there is little empirical evidence on the effects of collaboration in such contexts. Research from countries such as Canada and Finland suggests mentoring can be valuable as part of broader approaches to induction.[99]

In lesson study, teachers collaboratively design lessons and observe one another teaching in order to better understand how students learn and to improve instruction.

Lesson study has been defined as "classroom-based collaborative research" that is designed and undertaken by teachers.[100] Lesson study originated in Japan at the turn of the 20th century and has since been a key feature of their education system. Japan saw sustained high levels of student achievement during the 20th century. The institutionalized use of lesson study in Japanese schools suggests a relationship between lesson study and improvements to student achievement.[101] Lesson study is intentionally designed to lead to slow but steady change.[102]

In Japan, the process typically works as follows: A group of teachers reviews a curriculum and works collaboratively to identify goals for student learning and to design a lesson. They conduct a live classroom lesson led by one teacher and observed by the rest, who collect data and make observations on teaching and learning during the lesson. Teachers then meet to discuss and reflect on the data to evaluate the lesson on whether and how it achieved the student learning goals. Finally, this reflection is documented and carried forward in an iterative process to continue to refine the lesson and teaching methods. In addition to or instead of these steps, teachers may observe a highly accomplished teacher talk through the planning of a lesson and then observe that teacher teach it and reflect on it. New teachers may be asked to do the same, with guidance from peers and from more accomplished teachers.[103]

Lesson study has spread to other countries, coming to the attention of educators in the United States in the late 1990s.[104] The practice was adopted by individual schools and some entire districts, in some cases aided by inviting teachers from Japan to coach or mentor. But lesson study has not been widely adopted in the United States. Where it does happen, the practice is most often used at the school or district level and especially for mathematics. Research on lesson study for mathematics instruction in particular indicates that it has potential to help teachers develop their content knowledge and instructional practices.[105]

Research on lesson study in the United States has primarily taken the form of descriptive case studies.[106] This research has documented and described how lesson study is being adopted, implemented and improved upon, in part to understand what aspects of it work and do not work in carrying the practice into American schools. A descriptive study of how a group of teachers in a California district undertook lesson study highlighted the importance of helping teachers understand both the practice and the theory of lesson study.[107]

There are few experimental studies designed to determine by what mechanism lesson study improves instruction.[108] But researchers Catherine C. Lewis and Rebecca R. Perry conducted a randomized control trial study in which 39 already existing collaborative groups of elementary school math teachers were assigned to three different conditions: implementing a lesson study practice; implementing lesson study with a specifically developed guide modeled from Japanese curriculum guides that explained the curriculum as well as common student thought processes and misconceptions; and continuing collaborative practices as usual but with a stipend equivalent to the other two groups, to serve as the control group. Groups were matched on school demographics and socioeconomic status and location within the same district, if possible, and were tracked and measured across one semester. The study found

that in groups that implemented lesson study with the guide, teachers self-reported more awareness of student thought processes and higher expectations of their students.[109] Those teachers also scored higher on a measure of their belief that they were helped by learning from other teachers.[110]

Professional development is not typically designed to create long-term collaboration but can lead teachers to support one another.

Professional development typically entails teachers attending classes or conferences led by experts from outside their school. Teachers are generally then left to implement what they learn on their own in their classrooms. Professional development opportunities and requirements have seen significant investment from school districts and states in recent decades.[111] Research suggests the majority of professional development opportunities are not ongoing.[112] Yet professional development activities that are not ongoing do not lead to dramatic changes in instruction or student achievement.

Elements of effective professional development:

Based on systematic review of studies on professional development, researchers posit that there are key elements or characteristics that professional development activities must include in order to be able to meet improvement expectations, including:

- A focus on content
- Opportunities for active learning
- Coherence, between the goals of the professional development and school and district policies
- Sufficient duration, in length of time and numbers of hours spent on the activity
- Collective participation.[113]

A case study by Elham Kazemi and Megan Loef Franke provides an example of a professional development program of sufficient duration that enabled teacher collaboration. The study examined a professional development program designed to bring together a team of 10 math teachers in one elementary school in a small urban school district for monthly team meetings. The meetings focused on students' math work and on observations of other teachers' classrooms in order to spur "collective inquiry," or collaborative teacher learning. School administrators, support teachers and the principal offered support for the program. Based on systematic analysis of meeting and classroom observations, the researchers documented two shifts in teachers' participation as a result of the program. Teachers became more aware of students' thought processes in solving math problems, and because of this focus, they worked to develop shared goals and instructional techniques for their students' mathematical learning.[114]

In schools that do more to coordinate the work of teachers in different classrooms, even professional development that is not ongoing may have potential to lead to lasting improvements in instruction. In their multiyear study of hundreds of elementary schools in Chicago, Bryk and colleagues found that quality professional development led to improved academic outcomes, but only in schools characterized with a strong "work orientation"—support for innovation and a collective sense of responsibility for improving the school.[115]

Collaborative practices tend to be more successful when teachers have shared goals to achieve.

Researchers have only just begun to develop an understanding of what makes for effective collaboration. But many researchers have concluded that teacher collaboration tends to be more successful when teachers have goals and shared values.[116] In their 2015 review of the literature on teacher collaboration, Vangrieken and colleagues note that shared goals, among other conditions, is mentioned across many studies as a facilitating factor for teacher collaboration and that, on the other hand, a lack of clarity around goals is an oft cited factor hindering collaboration.[117]

Collaboration centered on shared goals can in some cases be sufficient for spurring improvement. A team of researchers studied a "continuous improvement" intervention structured entirely around goals in Title I elementary schools, which serve substantial proportions of low-income students. Teachers in "intervention" schools met a few times a month in grade-level groups to work together. They set goals, monitored indicators of progress toward them and got help in achieving them, including help from principals. Teachers in comparison schools also met a few times a month in grade-level groups to work together but followed other reform models that did not center around shared goals for student learning.[118] The researchers described teachers in intervention schools shifting toward a focus on student learning and away from thinking it was out of their hands if they planned a lesson and their students "didn't get it."[119] The researchers observed teachers in intervention schools adapting their teaching practices to meet students' needs; assigning more responsibility for student learning to their own work as teachers; and ascribing less responsibility to students' previously demonstrated engagement, family resources or parents' involvement.[120]

In fields outside education, members of successful organizations "interact regularly to share their ideas and expertise and develop common understanding of organizational goals and the means to their attainment."[121] In addition to developing common understandings of school and district goals as well as the means to achieve them, the process of collaborating can lead teachers to develop shared goals.[122]

Of course, goals can sometimes be too narrowly focused. For instance, teachers might collaborate to focus a disproportionate amount of their attention on supporting only those students performing just below a proficiency level on a state-mandated exam in hopes of raising a school's status, instead of supporting all students.

Besides having goals, researchers have only just begun to develop an understanding of what makes for effective collaboration.

Within their own study design, researchers can determine whether or not a studied collaborative activity or intervention was "effective" to the degree that it did or did not achieve a certain outcome being measured, such as allowing teachers to establish a shared vision or leading to improvements in students' test scores. However, it is more difficult to ascertain from the field of research on teacher collaboration overall elements of "effective" teacher collaboration. The most recent review of the literature, published in 2015 by Vangrieken and colleagues, attempts to contribute an understanding of what makes for "effective" teacher collaboration.

Despite different outcomes being preferred and different interpretations of effectiveness being considered important depending upon the goal and context of collaboration, Vangrieken and colleagues proposed some criteria for "effectiveness."

Process-level criteria for effective collaboration included:

- Regular, open and honest conversation among team members
- Actively keeping track of innovations or developments in the education world
- Clear definition of roles and shared responsibility
- Adaptability to changes in pedagogy or curriculum
- An adequate amount of effort put toward collaboration by team members
- Adequate competencies: knowledge, skills and strategies to approach the work
- The responsibility to use all members' expertise
- Use of data to set goals and the use and understanding of student data
- Structural, informational and instructional support from the school principal.

Outcome-level criteria for effective collaboration included:

- The attainment of goals set by the team
- The increase of knowledge and its applications to improve group members' practice
- The translation of knowledge into actual changes in the classroom
- The capability of the team to work together in the future.[123]

ENDNOTES

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What are some ways in which principals can foster teacher collaboration?

- Principals can model norms and behaviors that foster more collaborative teacher workplaces.
- Ideally, principals can set aside time and allocate resources that better enable teachers to work collaboratively.
- As instructional leaders, principals can provide teachers with mentoring and feedback to help them develop their skills.
- Yet principals or other school leaders may enact policies or changes that preclude or roll back collaboration.
- Some researchers argue that administration-mandated collaboration is less valuable than spontaneous collaboration initiated by teachers themselves.

Empirical research on principals' roles in teacher collaboration is somewhat limited. But the research thus far suggests that principals and district leaders play essential roles in creating the conditions for meaningful collaboration among teachers—or in stymieing collaboration. (For more on these topics, see the **section on making time for collaboration**.) District leaders, school principals and teachers in leadership roles can all make a difference in the presence and scale of collaboration in a school system. The National Association of Secondary School Principals has published a framework that provides further detail on how principals in particular can foster collaboration.[124]

Principals can model norms and behaviors that foster more collaborative teacher workplaces.

Findings from a multiyear study of hundreds of elementary schools in Chicago by researchers from the University of Chicago Consortium on School Research led by Anthony Bryk support the claim that leadership is a significant facilitating factor for collaboration. The researchers examined leadership as one of a set of five "essential supports," or organizational features, associated with improvements in student achievement—the others being a coherent instructional guidance system, "professional capacity" (for more on this, see the **subsection on student achievement**), strong parent-community-school ties and a student-centered learning climate. Based on their analyses, Bryk and colleagues assert that principals can change school climates by challenging norms of teacher isolation, but that teacher buy-in is necessary in order to do so.[125] Bryk and colleagues maintain that principals must take the lead, using their authority "to reform the school community through professional norms" and trusting that teachers will eventually begin to perpetuate those shifts in school climate.[126]

Principals can change school climates by challenging norms of teacher isolation, but teacher buy-in is also necessary.

Among the conclusions of this research team's analysis of survey data from nearly 6,000 Chicago elementary school teachers is that principals can nurture "a normative climate in which innovative professional activity is supported and encouraged."[127] They found that schools where teachers indicated their principals had regular contact with them were more likely to have a "professional community" among teachers—defined by six measures, including staff collegiality and collaboration, teacher sharing of information and a focus on student learning. Schools where teachers said their principals exhibited inclusive leadership and encouraged innovation and risk taking were even more likely to have a professional community.[128] (For more on this topic, see the **subsection on professional communities**.) By contrast, teachers in a smaller survey study pointed to a perceived lack of support or lack of prioritization of collaboration from administrators as a barrier to collaboration.[129]

Modeling teamwork is one of the ways in which principals can support teacher collaboration.[130] According to researcher David Piercey's perspective on what the literature has shown, teachers may know how to collaborate, but they often don't do so.[131] He expresses the opinion that teachers generally do not collaborate because their leaders won't do so or can't model collaboration.[132]

Principals are not necessarily trained to work collaboratively or to model collaboration.

But principals are not necessarily trained to work collaboratively or to model collaboration. They may not value collaboration. In-depth interviews with principals suggest that even those who do value shared governance can struggle with stepping back, with facilitating rather than directing and with feeling less needed by teachers.[133] This suggests that principals as well as teachers may need training and support if they wish to make schools more collaborative for teachers.

Ideally, principals can set aside time and allocate resources that better enable teachers to work collaboratively.

Principals and other administrators are responsible for many resource allocation decisions that can affect the feasibility of collaborative practices among teachers.[134] In particular, they are involved in setting schedules that can create time for teachers to collaborate (for more on this, see the **section on making time for collaboration**).[135]

Principals are also involved in decisions about hiring new teachers and other administrators. Hiring decisions can be crucial to the development of shared goals among teachers and between teachers and administration.[136]

Principals can make a range of other decisions that create the conditions for teachers to develop their crafts and that may influence turnover, including whether and how to institute initiatives such as teacher teams, mentoring, coaching or induction.[137] However, many public school systems have faced budget cuts and shifting reform agendas that constrain principals' and other administrators' capacity to set aside time and resources for teachers to work collaboratively.

As instructional leaders, principals can provide teachers with mentoring and feedback to help them develop their skills.

Instructional leadership refers to a broad range of activities by principals, including creating a vision for a school, supervising teachers, offering feedback and advice and managing curricula. When principals act as instructional leaders, they are meant to assist teachers at developing their skills and at helping students learn.[138] Joseph Blase and Jo Blase's study of principals' instructional leadership found that teachers appreciated having both formal and informal "instructional conferences" with principals as well as getting concrete, results-driven feedback.[139]

One study—based on surveys of teachers and students' math and reading achievement scores—found that in schools at which principals provided shared instructional leadership, teachers collaborated more often. And in schools where teachers collaborated more often, students' achievement was higher in math and reading.[140] This suggests a relationship between principals' instructional leadership, how teachers work together and how students learn. But the study was not designed to provide details about what exactly principals did as instructional leaders.

Yet principals or other school leaders may enact policies or changes that preclude or roll back collaboration.

Research suggests that when state and federal policies induce or require significant reform, specifically high-stakes accountability reforms, principals and other school leaders have a critical role to play in mediating how those reforms are implemented and their effects on teaching, collaboration and teacher learning.[141] In some cases, this mediation can stymie teachers' efforts to collaborate.

In Na'ilah Suad Nasir and colleagues' extensive, in-depth studies of math teachers' collaboratively developed and nationally renowned equity pedagogy at one urban California high school, "Railside"* (for more on this study, see the **section on student achievement**), a change in school leadership that occurred simultaneously with new district policies and budget cuts led to the dismantling of the department's professional community.[142] A new superintendent was hired in 2007, per the No Child Left Behind policy for schools that fail to make adequate yearly progress. Responding to budget cuts, the superintendent instituted several changes over the next few years, such as changing the school day schedule, increasing class sizes and firing teachers. These changes had adverse effects on collaboration. The group of math teachers who continued at the school reported a significant drop in the frequency of collaboration as a result of the changes, from an average of once per week in the school years from 2000 to 2005, to once or twice per semester in the 2009–10 school year or even never for four of the 10 teachers in that time period.[143]

Decision making by the new leadership upended decades of work that had gone into building collaboration and creating the equity pedagogy. This highlights the level of influence that school leaders such as principals have over the shift to or success of collaborative models within or across schools. As Nasir and colleagues noted, "Teachers reported that their style of teaching—emphasizing collaboration, intellectual risk-taking, student exploration, and deep mathematical connections—was extremely difficult to maintain under the circumstances created by changes in district policies."[144]

*Railside is a pseudonym given to the high school by the authors.

Some researchers argue that administration-mandated collaboration is less valuable than spontaneous collaboration initiated by teachers themselves.

Andy Hargreaves has criticized "contrived collegiality," in which teachers follow a mandate from administrators or go through the motions of working together without a shared vision and without truly engaging one another.[145] He and others argue that this type of administration-mandated collaboration has little benefit. He distinguishes it from more spontaneous forms of collaboration in which teachers come together to share "new ideas, creative energy, and moral support."[146] In one study that analyzed survey responses from 118 elementary school teachers across six schools about their collaborative practices, researchers found that teachers sharing educational goals and values with fellow teachers was related to their participation in spontaneous ("informal") collaboration, but not to their participation in administration-mandated ("formal") collaboration.[147] The researchers posit that this might indicate teachers are more likely to simply "go through the motions" when administrators mandate collaboration, and therefore they do not benefit in the sense of developing or discovering shared goals with their colleagues.[148]

However, at least one study has shown that "contrived collegiality" can evolve into "true" collaboration. In case studies of two districts in Texas and California, Amanda Datnow concluded that what began as "contrived" administration-mandated meetings to discuss data "evolved into spaces for more genuine collaborative activity wherein teachers challenged each other, raised questions, and shared ideas for teaching."[149] This administration-mandated collaboration succeeded because it took place in schools and districts that already had high capacities for change—where cultures, structures and leadership were already in place to support continuous improvement.

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How do schools make time for teachers to collaborate?

- Some schools and districts explicitly build time into teachers' schedules to enable them to collaborate.
- Making time for collaboration can include scheduling occasional days off for students or creating regular times during the school week when teachers can work together.

Dedicated time for teachers to work together is crucial to collaboration.[150] Time for collaboration can be carved out of teachers' schedules. But this way of thinking about collaboration—as a discrete activity that teachers take time out of their "real" work to do—means thinking about collaboration as an add-on to individualized, egg crate–type schools rather than a fundamental way of working.

Some schools and districts explicitly build time into teachers' schedules to enable them to collaborate.

Certain simple forms of collaboration such as sharing lesson plans may happen without physical contact and may take very little time. But time and spaces are required for sustained, ongoing discussions of lesson designs, student learning processes, subject-area issues, multidisciplinary connections and pedagogical challenges. Unfortunately, time for collaboration is not always reflected in teachers' formal schedules or paid time.[151]

Time and spaces are required for sustained, ongoing collaborative work.

A few studies have shown that shared planning time is related to increased student achievement[152] and reduced teacher turnover.[153] Principals are particularly influential in making time for teachers to collaborate, as they make many decisions about schedules in their schools.[154] (For more on this topic, see the **section on principals**.) Scheduled time for teacher collaboration was one of three key components of successful collaboration identified in a case study of a struggling rural high school at which a new principal implemented collaboration-focused reforms that led to significant increases in student achievement.[155] (For more on this study, see the **section on student achievement**.)

Making time for collaboration can include scheduling occasional days off for students or creating regular times during the school week when teachers can work together.

Researchers have described a variety of approaches to making time for teachers to collaborate.[156] Some schools use professional development or in-service days for collaboration.[157] Others carefully construct teachers' and students' schedules so that teachers on a team all have shared time when they are not teaching a class so that they can work together.[158] One district in California changed schedules districtwide so that school started later once every two weeks, giving teachers 90 minutes of collaboration plus 30 minutes before the students arrived at school to prepare for classes.[159] A district in Texas had teachers meet in grade-level teams on Wednesday afternoons every two weeks, although it is unclear from the study whether these meetings took place after the regular school day or whether students had early releases.[160]

Setting aside time for collaboration does not mean that teachers will know how to use that time effectively.

Setting aside time for collaboration does not mean that teachers will know how to use that time effectively.[161] In a study of Title I elementary schools, which serve substantial proportions of low-income students, teachers reported that time scheduled for shared planning or collaboration was sometimes used for other purposes, canceled or rescheduled at the last minute and that some schools' meetings felt incoherent.[162] (For more on this topic, see the **subsection on goals for collaboration**.) Making time for collaboration is important but not sufficient: That time must be used effectively.

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Directions for future research: What more do we need to know?

Making teachers' workplaces more collaborative holds promise as a way to improve student learning and reduce teacher turnover. But many questions remain unanswered, including how collaborative practices are implemented, the full range of their effects (particularly over the long term) and their costs. Below, we pose several directions for future research that could contribute to efforts to improve teaching for all educators and learning for all students.

Case studies of collaborative schools

Given the prevalence of the egg crate model in U.S. schools—where collaborative practices may at best be add-ons to schools that remain fundamentally isolating—case studies of more thoroughly collaborative schools could help educators better understand the full potential of collaboration for students, teachers and communities. Case studies could help schools and districts better understand how to initiate and sustain collaboration and the pitfalls they might encounter along the way. Finding collaborative secondary schools for case studies may be much harder than finding collaborative elementary schools.

Impacts on students

How can fostering teacher collaboration impact school climate, students' social and emotional competencies and students' approaches to learning? Are some approaches to collaboration better than others at helping students learn? How do specific collaborative practices help teachers in situations such as working with students who are struggling academically, working with special-needs students or working in low-performing schools?

Teaching skills and practices

How might fostering collaboration relate to changes in teaching skills or in specific classroom practices?

Teachers' isolation, stress and coping mechanisms

How might collaborative practices relate to teachers' perceived isolation, stress or coping mechanisms on the job? Can a more collaborative workplace reduce feelings of isolation or stress for some teachers? Could it increase stress for others? How might collaboration help teachers develop ways of coping with workplace stress?

Who gets left out or marginalized when teachers work collaboratively?

Who gets left out, talked over or otherwise marginalized when teachers collaborate? Do teachers differ in how they adapt to and operate in collaborative settings by their years of experience, gender, race, sexual orientation or other variables? Can certain forms of teacher collaboration lead to groupthink that reinforces negative perceptions of some students, such as students of color, English-language learners or those who are struggling academically? What principles or approaches can help collaborating teachers reduce marginalization, increase inclusion and focus on success for all students?

Costs and finances

What are the financial costs and returns on investment of fostering collaboration, including personnel costs, time and space, as well as the potential savings through reduced turnover?

Physical space to work together

Case studies or guidelines about how to create or set aside physical space for teachers to work together productively might help administrators and teachers foster collaboration, particularly in schools that are crowded. Case studies or guidelines for architects designing school buildings that encourage collaboration could illustrate physical alternatives to the egg crate model.

Digital tools for collaboration

For-profit firms have developed many online and other digital teaching and learning platforms. How useful are those platforms to teachers, and how effectively do they help teachers work together?

Unions' roles

Teachers' unions can provide built-in structures for teachers to build relationships and work together. But instituting collaborative practices may also involve changing schedules, reorganizing roles and titles and hiring new staff. How can teachers' unions help and hinder efforts to make teachers' workplaces more collaborative?

Parents' roles

How do parents understand, perceive and respond to efforts to make teachers' workplaces more collaborative, particularly if those efforts involve changing school schedules that may affect students' and parents' work and family responsibilities?

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