The Role of Collaboration in Supporting the Induction and Retention of New Special Education Teachers

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INTRODUCTION

The individual school context sets the tone for the early career experiences of novice teachers. With persistent teacher attrition problems (Ingersoll, 2001; Ingersoll & Kralik, 2004; Inman & Marlow, 2004) and continued shortages in many educational fields, including special education (McLeskey, Tyler, & Flippin, 2004; McLeskey, Tyler, & Saunders, 2002), how schools create climates that encourage professional growth and teacher collaboration is critical to the retention of beginning teachers. Induction and mentoring programs hold promise for retaining teachers generally (Drago-Severson & Pinto, 2006; Ingersoll & Kralik; Smith & Ingersoll, 2004). As more states move to implement induction programs, it is critical to understand how to support beginning teachers as they transition into their first teaching positions. Despite advances in the development of novice teacher support and knowledge about how to construct such programs, well-designed induction is not universally available. It is more likely to be found in schools that promote and sustain professional learning communities [PLCs] and encourage ongoing professional development (Johnson, 2007). In these schools, new teachers are not left to their own devices to learn to teach; they work closely and collaboratively with veteran colleagues.

Given the high attrition rates and difficult working conditions of special education teachers [SETs], how to retain them in the teaching force poses an even greater challenge, and their retention continues to lag (Billingsley, 2004; Boe & Cook, 2006). Retaining a stable special education teaching force is critical to the quality of student learning, especially in light of the unyielding achievement gap between students who have disabilities and their peers. Furthermore, given that a large proportion of SETs work directly with general education teachers [GETs] to create inclusive learning environments, the retention of these teachers is a concern for both general and special education.

Collaboration among teaching professionals across general and special education appears to have potential for playing a positive role in inducting and retaining beginning SETs within a supportive, vibrant professional school culture. In the face of a growing literature that is starting to reflect the importance of the local school community for the retention of new teachers generally (Humphrey, Wechsler, & Bosetti, 2007), what is less well understood is how such collaborative communities might function and what kinds of intersections between special and general education might best serve to promote the retention of new SETs.

Further complicating the situation, in contrast to induction for new GETs, induction for novice special educators can be viewed as a process of dual socialization in which SETs are learning to be professionals both within their individual schools and also as members of the larger special education community (Pugach, 1992), often defined by district practices. This dynamic makes induction a more complex undertaking in relation to meeting the needs of SETs and raises several important questions about how SETs view their primary professional identities and how they act on belonging to both a school and special education professional culture. This situation can pose a challenge for district- and school-level administrators alike who will need to respond to this duality by creating induction programs for SETs that acknowledge the dual nature of their professional lives as well as minimize their separation and segregation from other teachers.

The purpose of this literature review is to explore the role of professional collaboration within the school context as a means of improving the quality and retention of beginning SETs. The assumption underlying the review is that the local school context in which new SETs work

should also function as the primary source of induction support for GETs and SETs alike. As such, the audience for this review is both general and special educators, school building administrators, and central services staff in both general and special education, all of whom have interconnected responsibilities for the success of new SETs and whose actions can directly contribute to their professional longevity. With this assumption in mind, two questions guide this analysis:

- If the school is viewed as the major context within which induction takes place, what aspects of the school as a community need to be taken into consideration when building strong induction policies and practices for SETs?
- What is the relationship between capacity building for induction at the school level through a variety of collaborative practices that treat SETs as fully participating members of the school's learning community and any discipline-specific support related to the unique role and needs of special educators, and how might general and special educators' efforts in this regard intersect to create effective connections and an appropriate balance between the two?

Drawing on the literature from both general and special education, four major issues are addressed, which include:

- How are novice SETs situated within the concept and practice of schools as PLCs?
- What roles do building principals play in creating school communities that support the induction of SETs?
- What professional development practices might best serve as vehicles for improving the quality of new SETs' practice?
- What is the role of co-teaching or teacher teaming as a collaborative enterprise for the induction of SETs?

Each section of the paper explores one of these issues as related to support for the induction of SETs. Literature from general education that has direct applicability to building capacity for the induction of SETs at the school site through collaboration, as well as literature that addresses SETs more directly, is included. The paper includes charts of empirical studies that have informed the review as well as recommendations for practice and research. The conclusion explores themes across all four sections of the review.

METHODS

Due to the limited research on school-based capacity and induction in the special education literature, we searched databases and journals in both general and special education. Studies selected for this paper date from 1988 through the present. We chose 1988 as the starting year for identifying empirical studies in view of the growing impact of induction and mentoring as a phenomenon at that time. Specifically, in 1988, the New Teacher Center [NTC] at the University of California at Santa Cruz was initiated, which created a national focal point for research and practice on induction and mentoring.[1] Shortly thereafter, in 1990, a chapter on induction and mentoring appeared in the first *Handbook of Research on Teacher Education* (Huling-Austin, 1990), solidifying both the importance of these new practices in the development of novice teachers and the initial accumulation of related literature. This review is focused on collaboration and its structures to improve the retention of practicing teachers during their initial years (0-5) in the field; therefore, literature related to collaboration in preservice teacher education was not included.

Three extensive research databases were first searched: ERIC, JSTOR, and EBSCO Host. The academic search engine Google Scholar was used to locate further resources not found within these databases. The terms *collaboration, collegiality, collaborative culture, professional development, learning community, co-teaching, teaming, administration, leadership, principal, beginning teacher, beginning special education teachers, special education teacher, action research, retention, teacher assistance teams, problem solving teams,* and *prereferral intervention teams* were used in conducting our search. When a particular term produced over 20 results during an initial search, search terms were used in combination (e.g., *collaboration and retention*, *collaboration and not university*).

The following journals in both general and special education were searched electronically and by hand. General education journals included *Action in Teacher Education, American Educational Research Journal, American Journal of Education, American Secondary Education, The Clearing House, Education, Educational Administration Quarterly, Educational Evaluation and Policy Analysis, Education and Urban Society, Educational Researcher, Elementary School Journal, International Journal of Educational Research, International Journal of Leadership in Education, Journal of Research in Rural Education, Journal of Teacher Education, Journal of Technology and Teacher Education, Leadership and Policy in Schools, National Association of Secondary School Principals Bulletin, Preventing School Failure, Principal, Principal Leadership, Review of Educational Research, Review of Research in Education, School Psychology Quarterly, Teacher Education Quarterly, The Teacher Educator, Teachers College Record, Teachers and Teaching, Teaching and Teacher Education, Theory into Practice,* and *Urban Education.*

Special education journals for both low- and high-incidence disabilities searched were *American Annals of the Deaf; American Journal on Mental Retardation; Communication Disorders Quarterly; Education and Training in Developmental Disabilities; Exceptional Children; Exceptionality; Focus on Exceptional Children; Intellectual and Developmental Disabilities; Intervention in School and Clinic; Journal for the Education of the Gifted; Journal of Deaf Studies and Deaf Education; Journal of Learning Disabilities; Journal of Educational and*

[1] www.newteachercenter.org

Psychological Consultation; Journal of Special Education; Journal of Special Education Technology; Journal of Visual Impairment and Blindness; Language, Speech, and Hearing in the Schools; Learning Disabilities Research and Practice; Learning Disability Quarterly; Mental Retardation Practice for Persons with Severe Disabilities; Remedial and Special Education; Research and Practice for Persons with Severe Disabilities; Rural Special Education Quarterly; Teacher Education and Special Education; Teaching Exceptional Children; and *The Volta Review.*

Numerous book chapters were included, as well as a small number of reports containing empirical data. Ancestral searches of journal articles were explored to identify additional relevant sources. Journal articles, reports, and book chapters were not included (a) if the source did not clarify the methodology used or (b) if the resource was practitioner-oriented and provided details of promising practices rather than empirical research. Across the four major topics in this review, roughly 75 sources were identified, including primarily empirical studies and literature reviews from 1988-2009.

PROFESSIONAL LEARNING COMMUNITIES

How Are Novice Special Education Teachers Situated within the Concept and Practice of Professional Learning Communities [PLCs]?

In this section of the paper we review empirical studies on professional learning communities [PLCs]. What we have found is that most of the research on PLCs is focused on general education and rarely mentions special education, even when whole-school PLCs are the focus of investigation. As such, this review examines the existing research to uncover the extent to which SETs, especially novice SETs, have participated in PLCs. Our examination reveals a number of implications directly applicable to special education teacher [SET] involvement in PLCs. **Table 1** provides a summary of the studies discussed in this section of the review. Because there is no consensus on a definition of PLCs in the literature, we begin the paper with an overview of how PLCs are defined and their characteristics that have emerged in the literature. This section concludes with a discussion of the implications of the PLC literature for practice in special education and explores the limitations of current research and future research needed on PLCs and special education.

PLCs Defined

A proliferation of terms has appeared in the literature to describe the concept of teacher communities: *community of learners, professional learning communities, teacher community, communities of practice,* and *inquiry communities,* among others (Grossman, Wineburg, & Woolworth, 2001; InPraxis Group, 2006; Le Cornu, 2005). In most cases, the terms refer to a community of teachers located in a local school, but in some cases they refer to a subset of the larger school community, or even to a network of teachers in multiple sites (e.g., Louis & Marks, 1998; Meyer & Achinstein, 1998).

Some terms are derived from theoretical perspectives (e.g., *communities of practice* and *community of learners*) based on the idea of community as, for example, in the works of Lave and Wenger (1991) and Brown and Campione (1994). Other notions have emerged from the study of workplace practices (e.g., Engestrom & Middleton, 1998), mostly conducted in fields other than education. In some cases, conceptions of schools as learning communities have evolved from the study of business practices (e.g., Senge, 1990). These lines of thought and their associated research continue to exert influence on the understanding of teachers' work and ways that school improvement might be achieved.

The broad array of terms and the conceptual frameworks from which PLCs have evolved pose a challenge for interpreting the literature on teacher communities. For this paper, we focus on the term *professional learning communities* as the term most closely associated with the school-improvement literature of the last 25 years, broadly defined as professionals in a school, typically groups of teachers, who work collaboratively to improve practice and enhance student learning (Grossman et al., 2001; Kardos, Johnson, Peske, Kauffman, & Liu, 2001; Louis, Kruse, & Marks, 1996).

As noted by Westheimer (1999), there are no agreed-on models for analyzing teacher communities. Models that have been developed often focus on specific subject matter or grade levels (e.g., elementary mathematics). As pointed out by Grossman et al. (2001), "community

has become an obligatory appendage to every education innovation" (p. 942). That is, while teacher groups might be described (or describe themselves) as a community, these groups may not be engaging in actions to suggest that they are actually functioning as such, which can sometimes make it difficult to distinguish between a *community* of teachers and a *group* of teachers.

Complicating the issue, PLCs may share common characteristics (e.g., shared vision or forums for participation) but focus on different actions (e.g., shared vision for a curriculum that is interdisciplinary or one that is not) in different school settings. According to Westheimer (1999), promoting a shared vision or belief as a criterion for PLCs still ignores the "thorny question" about "what beliefs should be shared" (p. 97). For example, a school may have a shared vision—a characteristic of PLCs—but a shared vision that fails to address students who have disabilities excludes them from consideration as the school moves forward.

Issues such as poorly formulated theoretical models and limited understandings of the concept of community have influenced the nature and type of research conducted on PLCs (Grossman et al., 2001; Westheimer, 1999). For example, some studies have analyzed longitudinal data on newly formed, school-based PLCs to more fully understand the processes involved in the transformation, expansion, and sustainability of PLCs (e.g., Grossman; Wood, 2007). Although the research has not resulted in agreement about theoretical orientations and models for conducting research on PLCs, it has contributed to a better understanding of their characteristics and provides critical parameters for the concepts.

Characteristics or Dimensions of PLCs

Three reviews of the literature on PLCs (Hord, 1997; InPraxis Group, 2006; Morrissey, 2000) addressed and summarized characteristics or dimensions of PLCs. Hord's early review, which focused on entire school staffs or whole high school departments, identified five primary characteristics of PLCs:

- supportive and shared leadership (i.e., collegial with the principal)
- collective creativity (i.e., collective learning and application)
- shared values and vision (i.e., consistent focus on student learning)
- supportive conditions (i.e., structural and collegial)
- shared personal practice (i.e., ongoing interactions).

Morrissey and staff at the Southwest Educational Development Laboratory [SEDL] included more recent literature, linking Hord's characteristics with issues confronting low-performing schools. While working with low-performing schools to support their efforts at comprehensive school reform, SEDL staff noted five issues that hampered school improvement efforts: organizational structures, focus of improvement work, personal and social dynamics, contextual issues, and leadership. In their analysis, SDEL staff identified parallels between the issues in low-performing schools and Hord's five dimensions of PLCs, concluding that all five dimensions are critical elements in school improvement efforts.

In a more recent review of literature, the InPraxis Group (2006) concluded that there is "a great deal of agreement about those attributes that make a PLC more than a group of teachers working

together in a school" (p. 9). Along the same lines as Hord (1997) and Morrissey (2000), the InPraxis Group offered six attributes of PLCs identified in the literature:

- supportive and shared leadership capacity
- shared mission, focus, and goals
- collective learning and application of learning
- continuous inquiry and practice
- focus on improvement
- supportive conditions and environments.

These reviews by Hord, Morrissey, and the InPraxis Group reveal that a number of common characteristics have continued to emerge from the literature and to provide some guidance in understanding the processes and structures of PLCs. In the next section, we provide an overview of research conducted on school-based PLCs.

Research on PLCs in General and Special Education

Research on school-based PLCs has largely been qualitative, although some studies have included quantitative components, generally in the form of teacher surveys. All school levels (i.e., elementary, middle, and secondary) have been investigated as well as schools in urban and suburban settings. Much literature clusters around three major topics: (a) how PLCs emerge and sustain; (b) the impact of PLCs on teaching practice and student learning; and (c) the variables that influence PLCs, such as bounded communities, conflict, and contrived congeniality.

Research directly connecting PLCs and special education is practically nonexistent and actually is nonexistent with reference to novice or beginning special educators. For each of the three topical areas in this review, the research on PLCs focused on general education and included only one study directly related to special education. This study, conducted by Englert and Tarrant (1995), was not an investigation of a whole-school PLC but used a sample of three SETs to examine changes in their teaching practices as a result of involvement in a PLC.

While most studies examined whole-school PLCs, SETs were rarely mentioned, although one can assume that SETs were study participants in these investigations. This assumption was further supported by the analysis and findings of several investigations that focused directly on struggling students, including students with disabilities. We conclude each topic by examining the extent to which SETs or students were included in, discussed, or assumed to be part of the research. We follow the review of the three topics with a section on implications, where we draw out and analyze four implications of this research on PLCs for special education.

How PLCs emerge and sustain. A number of studies have examined the processes involved in the emergence and sustainability of PLCs (Dooner, Mandzuk, & Clifton, 2008; Giles & Hargreaves, 2006; Grossman et al., 2001; Hipp, Huffman, Pankake, & Olivier, 2008; Lieberman, 1995; Morrissey, 2000; Phillips, 2003; Westheimer, 1998, 1999; Wood, 2007). Grossman and colleagues targeted their investigation on the formation of a teacher community in an urban high school. Data were collected from 23 teachers to examine how the teacher community formed and changed over an 18-month period. Findings revealed four dimensions that these authors identified as distinguishing a community of teachers from a group of teachers: (a) formation of group identity and norms of interaction, (b) navigating fault lines, (c) negotiating the essential

tension, and (d) communal responsibility for individual growth. Grossman et al. used these markers of community formation to develop a model of emergent community to aid in understanding how communities form. In the schematic for the model, each dimension or marker of a PLC is shown along a continuum to demonstrate teacher interactions, progressing from the beginning stage of a PLC to an evolving stage, to the stage where a PLC has achieved maturity.

In a similar effort, Westheimer (1998, 1999) spent 15 months in two middle schools presumed to have strong teacher communities to examine the evolution and processes that might account for their success. Through a case study approach, data were collected using ethnographic techniques to understand the context of the schools. In the analysis of data, Westheimer found that the communities in each school shared certain characteristics (e.g., shared beliefs, participation, interdependence, dissent, and relationships); but their activities and approaches to accomplish outcomes differed dramatically. For example, the teachers in one school worked collectively to develop interdisciplinary curricula that reflected the group's shared beliefs about "community problem-solving, critical analysis, democratic participation, and inclusiveness" (Westheimer, 1999, p. 91). In contrast, teachers in another school articulated shared beliefs that reflected the need for teachers to individualize their curricula. Westheimer used examples such as these to demonstrate how easily school reformers can describe PLCs as being alike (on a characteristic like shared beliefs) but overlook major ideological differences that may affect the activity of the PLC. Westheimer's analysis of how PLCs differed amplifies what "may have caused both researchers and practitioners to overlook significant individual and organizational factors contributing to the survival or dissolution of these communities" (1999, p. 100).

Dooner et al. (2008) used Weick's model of means convergence to examine the interactions affecting the dynamics of and changes in group formation. Findings of this 2-year study of seven teachers in a suburban middle school provided insights into the cycles through which they progressed and identified inherent tensions created by individual and collective points of view of PLC members.

In her analysis of the six cases commissioned by the National Center for Restructuring Education, Schools, and Teaching [NCREST], Lieberman (1995) described the commonalities and differences among elementary and middle schools in developing PLCs. While a number of characteristics were common (e.g., shared experiences), PLCs developed differently. These differences ranged from principals encouraging teachers to come together on a regular basis to individual teachers initiating discussions about research.

Using the five characteristics identified by Hord (1997) as a guide to identifying similarities and differences in the emergence of PLCs, Morrissey (2000) and the SEDL group studied the evolution of PLCs in five schools in a five-state region. During the first 3 years of data collection, these themes emerged as critical to PLC development:

- supportive role of principal
- culture of collaboration
- commitment from all staff
- presence of a catalyst
- use of change facilitators.

An investigation by Phillips (2003) traced the evolution of a PLC in one urban middle school over 5 years as part of a larger school reform initiative. Using a case-study approach, data were obtained through interviews and focus groups, classroom observations, document reviews, and student work samples. Findings revealed that a strong PLC emerged as teachers gradually took over responsibility for a staff development plan originally created by school leaders. Observations indicated that the principal was comfortable with an expanding leadership base in the school.

Other studies have considered whether PLCs can be sustained over time. In an extension of the SEDL 5-year study, Morrissey (2000) and Hipp and colleagues (2008) sought to answer the question of how a school becomes a sustainable PLC. They reported findings on two schools they considered the most advanced schools: an elementary and a middle school that had unexpectedly performed high on state accountability measures. Interview data as well as assessments of beliefs were collected at intervals over 5 years. Data analysis suggested that the schools were both similar and different in how they evolved and were self-sustained as PLCs. These schools differed in location and socioeconomic circumstances; both embodied similar characteristics. These included a commitment to students as revealed in documents and activities; strong leadership as demonstrated by how the schools were organized and run; and a history of involvement in projects relating to educational change.

Giles and Hargreaves (2006) explored whether PLCs organized in innovative schools could be self-sustaining. In their examination of one particularly innovative high school, findings revealed that PLCs may enable the schools to resist conventional pressures of standardized reform. However, with time, as their findings showed, PLCs may give way to the pressures of traditional practice. Similarly, Wood (2007) followed the creation and implementation of PLCs in five targeted schools (elementary, middle, secondary) in a mid-Atlantic city that presented issues similar to many urban districts, such as achievement gaps between middle-class and poor children, low state test scores, and economic disparities. With the goal of improving student learning, school administrators chose to replace their traditional organization of teacher professional development with PLCs. The district became part of a large national PLC project that supported the district to explore (a) teacher collaboration, (b) the impact of the PLC initiative on district culture, and (c) the influence of institutional and policy conditions. Serving as an outside researcher to track the initiative, Wood led the collection of qualitative data (e.g., onsite interviews, observations, focus groups) over 2½ years. Analyses of participant surveys and interviews revealed a number of positive outcomes, such as increased collaboration and more discussion about teacher practice and student work, enhanced trust among participants, and an increased focus on students and their needs. Other findings showed that district policies could also negatively affect the sustainability of PLCs. For example, the district chose to engage in traditional practices of control (e.g., mandating PLC participation) that created conflict among school leaders and teachers.

With the exception of the Grossman et al. (2001) study, none of the research on how PLCs emerge and are self-sustaining noted whether SETs were included in the investigation or whether novice teachers were participants. Among Grossman and colleagues' 23 teachers, 1 teacher was identified as a SET and 1 as an English as a Second Language [ESL] teacher. It was of particular interest that the SET was a peripheral participant in the early stages of the PLC but emerged as a central participant as the PLC developed. Similarly, Curry (2008) reported that a journalism teacher moved from feeling completely isolated to being centrally involved after joining a

critical friends group. Both studies speak to the potential for PLCs to serve as a catalyst for integrating teachers who might otherwise become marginalized and isolated in schools. Without greater transparency in the research in terms of the membership of PLCs, the potential exclusion of SETs and other specialist teachers is difficult to determine.

Impact of PLCs on teaching practice and student learning. Another strand of research on PLCs relates to the impact of participation in PLCs on a teacher's practices and on student achievement. Vescio, Ross, and Adams (2008) reviewed the literature and identified 11 empirical studies that (a) documented essential characteristics of PLCs, (b) provided data on the impact of PLCs, and (c) were published in journals or chapters. All were U.S. studies except for one in England.

In this synthesis, all studies discussed improvements in teachers' classroom practices as a result of participating in PLCs. In addition, all studies revealed changes in the professional culture of the school when teachers participated in PLCs. Of the 11 studies, 8 provided evidence that student achievement was improved as a result of teachers' involvement in PLCs.

When Vescio et al. (2008) analyzed the 11 studies to uncover how teachers' classroom practices changed as a result of involvement in a PLC, they found that only 5 studies explained these changes (Dunne, Nave, & Lewis, 2000; Englert & Tarrant, 1995; Hollins, McIntyre, DeBose, Hollins, & Towner, 2004; Louis & Marks, 1998; Strahan, 2003), and most of these 5 failed to collect data on teacher practices when the study began as a way to make comparisons with practices observed later in the research. Englert and Tarrant's research was one of the few studies to provide sufficient data on teacher practices throughout the course of the project to describe the nature of changes in teachers' classroom practices. Changes in the three SETs' literacy practices in this study transformed from the use of a few restricted instructional practices to the use of a variety of new interactive literacy practices. Analysis of the discourse in meetings among the teachers and researchers showed that the teachers' talk changed over time from a focus on practical activities to discussions that included the theoretical underpinnings of the activities they were implementing in their literacy instruction.

Although the findings about teacher practices analyzed by Vescio et al. (2008) often lacked specificity, these authors reported that all 11 studies provided empirical data showing changes in the professional cultures of schools as a result of teachers' participation in PLCs. Vescio and colleagues categorized the characteristics that seemed inherent in PLCs that contributed to changes in school culture. These were (a) collaboration; (b) a focus on student learning (e.g., regularly scheduled meetings to discuss students); (c) teacher authority (e.g., making decisions on curriculum); and (d) continuous teacher learning (e.g., seeking new information). In a recent study that was not part of the Vescio et al. review, Wood (2007) reported similar changes in the school culture of five schools, including a greater focus on "more discussions focused on student work samples" and "more collegial conversations," among other changes.

The purpose of a recent investigation by Curry (2008) overlaps with the research that Vescio et al. (2008) reviewed on the impact of PLCs on changes in the school cultures. Curry sought to understand how Critical Friends Groups [CFGs], defined as a type of school-based PLC in the study, influenced instructional improvement and/or school-wide reform in an urban high school. Grounding the study in theories of "community of practice" and "community of learners," Curry explored teacher interactions and practices within CFGs.

A qualitative case study approach over 3 years was organized around four design features of CFGs: diverse menu of activities (e.g., multiple pathways for learning; decentralized structure; interdisciplinary membership; and the use of protocols to guide discussion). Curry (2008) pointed out a number of limitations. One example is that the CFGs in the study may not be typical because they participated in earlier national projects that may have heightened their emphasis on instructional improvement. The researcher reasoned that this investigation did "capture a mature case of professional community..." (p. 741). Curry demonstrated how each design feature both enhanced and constrained teacher learning and school improvement. For example, because the CFGs offered teachers multiple pathways for their learning and development, this provided opportunities for teachers to connect their own classroom practices to the larger reform agenda in a school. In other cases, however, the availability of multiple pathways stood in the way of teachers seeing the bigger picture and coming together to improve student achievement. The decentralized nature of a CFG allowed for more open debate about controversial issues, such as tracking and inclusion. However, Curry's findings revealed that debating core issues did not necessarily lead to follow-up and action because of the limited decision-making power of CFGs. Although the interdisciplinary make-up of CFGs supported cross-disciplinary discussions and led to greater collective responsibility for students, the interdisciplinary nature of CFGs also hindered teachers' growth in the subjects that they taught because of their inability to engage in in-depth discussions about the subject matter.

In examining whether the possibilities of CFGs outweigh the identified constraints, Curry concluded that that CFGs do indeed support teacher learning and school reform. However, given the seriousness of some constraints (e.g., lack of in-depth discussion of subject matter), Curry cautioned CFGs and their members to understand and consider constraints in relation to their goals for teacher learning and school reform.

Among 11 studies in the Vescio et al. (2008) review, 8 provided evidence that PLCs improve student learning (Berry et al., 2005; Bolam et al., 2005; Hollins et al., 2004; Louis & Marks, 1998; Phillips, 2003; Strahan, 2003; Supovitz, 2002; Supovitz & Christman, 2003). Most studies documented changes in student learning by reporting longitudinal results on state achievement tests. For example, using case studies to examine school culture, Strahan studied three schools serving low-income and minority students that showed dramatic improvements on state achievement tests. Achievement test scores reported from 1997-2002 showed that the percentage of students at or above grade level in reading and math rose on average from 46.2% in 1997 to 75.6% in 2002. This 3-year study found that the schools differed in what they emphasized to accomplish school improvement (e.g., a focus on literacy), but their similarities included building strong PLCs that focused on data-driven dialogue. Other studies (e.g., Louis & Marks) revealed a relationship between student performance and the extent to which a PLC focuses on student learning. Overall, Vescio and colleagues concluded that the "literature supports the assumption that student learning increases when teachers participate in PLCs" (p. 87). In addition, the literature supports the idea that teachers' involvement in PLCs changes the professional cultures of schools (e.g., a focus on student learning and willingness to debate issues such as tracking and inclusion). Further, although the findings are not specific, this research shows that teachers change their practices after being part of a PLC. Englert and Tarrant (1995) was the only one of the studies reported in this section to focus on SETs. The study by Supovitz made note of the fact that all teachers, including SETs, were included in the investigation; however, the findings reported did not specifically mention SETs.

Issues that Influence PLCs

Within the literature on PLCs, several issues surfaced as critical to understanding the complexities of teacher communities. One issue relates to how school organizational structures, such as departments (e.g., mathematics departments), mediate teachers' practices and professional interactions. A second issue relates to the conflict, tension, and disruption centered on professional beliefs and practices that are inevitable in the workplace, including PLCs.

Departmental structures in organizations. One of the eight lessons that organizational theorist Michael Fullan (1993) outlined in his early work on change was that "individualism and collectivism must have equal power," which he explained as meaning that "productive educational change is also a process of overcoming isolation while not succumbing to groupthink" (p. 33). As Fullan reasons, if we think that isolationism among teachers is a problem, then we assume that working together must be a solution. Therefore, the answers to our problems in the reform of education must lie in collaboration, participatory site-based management, mentoring, and the like. In short, according to Fullan, our tendency is to do too much of a good thing without necessarily understanding the tensions and complexities that need consideration when we think we have found answers to our educational dilemmas.

Workplace structures are important to understanding more about what happens in teacher communities, particularly those that form around teaching responsibilities or interests. In one study at the Center for Research on the Context of Secondary School Teaching [CRC], 3 years of fieldwork and survey data were collected to understand the workplace of teachers and the influence of workplace factors on their teaching and learning (McLaughlin, 1993). Data were collected from 16 diverse public and private secondary schools in eight communities in two states. Findings revealed that factors at both the school level and the department level influenced how teachers thought about and engaged in the practice of teaching in their classrooms, but the department exerted the greatest influence on their practices. Moreover, how departmental influences played out differed from one department to another and were determined by whether departments were highly collegial or noncollegial. While these data supported the influence on teachers of departmental structures or substructures that may be referred to as *bounded communities*, McLaughlin warned that some strong professional communities may be characterized as exclusionary and thereby thwart change in professional practice.

In a study of mathematics and English teachers in two high schools, Little (2003) conducted case studies to explore how teacher learning opportunities and the dynamics of professional practice affect teacher-led groups. Little's interest was in looking inside teacher communities to understand how interactions among teachers promote the positive outcomes that are often attributed to PLCs. Her findings revealed that the interactions of the group members supported teacher learning and improvement of practice, as evidenced by allocating time to talk about problems in their practice, revealing their dilemmas to each other, exploring their problems openly, and sharing specific classroom materials (such as student work) to find solutions. Little (2003) also found that the mathematics and English teachers in her study used shortcut language and familiar experiences to move their conversations along. This raised the question of whether bounded communities, such as teachers in a mathematics department, simply replaced "the isolated classroom teacher with the isolated teacher group and balkanized workplace" (p. 939). Little also discussed how the interactions in bounded communities presented opportunities for teacher learning and growth at some points and constrained their professional growth at other

times. She noted how the discourse of teachers in bounded communities created challenges for others who might want to interact with these teachers.

Conflict, tension, and disruptions. In the course of examining the emergence and sustainability of PLCs, findings from a number of studies revealed that tension and conflict are inherent in PLCs (e.g., Dooner et al., 2008; Grossman et al., 2001; Westheimer, 1999; Wood, 2007). Although not the primary purpose of the studies, exploration of conflict, tension, or disruptions surfaced repeatedly.

The purpose of some studies was to analyze and understand how teachers manage the tensions they encounter in PLCs. Drawing on micropolitical and organizational theories, Achinstein (2002) analyzed two school-wide teacher communities in urban middle schools. Using a micropolitical lens to gain insights into conflict, boundaries of community, and ideological stances, Achinstein sought to understand teachers' political activity as they navigated their differences in PLCs. From the lens of organizational theory, Achinstein explored how conflict influences more fundamental change in organizations. A case study approach was used to collect data at the first site for 2 academic years and at the second site for 1 academic year. Using key characteristics identified in the literature for comparison, the two sites chosen for investigation were recognized as strong PLCs. The findings of interviews, observations, documents, and a teacher survey were used by Achinstein to develop a continuum of micropolitical processes about conflict within PLCs that showed the variation in ways the two schools managed conflict, boundaries, and ideology. For example, her findings revealed that conflict can occur at any point along a continuum—from groups of teachers who completely avoid conflict to groups or communities who are capable of fully embracing conflict. How teachers identify with particular subgroups in a building is also a concern; Achinstein uses the term "border politics" to label how such subgroup identities can create boundaries that exclude or include others and that ideologies can clash over the purposes of schooling and help explain different stances on conflict. Repairing the breakdowns and disruptions that each of these processes creates can affect whether an organization will transform or change.

Of particular interest in the Achinstein (2002) study was that the two schools experienced most of their conflict over ways to manage students with academic and behavioral problems, including those with disabilities. In one school, teachers coalesced around removing or excluding students with problems and failed to engage openly in conflict about these issues; the SET, who represented a different perspective, left the school at the end of the year. In the other school where conflict was more open, these same issues were directly debated and teachers more willingly accepted responsibility for all learners. These findings are similar to those of Dooner et al. (2008), who found that using strategies to manage conflict early in a community's development may help members learn to expect and deal with conflict.

The continuum Achinstein (2002) developed was somewhat similar to several of the stages developed by Grossman et al. (2001) as part of their model of emergent community. Two markers in the model, Navigating Fault Lines and Negotiating the Essential Tension, show how conflict changes from early to mature stages of PLC formation.

In a related study not focused on PLCs, Hargreaves (2001) explored teacher relationships with colleagues to gain more understanding about how emotions and adult relationships influence the work of teachers' professional development and educational change. In elementary and

secondary schools 53 teachers were surveyed and interviewed. Of particular interest to this review were the findings that conflict was viewed by most teachers as something to avoid and was the source of most of their negative expressions toward other teachers. Conflict among teachers often centered on different philosophical orientations about schooling (e.g., fairness to students). Other sources of conflict included instances of particular classroom practices. One example that stands out was disagreement about whether students with disabilities should be included or excluded from general education classrooms.

These and other studies that identified conflict in teacher communities make clear that simply proclaiming the virtues of collaboration and collegiality as essential to school reform does not capture the complexity of the issue. Hargreaves (1991) cautioned the field about the "many faces of collegiality" when he used a micropolitical perspective to examine group differences in organizations. In an exploratory study where principals and teachers in six schools were interviewed, an important factor was whether teachers' working arrangements were controlled administratively or whether they emerged from the teachers. Hargreaves referred to the latter as *collaborative cultures,* meaning that the working relationships of teachers are spontaneous, voluntary, development oriented, and pervasive across time and space, and unpredictable. For groups that are controlled administratively, Hargreaves used the term *contrived collegiality* because such groups are administratively regulated, compulsory, implementation oriented, fixed in time and space, and predictable. For example, administrators may require teachers to work together on a project during a particular time period to accomplish a prescribed outcome. Three examples of contrived collegiality were: mandated collaboration and joint planning, required consultation with SETs, and participation in peer coaching. Hargreaves interpreted these findings to mean that some administrators use the rhetoric of collegiality when in reality collegiality is contrived via administrative mandate.

Contrived collegiality, however, can be "double edged," as noted by Fullan and Hargreaves (1996) when analyzing both its positive and negative outcomes. Although the negative outcomes seem clear, Fullan and Hargreaves point out that when contrived collegiality is more facilitative than controlling, it can be a "starting point" toward greater collaboration.

The few studies (e.g., Little, 2003) that investigate the relationship of workplace structures, such as departments to teacher communities, show that these bounded communities have the potential to create exclusionary groups that either support or deter teacher learning and their interactions with teachers who are not part of the group. Although these studies made no mention of special education, one can infer that such organizations would have an impact on teachers who may have no other role-alike colleagues in a school as, for example, the SET.

Both studies that explored conflict in PLCs and those not focused on conflict revealed that conflict and tension are to be expected in PLCs. In some studies (e.g., Achinstein, 2002; Hargreaves, 2001), the conflict among teachers was centered on teachers' views about whether and/or how to include students with disabilities in general education classrooms. In fact, in Achinstein's investigation disagreements over this issue resulted in the SET's leaving the school.

Implications of Research on PLCs for Special Education

Although the research in relation to PLCs and special education is sparse, several implications for special education practice can be drawn from the literature. Based on the Grossman et al.

(2001) and Curry (2008) studies, a PLC may serve as a vehicle to integrate isolated SETs into the community of GETs in a school. PLCs may also provide a safe environment for debating such core issues as inclusion (Curry). This is a particularly important consideration when reflecting on the research relating to bounded communities and the potential for a balkanized workplace (e.g., McLaughlin, 1993; Little, 2003).

Second, the research reveals that PLCs may improve student outcomes for students with disabilities (Vescio et al., 2008). Some research (e.g., Hipp et al., 2008; Louis & Marks, 1998; Wood, 2007) has found that, over time, PLCs seem to place a greater focus on students, including those students who struggle most. It is not a given that the activities of a PLC will focus equally on the subgroups of students in a school. This is an important point because special education is often not included in school reform research (Koh & Robertson, 2003). However, some school reform research has shown that a distinctive characteristic of exemplary schools is that GETs and SETs alike accept increased responsibility for focusing on improving the performance of all students in their school, including those who have disabilities (Caron & McLaughlin, 2002).

Third, the research on PLCs reveals that the classroom practices of SETs, like those of their general education counterparts, will change in a positive direction as a result of their participation in PLCs. This is supported in the research generally (Vescio et al., 2008) and in a study focused on special education specifically (Englert & Tarrant, 1995).

A fourth implication of this research for special education is the finding that conflict, tension, and disruptions are natural occurrences in PLCs (e.g., Achinstein, 2002; Dooner et al., 2008; Grossman et al., 2001; Hargreaves, 1991; Westheimer, 1999; Wood, 2007). Successful PLCs go through cycles of learning and, in doing so, are able to repair the problems the community experiences. Strategies to manage conflict and identify and solve problems should be continuous activities of PLCs and be included early in the startup of a PLC. Beginning SETs and GETs would be better served if all members of a PLC are expected to collaborate on developing solutions to problems and have an opportunity to discuss strategies for managing conflict when it inevitably occurs.

Limitations of the Research on PLCs

Although the findings of research on PLCs have implications for practice in special education, limitations on the interpretation of this body of literature do exist.

First, most studies rarely mention whether SETs are members of PLCs. Similarly, the research reviewed did not note the inclusion of novice teachers within the communities they explored, whether in general or special education. The effects of subgroup membership should be disaggregated in PLC study designs. Subgroup effects and interactions can show the extent to which the desired outcomes are obtained, how identities change, and the roles played in transforming and sustaining a PLC.

Second, most studies of PLCs differed in their notions of community. In some cases, PLCs were viewed from a school reform stance; in other cases, PLCs were grounded in specific theoretical orientations such as “communities of practice”; and still others anchored their work to a combination of concepts. Although this may be expected, the concern rests on the notion of

"declaring" a group a community, or PLC, which can avoid discussion of all the components that make up a community (e.g., resources, parents, students). In addition, most studies do not address the effects of interactions with other proximal and distant communities (e.g., the school system, local school board, local community, state department of education, and other PLCs within a school district). For novice SETs, this list of other communities might include district-wide special education personnel.

Future Research on PLCs and Special Education

Further research is needed to address the limitations identified in the literature as well as to focus specifically on beginning SETs. Research is also needed to expand understanding in each topic area reviewed in this paper and should address the questions below:

How PLCs emerge and sustain

- How are beginning SETs included within the larger whole-school PLC?
- If there are several SETs in a school, including a beginning SET, how does this subgroup of SETs interact with the larger whole-school PLC? What is the professional trajectory of a beginning SET both within this subgroup and across the community as a whole?
- How do beginning SETs interact in emerging and mature PLCs? How do beginning SETs interact in PLCs that are considered strong?

Impact of PLCs on teaching practice and student learning

- How do the teaching practices of beginning special educators change as a result of being involved in a PLC?
- How does SET participation in a PLC affect the achievement of students with disabilities? In strong PLCs? Are there any differences for veteran versus novice SETs?

Issues of organizational structures and conflict, tension, and disruptions

- How does the participation of SETs (e.g., their specialized language, preparation, and experiences) affect a whole-school PLC? Are there differences for veteran SETs in comparison to beginners?
- How do beginning GETs and SETs manage conflict, tensions, and disruptions in PLCs? If provided with strategies for managing conflict early, does this influence how they manage conflict in PLCs?
- How do GETs and SETs see their work as interconnected in PLCs, and where do they see their work as legitimately diverging, if at all?

THE ROLE OF PRINCIPALS

The support of new teachers by principals has been cited as one of the factors influencing teacher retention or attrition (Darling-Hammond, 2003). As school leaders, principals set the climate, culture, and direction of schools. Principal leadership is a critical component in creating environments that not only support new teachers but also nurture veteran teachers to meet the complex and diverse needs of their students and families (Cherian & Daniel, 2008; McLeskey & Waldron, 2002b).

Induction and mentoring can foster collaborative relationships that reduce the isolation many teachers experience. Comprehensive induction that includes strong administrative leadership, mentoring, professional development and support, and formal assessments for new teachers appears to cut attrition drastically, perhaps even in half (AEE, 2004). Typically, induction programs are mandated by the state and implemented at the district level. Although some states have hired induction coordinators to work across the district with principals to mentor beginning teachers (AEE), the building principal or vice-principal typically oversees most of the day-to-day activities of induction programs. The success of an induction program for beginning teachers assigned to their schools falls primarily in their hands (Cherian & Daniel, 2008). Thus, a key element in assuring that induction programs are successful in retaining novice teachers is the support of the principal.

The principal's complex role in the induction of novice teachers must be viewed from multiple perspectives. Principals have several responsibilities in the implementation of a comprehensive induction program. Most importantly, they are responsible for creating a school culture that is collaborative and provides positive working conditions. They also serve as instructional leaders by promoting ongoing evaluation and professional development of beginning teachers as they gain knowledge and skills in instruction and classroom management. Principals ensure that the mentor-mentee relationship is of high quality and is supported with time for planning and collaboration. As school leaders, they monitor and support the ongoing appraisal of new teachers. They are often responsible for the recruitment and hiring of new teachers, which is the first interaction that creates a positive or negative impression for novices. In short, principals can exert a powerful influence on a beginning teacher's decision to remain at the school site, a role that is becoming more difficult as attrition rates climb (Wynn, Carboni, & Patall, 2007).

The primary purpose of this section of the paper is to provide a review of key empirical studies that address the administrator's role in the induction of novice teachers. We first provide an overview of the research in general and special education related to the principal's role. We then present an analysis and discussion of the research on administrators' roles in the induction of beginning GETs. This is followed by a review and discussion of research from special education that has addressed the role of administrators in retaining and supporting beginning SETs. This section ends with recommendations for best practices in school leadership for induction and suggestions for future research in this area. **Table 2** provides a summary of the specific studies discussed in this section of the review.

Overview of Professional Research on the Role of the Principal

Much research on the principal's role in the induction of new teachers has been conducted with GETs (Kardos et al., 2001; Weiss, 1999; Wood, 2005; Youngs, 2007a, 2007b). Research on

principals in the induction of beginning SETs, however, is more limited than the research in general education. Yet our findings across both areas were similar (Billingsley, Carlson, & Klein, 2004; Schlichte, Yssel, & Merbler, 2005; Singh & Billingsley, 1998; Whitaker, 2001). Research indicated that the principal plays a critical role in providing supports for beginning teachers by promoting a positive school culture, serving as an instructional leader, and supporting induction and mentoring activities.

Principals who were effective created school cultures that supported distributed and shared leadership between veteran and novice teachers and promoted a collaborative learning community (Flores, 2004; Singh & Billingsley, 1998; Wood, 2005; Youngs, 2007a). The job of supporting new teachers became integrated into all aspects of the school and the principal's role was as an active participant (Kardos et al., 2001). Beginning teachers received orientation sessions about school policies, procedures, and resources (Brock & Grady, 1997) and accessed both formal and informal systems of support (Billingsley et al., 2004).

As instructional leaders, principals observed teachers in their classrooms and conducted nonthreatening evaluations of their teaching (Andrews, Gilbert, & Martin, 2006). Beginning teachers who felt supported described their principals as coaches, mentors, and promoters of their work. Together with mentor teachers, principals provided beginning teachers with teaching resources and professional development training to be successful (Andrews et al.; Wood, 2005). Principals were careful to protect new teachers from difficult teaching situations such as large class sizes, large number of class preparations, classes with challenging students, leftover assignments, and nonteaching duties (Andrews et al.; Cherian & Daniel, 2008).

As supervisors of induction programs, principals who were effective carefully considered the matches between the novice teacher and the mentor (Brock and Grady, 1997). They provided co-planning time with mentors, opportunities to observe other classrooms, and meetings with other new teachers for peer support (Andrews et al.).

Beginning SETs faced special challenges, such as feeling like an integral part of the school culture, having a principal who was able to provide instructional leadership in special education, and having a mentor who had a background in special education (Billingsley et al., 2004; Schlichte et al., 2005; Singh & Billingsley, 1998; Whitaker, 2001).

The following sections provide analyses and discussion of the research on principals' roles in the induction of beginning GETs and SETs.

The Role of Principals in General Education Induction

Principals influence the well-being of novice teachers in numerous ways and can be the decisive factor in a new teacher's commitment to staying in or leaving teaching. School principals have very complex, challenging jobs that involve multiple roles as school manager, instructional leader, public relations marketer, fundraiser, parent advocate, policymaker and enforcer, and disciplinarian. The induction of new teachers should be integral to their responsibilities as leaders who build supportive professional communities in their schools. For many principals, however, this role can seem like one more responsibility added to what they view as their already complex jobs.

Principals often begin the year intending to support novice teachers, only to find themselves consumed with other, more urgent and demanding duties (Cherian & Daniel, 2008). They struggle to balance their different roles as they work for the betterment of all teachers, staff, and students in their school. Effective principals realize they cannot do this work alone. McLeskey and Waldron (2002b) note that principals who use distributed leadership can empower teachers and staff to share responsibility for decision making and work together to build a collaborative school climate. In this way, principals make induction an integral part of the school culture and share the responsibility for mentoring new teachers with veteran teachers and other school personnel.

This section of the paper highlights several common features found across research studies on the role of principals in the induction of beginning GETs. Based on the research on beginning teachers and induction in general education, administrative roles cluster around three areas: (a) principals as promoters of school culture, (b) principals as instructional leaders, and (c) principals as supporters of induction and mentoring programs.

Principals as promoters of school culture. Several studies reported on the impact that school culture and climate have on beginning teachers' satisfaction with their job and their intention to stay in teaching (Kardos et al., 2001; Weiss, 1999; Wood, 2005; Youngs, 2007a, 2007b). Principals bear the primary responsibility for creating positive workplace conditions that promote shared decision making and collaboration. Wood defined principals as culture builders who should encourage and support professional relationships between novices and experienced teachers and create a view of induction as a collective responsibility within the school.

One of the most basic steps a principal can take to create a climate of support and collaboration is to provide beginning teachers with orientation sessions. Brock and Grady (1997) reported that a majority of principals used extensive fall orientations to help beginning teachers understand the school's policies and procedures related to classroom management, public relations, lesson planning, and conferencing. In a study by Quinn and Andrews (2004), 1st-year teachers echoed the need for orientation sessions. These researchers asked 106 first-year teachers in Reno, Nevada, to answer a questionnaire about the amount and types of supports they received from the school. Of the multiple supports reported by teachers, the need cited most often was for more and better school orientations with a particular need for information on administrative policies and procedures.

Quinn and Andrews (2004) found that many of these novice teachers were hired in late summer, sometimes even after the school year had begun, and may have started their work unprepared for their classes and before meeting any other adults in the school except for the principal. These late hires report no introduction to school staff, no explanation of school policies and procedures, no tour to see where to find materials and supplies for their classrooms, and even no demonstration of how to work the phones (Quinn & Andrews). These findings suggest that teachers who are hired after school starts should be provided with sufficient orientation to enable them to function effectively in the school environment and should at a minimum be given a school handbook containing information about school policies and procedures. Principals should also make sure these teachers are provided the supports of a mentor, whether through formal or informal approaches.

The profound effect of school culture on the experiences of beginning teachers has been the subject of several studies. Kardos et al. (2001) interviewed 50 first- and second-year teachers in Massachusetts and identified three types of school cultures: *veteran-oriented, novice-oriented*, and *integrated*. In the veteran-oriented culture the majority of teachers were experienced senior-level teachers who functioned independently. Of those teachers, some were effective and efficient in teaching, some were minimally involved in the school culture, and others were holding on until retirement. Beginning teachers felt that the veteran teachers in this school culture saw little need to interact with them and offered little organized support. The principals in these schools were described as "never there or absent" and largely ignored what teachers did in the classroom. Their major focus was on keeping order and making sure that rules were followed.

The schools with a novice-oriented culture had a larger percentage of novice teachers who were young, inexperienced, and idealistic. Although these beginning teachers described having ongoing professional interactions with their peers, the interactions were often "uninformed by the expertise and wisdom of veteran teachers" (Kardos et al., 2001, p. 261). Interestingly, beginning teachers in novice cultures were also not well supported. Principals often treated the new teachers as underlings and were unavailable because they were too busy with external school activities (e.g., fund raising).

Beginning teachers who found themselves in the integrated school culture reported the highest satisfaction. In these schools, there were no separate camps of veteran and novice teachers. Instead, all teachers were engaged in discussions about curriculum, instruction, and shared responsibility for students. Principals in these schools were described as being engaged in the daily life of the school. They were "hands on" leaders who took an interest in the new teachers and were accessible to them. Beginning teachers in these schools reported receiving the most support with mentoring and curriculum planning.

Kardos et al. (2001) confirms the principal's central role in creating a collaborative school culture:

> This joint endeavor, in which novice and veteran teachers embark together on the collective mission of educating all students in their school, calls for leadership by both the principal and teachers. This kind of leadership facilitates collaboration and teamwork, is supportive and embedded in the work and life of the school, and has as its primary focus the improvement of teaching and learning. (p. 283)

Youngs (2007a) also observed veteran and integrated school cultures in a study of six principals engaged in a yearlong induction program for beginning teachers mandated by the state of Connecticut. Youngs found that in three of the schools, principals promoted an integrated school culture and provided opportunities for new teachers and mentors to meet and discuss instruction and student learning. Those principals believed in a collective mission and facilitated collaboration and teamwork. In these schools, the principals had extensive knowledge of and strong beliefs about teacher development. The other three schools were characterized as veteran-oriented cultures in which beginning teachers were treated no differently than experienced teachers, who rarely had time to address instruction and student learning. The principals of these schools had very little knowledge of or commitment to the induction program in the school.

A key aspect of the school culture is the amount and type of support provided for teachers. It is up to principals to recognize that beginning teachers require different types of support than those provided to veteran teachers. Andrews et al. (2006) asked 144 administrators, mentors, and beginning teachers in eight school districts in Georgia to respond to the *Support for New Teachers Survey*. Beginning teachers were asked which support strategies they had experienced and the value they placed on various strategies. Administrators and mentors were asked whether they provided the strategy to beginning teachers. The following 12 strategies were included on the survey:

- assign mentors to new teachers
- hold a special orientation session for new teachers before the school year begins
- provide new teachers with special publications (handbooks, guides, other materials)
- hold special professional development sessions for new teachers during the school year
- have informal meetings of groups of new teachers for peer support
- provide new teachers with co-planning time with other teachers
- give new teachers the opportunity to observe other teachers
- provide new teachers with constructive feedback based on nonevaluative classroom observations
- reduce new teachers' nonteaching duties (e.g., lunchroom, bus duty)
- assign new teachers to smaller classes
- limit the number of different class preparations assigned to new teachers
- schedule field trips that give new teachers an opportunity to learn about the school district and available resources.

Of the various supports provided to these teachers, only two were both valued and provided often: assignment of a mentor and provision of an orientation program. Supports that were valued but not provided as often to teachers were the opportunity to observe other teachers and co-planning time. Furthermore, principals who responded to the same survey indicated that they were providing supports that teachers did not report receiving. These discrepancies between new teachers and administrators may indicate a problem related to perceptions between the two groups and a lack of clear communication. Andrews et al. (2006) concluded that administrators must take the time to communicate with beginning teachers and mentors about their needs and provide the supports that are indeed valued. Principals may also need to hold mentor teachers accountable for their work with beginning teachers. Different beginning teachers will have different needs for support, and principals should be prepared to match the teachers' needs with the appropriate supports.

Although Andrews et al. (2006) discovered several supports that were important to beginning teachers, other researchers have investigated how different kinds of support influence teachers' commitment to teaching (Singh & Billingsley, 1998). For beginning teachers, the link between support and the desire to remain in the profession are important in understanding their retention. In a national study of 11,840 new and experienced GETs and SETs, Singh and Billingsley found that principal leadership or support was the most important influence on teachers' commitment to the teaching profession. Further, principal support influenced teachers' professional commitment indirectly through peer support. Principals who were strong leaders created school environments that were also supportive and collaborative.

Strong and supportive principals were characterized as individuals who accomplished the following:

- communicate clear expectations
- share a vision for the school
- provide fair evaluations
- communicate the goals and priorities of the school
- provide encouragement and support
- recognize accomplishments
- assist with instructional practices
- help with discipline and enforced school rules for student conduct
- provide resources.

Singh and Billingsley (1998) emphasized the importance of the school culture on the success of induction programs and the retention of new teachers. Similarly, in a 3-year study of 217 first- and second-year teachers, Wynn et al. (2007) found that school culture and principal leadership were factors in teachers' intent to stay in teaching and that low salary was also one reason they considered leaving the profession. When the new teachers gave their perceptions of a mentoring program, the school culture, and principal leadership, no correlation was found between teachers' satisfaction with the mentoring program and their decision to remain at the school site or in the school district. Although it was not clear how consistently the mentoring program was being implemented, most beginning teachers were satisfied with it. However, school culture and principal leadership did correlate with intent to remain at the school site. The more positively teachers felt about the principal and the school culture, the more likely they were to stay in their current teaching jobs. One key characteristic of effective principals in this study was the ability to create a school culture that valued PLCs and focused on instructional supports.

Principals as instructional leaders. Promoting a positive school culture is of critical importance for insuring retention of beginning teachers. The principal's leadership style is the dominant way in which school culture is promoted. The leadership styles of school administrators provide important insight into the culture of a school and its impact on beginning teachers' experiences. Several leadership styles have been highlighted in the literature, including that of instructional leader.

In case studies of induction at five school sites, Wood (2005) noted that instructional leaders visited novice teachers' classrooms and conducted formative evaluations of their teaching. Principals in elementary schools typically provide more feedback than secondary principals. In some cases, teachers reported that the principal modeled lessons for them. Principals who were effective with beginning teachers were characterized as instructional leaders who were not only caring and supportive of new teachers, but also had high expectations for teacher and student learning. Principals in this study supported beginning teachers in the following ways:

- offer on-site, novice teacher professional development workshops
- provide specific support for Back-to-School Night
- make sure novice teachers have sufficient textbooks and resources
- arrange lesson plan support and curriculum map planning
- attend site-based novice teacher meetings

- encourage and facilitate novice teachers and their mentors to participate in professional development activities together
- meet regularly with their site's mentors
- provide novice teachers' monthly breakfasts, dinners, and other events
- provide site-based discussions of novice teachers' professional development training program content.

Similarly, Flores (2004, 2006) conducted a longitudinal study of 14 novice teachers in Portugal, relying primarily on semi-structured interviews. She found that principals who displayed effective leadership were "knowledgeable, strong and goal-oriented, but at the same time, flexible, encouraging, supportive, helpful and close to staff" (2004, p. 309). Only 5 of the 14 beginning teachers in this study reported having a principal who was an effective leader. The other teachers characterized their school principals as "normative" (rule-bound, strict, bureaucratic, and inflexible) or "laissez-faire" (lack of rules, common vision, or organization). Flores also reported that in the schools where principals were ineffective, the school culture was characterized by balkanization, competition, and separation. In these schools, beginning teachers became isolated from their colleagues and had to "find their own way" when it came to learning about school policies, goals, and curriculum guidelines. Flores observed that over the 2-year period of her study, beginning teachers in schools with ineffective principals became more compliant and less enthusiastic about teaching. The quality of school leadership emerged as a key factor in determining the schools' culture and workplace conditions. The successful leaders in this study created professional communities of learners by encouraging participation in the decision-making process, promoting shared goals, and promoting a people-centered view of leadership.

In a qualitative study of 22 principals and beginning teachers in Ontario, Cherian and Daniel (2008) found that principals valued the role of instructional leader and agreed that it was an important part of their job responsibilities. However, they also reported that the challenges of the job did not allow them the time to serve effectively in this capacity. They noted that their time was often consumed with managerial tasks and little time remained for assisting beginning teachers in gaining new knowledge and skills in instructional strategies. Principals reported that their jobs were often "reduced to dealing with people during the day and paperwork at night" (p. 8). The pressures of dealing with parents, teachers unions, budgets, and day-to-day management of student and teacher behaviors often took precedence over more direct supervision and mentoring of new teachers. Cherian and Daniel concluded that instructional leadership must be a shared role and joint endeavor with others in the school, such as veteran mentor teachers.

School leaders also play a significant part as instructional leaders in creating a workplace that respects what new teachers bring to the school and promotes teacher collaboration and shared decision making. A national study of 5,088 first-year teachers using the Schools and Staffing Surveys [SASS] conducted by Weiss (1999) indicated that "school leadership and culture along with teacher autonomy and discretion were the strongest variables associated with 1st-year American teachers' feeling that it is worthwhile to exert their best effort, commitment to career path, and intentions to stay in teaching" (p. 865). Teachers who felt they had a say in choosing a curriculum, selecting textbooks, teaching techniques, and discipline methods reported a stronger commitment to the field. Weiss cautions that a top-down mandate to provide new teacher induction programs may not be responsive to the needs of new teachers if it is based on the premise that new teachers are ineffective and need "fixing."

Another critical part of being an instructional leader is the principal's role in conducting formal evaluations of beginning teachers. The research on induction programs highlights the need for providing ongoing and informal feedback in a nonthreatening way (e.g., Andrews et al., 2006); and teachers valued the input principals provided from informal visits and observations. This was also the case for many principals in the Wood (2005) study in which ongoing and informal formative evaluation was appreciated by novice teachers.

A qualitative study by Cole (1991) in a district in Ontario indicated the challenges four principals faced in supporting new teachers at the same time that they were expected to conduct formal evaluations of their work. The dual roles of helper and evaluator were uncomfortable for the principals and vice-principals in this study. As a way of managing some of the conflict with the supporter and evaluator role, principals talked about engaging beginning teachers in more self-assessment and design of their professional development. Principals also reported increasing the amount of time in informal visits and observations of new teachers in classrooms as a way to normalize a more formative evaluation process.

Principals who act as instructional leaders also assure that beginning teachers have access to high-quality professional development at the district and school site (Kardos et al., 2001). Effective principals encouraged self-assessments of beginning teachers and individualized professional development plans based on extended observations and formative evaluations of their instructional needs. Some principals reported attending professional development workshops with beginning teachers.

Principals as supporters of induction and mentoring programs. The specific roles principals play in induction has also been a focus of several studies (Brock & Grady, 1997; Cole, 1991; Wood, 2005; Wynn et al., 2007). Effective induction includes multiple components, such as well-matched mentoring, released time to work together, financial incentives for mentors, opportunities for collaboration and planning, teacher networking, administrative support, and professional development (AEE, 2004; Smith & Ingersoll, 2004). Principals can affect the quality of induction across all of these components, starting with their own initial interactions with potential teachers at the time of recruitment.

Wood's case study research (2005) reported that principals were actively involved in recruiting novice teachers and often attended job fairs. Novice teachers reported that meeting the principal and forming this first impression was the main reason they had chosen the school. Other novice teachers reported that word-of-mouth about the principal from friends was what brought them to the school.

One significant component of induction programs is mentoring by veteran teachers and administrators, and several states have mandated mentoring programs as part of the induction of new teachers (AEE, 2004). Principals often occupy a key role in overseeing mentoring programs. According to Wood (2005), one of the roles principals play in induction is as a coordinator of mentors. In her study, principals often served as liaisons with district-level induction coordinators. They received training on the district's induction program, attended professional development training for novice teachers, participated in matching mentors and mentees at their schools, and monitored mentor-mentee relationships in their schools.

In a study by Stanulis and Floden (2009), principals participated in specific seminars on how to support induction and mentoring. The 24 beginning teachers studied in these programs were assigned to either a treatment or control group. The treatment group received intensive mentoring and curriculum seminars on teaching content, classroom management, and motivation and scaffolding of student learning. Their university-trained mentors were intensely engaged in the mentoring process weekly, observing the beginning teacher, co-planning, and collecting and analyzing student data. The comparison group received the regular district induction intervention of orientation, after-school seminars, principal seminars, and mentors who were not matched by subject matter or trained by university staff. Beginning teachers in the treatment group made significant gains in teacher effectiveness as measured by the Atmosphere, Instruction/Content, Management and Student Engagement [AIMS] observation instrument. Although principals as a factor was not controlled in the study, the fact that they received specific seminar training was noteworthy.

In their survey study of beginning teachers and principals in Nebraska, Brock and Grady (1997) reported that principals used the following criteria to identify mentors: same grade level, close in age, master teachers, similar personalities, skilled teacher of adults, good listener, capable, knowledgeable, and friendly. However, some principals used random assignment or volunteering to guide their decisions on matches for mentors. Brock and Grady further noted the importance of mentor-mentee relationships and that random assignment or volunteering may be less effective. Since the qualities or skills required by mentors are often dependent on interpersonal characteristics, not all successful veteran teachers make good mentors. Brock and Grady further noted that few principals reported having the resources to provide extensive training for the mentors or to other administrators—a critical component of the success of the program. Principals must consider several variables in making matches, and "schools need to establish criteria for the selection of mentors, define mentors' roles, and provide training to meet role requirements" (p. 182).

Some researchers argue that forced, nonvolunteer relationships or buddy systems may not be the only or most effective way to support new teachers (Cole, 1991). In her qualitative study of 13 new teachers in Ontario, Cole found that informal relationships formed by beginning teachers with other teachers in the school were often as valuable as the relationship with a mandated mentor. The idea of self-socialization emerged as a strong theme in her interviews with beginning teachers. Cole argued that mentoring should be promoted via the formation of natural, collegial, and authentic relationships with coworkers and administrators. When the administrator as culture-builder creates a community of learners, authentic relationships are more likely to occur and less responsibility for making formal matches between mentors and novices teachers is necessary. In fact, instead of creating such assigned partnerships, Cole argues that principals should strive to create communities of learners within the broader school community, arguing that "When caring and helping become psychosocial and behavioral norms in the workplace, that is, the natural way of being and doing, there is no need to be concerned about the development of formalized programs of assistance and support" (p. 423).

The success of a mentoring program also relies on the ability of the mentor and mentee to meet on a regular basis. Wynn et al. (2007) reported that a large percentage of beginning teachers in their study reported being observed less than 3 hours during the school year. These novices rarely had the opportunity to observe their mentors and did not share a common planning period. To counter feelings of isolation, the principals in Cole's (1991) study reported using "non-

negotiable" opportunities for beginning teachers to observe other teachers' classrooms. Principals made sure to structure time for frequent and high-quality observations and time to debrief about what the novice teacher had learned. In the study by Cole, the vice principal provided coverage of beginning teachers' classes to allow time for novices to observe other teachers. Substitutes and preservice students at local universities were also used to support creating these opportunities for new teachers.

Several researchers have suggested that effective principals can buffer beginning teachers from undue stress and hardship during the induction period by protecting them from heavy workloads, reducing duties that interfere with teaching and providing time for planning and collaboration with mentors and other school staff (Wynn et al., 2007). As stated earlier, Andrews et al. (2006) found that among the supports that were valued but not necessarily provided to teachers were the opportunity to observe other teachers and co-planning time. Wynn and his colleagues (2007) concluded that principals must assure that mentoring programs are structured for co-planning, frequent and high-quality observations, and time to engage in dialogue about teaching. Further, the research on beginning teachers' assignments indicates that they are often placed in classrooms with the most difficult students, given fewer resources, and provided the least desired school duties and schedules (Kardos et al., 2001). This may result in attention shifts on the part of novice teachers from high-quality instruction to day-to-day survival.

Difficult assignments and related hardships of teaching are sometimes more pronounced for beginning SETs. The next section of the paper addresses the role of principals relative to their induction.

The Role of Principals in Special Education Induction

The three aspects of principal support for induction—promotion of school culture, instructional leadership, and direct support of induction activities—apply to the early experiences of beginning GETs and SETs alike. Despite the similarity of many dynamics of induction for GETs and SETs, persistent and severe problems with the retention and attrition of new SETs suggest that they may face different obstacles than GETs (Billingsley et al., 2004) and that their induction may require some special considerations.

The quality of the relationship with school administrators is as important to beginning SETs (Billingsley et al., 2004; Schlichte et al., 2005; Singh & Billingsley, 1998; Whitaker, 2001) as it is to beginning GETs. Like GETs, one of the main reasons SETs state they are leaving the profession is lack of support and cooperation from administrative personnel (Billingsley & Cross, 1991; Brownell et al., 1997). Further, as is the case with beginning GETs, school culture, instructional leadership, and mentoring support all influence beginning SETs' job satisfaction, well being, and commitment to staying in teaching. However, several issues differentiate the induction experiences of special educators from general educators.

Novice SETs come to the school environment under slightly different circumstances than novice GETs. They are hired to teach students in different disability groups (e.g., high-incidence or low-incidence) and in different settings (e.g., self-contained, resource, or general education). They are usually outnumbered by GETs. Depending on their job duties, they can be left to function independently of the other staff. Such feelings of isolation, coupled with the feeling that they are ancillary to the core work of the school, can begin a cycle of stress, dissatisfaction, and

discouragement for continuing to teach (Schlichte et al., 2005). The principal who understands the stresses faced by beginning SETs and fosters a school culture that supports all teachers can help prevent the negative cycle new SETs often experience.

Although much has been written on the administrator's role in influencing the retention of SETs (Billingsley & Cross, 1991, 1992; Brownell et al., 1997; Cross & Billingsley, 1994; Gersten, Keating, Yovanoff, & Harniss, 2001; Littrell, Billingsley, & Cross, 1994; Miller, Brownell, & Smith, 1999; Westling & Whitten, 1996), there are fewer studies on the role that administrators play in the induction and retention of beginning SETs. For the five studies directly addressing this issue in special education, we drew on the same framework used for analyzing the studies in general education and highlight the research findings relevant to the induction of novice SETs.

Principals as promoters of school culture. School climate and culture significantly influence beginning SETs' satisfaction with their jobs. In a national study of 11,053 beginning SETs, Billingsley et al. (2004) reported that teachers who reported higher school climate scores were more likely to remain in the profession until retirement.

Beginning SETs' introduction to the school in the first days on the job can set the tone for how welcomed and included they are in the school's culture and workplace. As noted in the general education literature, orientation to the school and an understanding of district and building policies and procedures is important for beginning teachers (Brock & Grady, 1997; Quinn & Andrews, 2004). Similarly, in a survey of 156 first-year teachers in South Carolina, Whitaker (2000, 2003) reported that beginning SETs found that providing assistance with the mechanics of the job was rated as one of the most effective areas of their mentoring programs. Understanding the mechanics included an orientation to district and building policies and procedures, working with other staff, and locating resources. Whitaker states that focusing on the mechanics of the job "may be an even greater problem in special education where the paperwork, rules, and regulations can become overwhelming" (2000, p. 562).

The influence school leaders exert on school climate that has been well established in the GET research is also a factor with SETs. Billingsley et al. (2004) found that SETs felt their jobs were overwhelming not just related to the academic and/or behavioral challenges of teaching students with disabilities, but also to the required paperwork load related to special education compliance. They noted that principals were instrumental in helping to design working conditions for beginning SETs, such as insuring that teachers have access to teaching materials and are provided reasonable caseloads and workloads. To improve working conditions for beginning SETs, Billingsley and her colleagues suggest that principals provide some basic supports: appropriate instructional materials, suitable classroom space, reasonable caseloads, realistic access to formal and informal support, time for meetings, and clerical support for paperwork.

Whitaker (2000) observed that the working conditions were especially challenging for some beginning SETs. In some cases principals hired beginning SETs to teach students with disabilities that they were not certified or prepared to teach, putting them at risk for stress, job dissatisfaction, and possible withdrawal from teaching. Due to continuing teacher shortages in special education, however, this situation is exacerbated. Principals may have few options in hiring special educators who are often certified in noncategorical areas PreK-12.

Principals as instructional leaders. The principal's role as instructional leader for beginning SETs can be especially challenging. In a qualitative study of administrator supervision in nine elementary schools in three rural Virginia school districts (Bays, 2001), over 50% of building principals held sole responsibility for supervising and evaluating SETs generally, while 40% of principals shared this responsibility with assistant principals, special education directors, or a combination of district-level supervisors. As more and more principals focus on instructional leadership, they find themselves struggling with how to best serve the instructional and psychological needs of diverse teachers, especially in special education (Billingsley et al., 2004). In addition to providing instructional supports, school principals may also be responsible for both summative and formative evaluations of all instructional staff within the building—often observing SETs during an instructional lesson and providing feedback for instructional practice, One way principals can support beginning teachers is by creating communities of learners where school administrators and teachers can discuss issues such as instruction and discipline.

For beginning SETs, it may be difficult to feel part of a community of learners if principals do not understand what SETs do (Billingsley et al., 2004). It is often the case that principals have some understanding of special education regulations, legal policies, and administrative procedures. However, few principals have had preparation in instructional or behavioral strategies for teaching students with disabilities. In fact, Billingsley et al. found that few principals and district-level consultants or supervisors provided suggestions to beginning SETs on ways to enhance their teaching effectiveness. Whitaker (2000) also found that although beginning teachers ranked assistance with curriculum/instruction, discipline, and management among the top five areas of need, they reported not receiving this assistance.

If principals do not have sufficient instructional background in special education, they must rely on distributed leadership from veteran SETs or district-level staff to provide instructional support and assist with evaluation of beginning SETs. Singh and Billingsley (1998) found that peer support had a significant impact on beginning teachers' professional commitment, and principals' leadership influenced peer support. They state that "when principals' leadership is perceived as strong and positive, teachers are more likely to work cooperatively and share a common sense of purpose" (p. 237). This finding underscores the role of principal as instructional leader within a distributed leadership model. Principals must find ways to engage peers from within the school to help new teachers—general and special education alike—with instructional supports. Simply relying on SETs or administrators invites the risk of isolating novice special educators, but at the same time principals must seek balance in assisting new SETs in developing skills across general and special education.

Few studies have addressed the role of the principal in evaluation and appraisal of SETs. Singh and Billingsley (1998) reported that when principals provided fair evaluations (1 of 10 indicators of principal support), beginning SETs were more committed to the profession. Billingsley et al. (2004) reported that beginning SETs received little feedback on their teaching from central office administrators or principals, indicating a possible absence of appraisal procedures during the induction period. Although there is little reported in the research on the evaluation of beginning SETs, the research on beginning GETs and the findings discussed above related to peer support suggest that principals should use a formative evaluation approach that is nonthreatening and that is conducted in partnership with mentors, peer teachers, and district-level supervisors.

Principals as supporters of induction and mentoring programs. The principal's role in facilitating and assisting with mentoring for beginning teachers can differ substantially when working with a new SET. Mentoring of new special educators may be provided by an off-site, district-level supervisor, such as the director of special education services (Billingsley et al., 2004). This arrangement can be challenging and may not provide SETs with necessary information on how to access day-to-day support for instruction and classroom management within their school setting.

For beginning SETs whose mentor is at the school site, little is known about the nature of these mentoring activities. Billingsley et al. (2004) surmised that many new SETs might have participated in mentoring programs for all the new teachers in their school but did not receive programs that were tailored to their specific needs as special educators. Not surprisingly, SETs did not find formal mentoring programs helpful. However, they did find informal support from colleagues helpful. They reported turning to other teachers more than to principals to help them with instructional feedback.

Schlichte et al. (2005) conducted case studies of five beginning SETs in their 1st year of teaching to understand their experiences. Of these, three resigned at the end of the year. Lack of support and collegiality from mentors and administrators was partly the reason for their departures. One beginning teacher spoke with her mentor only three times during the year.

In the Whitaker study (2000, 2003) of 156 first-year teachers in South Carolina emotional support, materials and resources, system information pertaining to the school and the district, as well as system information pertaining to special education, were important to the teachers' satisfaction with the mentoring program. Whitaker also found a positive correlation between the overall helpfulness of the induction program and the intent to stay in teaching. When asked about qualities of the mentors, beginning SETs viewed knowledge of special education as the most important characteristic.

These findings raise the issue of the selection and matching of mentors for beginning SETs. Is an on-site mentor who is not in special education better than a special education mentor who is off-site for beginning teachers? Whitaker (2000, 2003) contends that selecting a mentor who has a special education background is more important than selecting a mentor at the same school. Yet her study revealed that 33% of the beginning teachers were not paired with special education mentors. For those SETs, the personal characteristics of the mentor (e.g., approachable, trustworthy, supportive/patient, sensitive, confident/enthusiastic) outweighed the lack of professional background in special education.

Whitaker (2000, 2003) also suggests that principals consider co-mentoring models of induction, where one on-site mentor and one special education mentor at another school site work collaboratively to assist the beginning SET. This arrangement appears to be one way to address the problem of dual socialization of novice SETs raised by Pugach (1992).

Finally, Billingsley et al. (2004) found that beginning teachers valued informal supports more than formal mentoring supports. More than half of the teachers surveyed had formal mentoring programs available to them. However, consistent with the position suggested by Cole (1991) early in the discussion of various forms induction might take, informal supports were more valued than the formal mentoring program. Whitaker (2000, 2003) similarly found informal

supports more helpful for beginning SETs. Billingsley and colleagues further note that other teachers provided more support than central office administrators or principals. Like their general education colleagues, support is important but beginning teachers are most likely not receiving it from the principal or district office administrator (Billingsley et al.; Cole, 1991). The results of the research on supports seem to indicate that principals must do a better job of interacting with beginning teachers and, perhaps most important, facilitate opportunities for teachers to meet and discuss their work in both formal and informal venues with skilled and supportive colleagues in their buildings. Further, it may be useful for principals to consider implementing a team approach to mentoring, where a mentor works with teams of beginning teachers that include novice SETs.

Implications of Research on Principals and the Induction of SETs

Research on the role of principals in the induction of beginning general and special educators reveals a complex and challenging scenario in today's schools. There is no doubt that the support of principals, who have responsibility for creating schools as positive work environments, strongly influences beginning teachers' satisfaction with their jobs and their intent to remain in teaching. The increased attention to induction and mentoring programs in recent years creates an opportunity for school leaders to reevaluate their school culture and organizational structures to accommodate the important work of supporting new teachers. The importance of promoting a school culture that builds professional capacity for all teachers is clear. Specific strategies for building those cultures are beginning to be identified (Billingsley et al., 2004; Schlichte et al., 2005; Whitaker, 2000, 2003).

Situating induction and mentoring programs within collaborative school cultures appears to be critical. The practice of integrating the induction of new teachers into the natural part of the work of schools is supported by many of the studies reviewed in this section. The Kardos et al. paper (2001) emphasizes this point:

> This joint endeavor, in which novice and veteran teachers embark together on the collective mission of educating all students in their school, calls for leadership by both the principal and teachers. This kind of leadership facilitates collaboration and teamwork, is supportive and embedded in the work and life of the school, and has as its primary focus the improvement of teaching and learning. It may well determine whether the next generation of teachers succeeds or fails in our nation's classrooms. (p. 283)

Studies on this critical period of a new teacher's professional life indicate that successful induction and mentoring programs are multifaceted. The factor that appears to be most important in supporting beginning teachers is the personal and informal relationships they develop with principals and colleagues. The power of those relationships on beginning teachers' perceptions of "how things are going" is striking. Studies of successful induction programs also reveal that principals need to attend to multiple support mechanisms for beginning teachers in their schools, including informational, instructional, and appraisal supports. As instructional leaders, principals must foster a community of learners that sustains a process of reflection, collaboration, and inquiry between beginning and veteran teachers (Flores, 2004, 2006).

But the hard work of assuring that beginning teachers are supported and retained in schools cannot fall solely on the shoulders of the principal. Principals are being asked to assume more

and more responsibilities, frequently without adequate support, guidance, or professional development (Cherian & Daniel, 2008; Cole, 1991; Wood, 2005). Responsibility for induction of new teachers must be distributed across district and school staff (McLeskey & Waldron, 2002b).

Whitaker (2000) points out that "simply mandated mentoring and induction programs at the state level is not enough" (p. 563). The implementation of these mandates is often left to principals and district administrators who may have little preparation in induction and mentoring for beginning teachers. In fact, only one study reviewed in this section reported on specific workshop content that was targeted for principals. Stanulis & Floden (2009) reported that principals attended seminars on "learning about ways to help beginning teachers thrive, ways to provide substantive feedback to beginning teachers, and ways to think about fostering educative mentoring in their buildings" (p. 116). It appears critical that principals engage with all aspects of induction and mentoring through principal accreditation programs and through their ongoing professional development (Quinn & Andrews, 2004; Wood, 2005). Such training should include the special challenges faced by new SETs and the relationship between their socialization to the school site and their practice as special educators.

Furthermore, professional development in the area of special education practice itself seems essential for principals working with beginning SETs. Although most principal accrediting programs prepare administrators to understand the policies and regulations associated with special education, it is not clear whether principals are knowledgeable about instructional developments in special education, in particular, the evidence-based instructional and behavioral strategies that are commonly being implemented in practice. Developing PLCs on induction of beginning teachers for principals and district administrators would appear to be a promising practice.

Limitations of the Research

With the exception of three studies (Billingsley et al., 2004; Singh & Billingsley, 1998; Weiss, 1999), most of the research reviewed about the principal's role in induction was based on small to moderate samples of principals, mentors, and beginning teachers and may not be generalizable to larger populations. The methodologies most widely used involved survey research and qualitative case analyses. Generally, the research did not reflect rigorous designs. For example, participants in many survey studies were not randomly selected from a larger pool, and the return rates were sometimes very low. Surveys relied primarily on self-report and retrospective reconstruction of prior events. Also, several survey instruments had not been evaluated or field-tested for psychometric properties.

Many qualitative studies did not address issues of trustworthiness and credibility of the data. Additionally, four of the studies were conducted outside of the U.S. (Portugal and Ontario) and might not generalize to the population of teachers in the U.S.

Implications for Future Research

Although several articles addressed recommended practices for the principal's role in the induction of beginning teachers in general and special education, few provide an empirical basis for recommendations for implementation or practice (Wood, 2005). Most of the literature

provides insight into the issues of induction from a conventional wisdom perspective. The few empirical studies reviewed in this section of the paper do provide some guidance on directions for future research. In general, the research conducted on administrators and beginning teachers indicates that not only the activities associated with the induction programs are important, but also the quality of the day-to-day interpersonal interactions and demeanor of the principal with the novice teachers (Wood). As Flores (2004) notes,

> Research has identified the common traits of successful leaders in fostering the building of professional communities of learners at school, amongst which are the promotion of shared goals, a sense of self-efficacy and self-worth amongst staff, the development of collaborative cultures with opportunities for authentic participation in the decision-making process, the centrality of personal values, the ability to manage tensions and dilemmas, a people-centered view of leadership and a sense of vision. (p. 314)

Studies reviewed in this section of the paper suggest that the next generation of research in this area should include the following topics:

- research on how beginning SETs are supervised and directed across school contexts (e.g., elementary, middle, secondary, rural, urban) models of service delivery (e.g., resource, self-contained, co-teaching), and disability categories
- research that identifies specific leadership roles and practices of principals who most effectively promote beginning teacher retention
- research that investigates how principals foster PLCs and establish school climate and culture that is conducive to building learning communities and the impact it has on beginning teachers across special and general education
- research that explores ways to intervene and assist district leaders, special education coordinators, principals, and mentors in the induction process through professional development activities that are reflective of the intersections of support across novice general and special educators
- research that continues to evaluate the implementation of induction and mentoring programs
- research on the impact of school-university partnerships on induction of beginning teachers.

THE RELATIONSHIP BETWEEN PROFESSIONAL DEVELOPMENT AND COLLABORATION

There are many purposes for conducting professional development (Joyce & Showers, 2002; Lang & Fox, 2003). Professional development may be conducted to raise the awareness of or provide knowledge to participants regarding a new law, such as No Child Left Behind [NCLB], procedural issues such as implementing a new IEP [Individualized Educational Plan], or a new practice such as Response to Intervention [RtI]. A second purpose of professional development may be addressing beliefs or understandings of participants about critical educational issues. This type of professional development could address teacher understandings about students from different cultural backgrounds or beliefs regarding students with disabilities and inclusion. A third purpose of professional development is to provide participants with new skills or strategies for instruction (e.g., strategies for teaching phonemic awareness). This professional development may or may not emphasize the use of these skills in the classroom (Joyce & Showers).

This section of the paper focuses on professional development that is designed to provide teachers with new skills and strategies used in classroom practice. This focus is taken because improving teacher practice has been shown to increase the retention of beginning SETs (Billingsley, 2004; Gersten et al., 2001) and improve student outcomes (Englert & Rozendal, 2004; Fuchs & Fuchs, 2001). Initially, we provide an overview of professional development research in general and special education. This is followed by a review of approaches to professional development that have typically been used in the past, continue to be widely used today, and rarely lead to changes in teacher practice. We then move to a review of the general education literature regarding new forms of professional development that result in teacher use of practices in the classroom. Finally, we review and discuss research from special education that has addressed the use of professional development to facilitate teachers' use of new strategies in their classrooms or schools. A summary of specific studies discussed in this section of the review is included in **Table 3**.

Overview of Professional Development Research

Most research on professional development has been conducted with GETs. Only in recent years have studies of professional development begun to appear in the special education literature (e.g., Englert & Tarrant, 1995; Greenwood, Tapia, Abbott, & Walton, 2003). Much of the research in special education on this topic has been influenced by the limited use of evidence-based practices by SETs (Gersten, Vaughn, Deshler, & Schiller, 1997). Thus, research on professional development in special education has primarily emphasized increasing the use of certain evidence-based practices in classrooms.

While the professional development research in special education is much more limited than the research in general education, our findings across both of these areas were similar. This research indicates that expert-centered professional development [ECPD] (i.e., requiring teachers to "sit and get" information from an expert, then apply this information in their classrooms with little or no support) is largely ineffective in changing teacher practice in both general and special education (Joyce & Showers, 2002; Lang & Fox, 2003). In contrast, research in both areas reveals that newer forms of learner-centered professional development [LCPD] have shown great

promise for improving teacher practice (Desimone, 2009; Klingner, 2004; Wayne, Yoon, Zhu, Cronen, & Garet, 2008).

One final clarification seems merited before addressing ECPD and LCPD. In both forms of professional development, an expert is often involved to provide knowledge for participants. However, in LCPD, the expert takes a more collaborative and supportive role with the expectation that participants will collaborate regarding the use of knowledge that is provided regardless of the source. In ECPD, knowledge is typically viewed as "fixed" information that is transmitted to participants, although in LCPD, knowledge is collaboratively examined and critiqued and then the teacher makes a decision regarding whether and how to use the knowledge in their classroom.

Expert-centered professional development [ECPD]. Most ECPD provided for teachers takes an empirical-rational approach to change (Chin & Benne, 1985; Richardson & Placier, 2001). This approach assumes that teachers are passive recipients of innovative instructional strategies and that improving classroom practice is a matter of disseminating strategies that have been demonstrated to be effective. It is noteworthy that in this approach experts from outside the classroom (often educational researchers) have the power over change. Moreover, it is assumed that once teachers find out about innovative strategies that improve student outcomes, they will use these strategies in their classrooms.

Within this framework, professional development takes the form of knowledge dissemination to teachers. To achieve this goal, an outside expert who is familiar with an innovative practice presents information to teachers using written materials, lecture, demonstrations, and/or practice over a relatively short period of time. There is typically little follow-up once a professional development session is completed, and teachers receive little or no support in implementing the strategy in the classroom. This occurs because teachers are expected to implement the strategy exactly as it is presented, with few or no adaptations to account for teacher preferences or the context of the classroom (Duffy & Kear, 2007). This is meant to ensure treatment fidelity and the effectiveness of the practice. If teachers do not implement an innovative practice precisely as it has been presented, they are viewed as resistant and perhaps recalcitrant (Richardson & Placier, 2001).

Much evidence indicates that the expert-centered approach to professional development has not been effective in changing classroom practice (Boyle, While, & Boyle, 2004; Butler, Lauscher, Jarvis-Selinger, & Beckingham, 2004; Joyce & Showers, 2002; Little, 1993; Richardson & Placier, 2001; Sprinthall, Reiman, & Thies-Sprinthall, 1996; Waldron & McLeskey, in press). For example, in a review of research on professional development, Joyce and Showers found that short-term knowledge dissemination ("sit and get") types of professional development result in knowledge and skill development for some teachers especially when demonstrations and opportunities to practice instructional strategies are used, but this information is rarely used in the classroom.

Butler and colleagues (2004) suggest that ECPD fails because it results in shallow, surface-level knowledge of instructional strategies that promote little sustained use of innovations. Little (1993) concurs and further notes that expert-centered forms of professional development are ineffective given the complexity of changes required in classrooms to meet high academic standards.

Expert-centered forms of professional development are also based on faulty assumptions regarding the nature of professional knowledge and how to bridge the research-to-practice gap (Butler et al., 2004; McLeskey & Waldron, 2004; Waldron & McLeskey, in press). For example, these models of professional development tend to be built on the assumption that formal knowledge (e.g., evidence-based practices) is the purview of outside experts (often researchers), while the role of teachers is to implement these practices. However, "an alternative view is that both teachers and researchers bring combinations of formalized and practical knowledge to classrooms as they seek to make instructional change" (Butler et al., p. 437). This suggests the need to combine the expertise of researchers and teachers in developing and implementing innovative classroom practices (McLeskey & Waldron).

Research findings in special education have been strikingly similar with regard to the use of ECPD and the failure to translate research-based strategies into classroom practice (Klingner, 2004; Lang & Fox, 2003; McLeskey & Waldron, 2002a). As Klingner notes, these "sit and get" professional development activities which involve passive teacher participation are marginally successful at best. This has led to widespread concern in the field regarding the lack of research-based practices that are used in classrooms (Browder & Cooper-Duffy, 2003; Cook & Schirmer, 2003; Gersten et al., 1997; Vaughn & Linan-Thompson, 2003).

In spite of widespread concerns regarding the lack of effectiveness of ECPD, research has shown that many school districts and state departments continue to rely on this form of professional development. For example, in a study using a national sample to examine professional development practices related to instruction in math and science, Porter and colleagues (2000) found that the quality of typical professional development offered nation-wide was not high and that this quality varied across teachers and settings. More specifically, they found that more than three of every four teachers only participated in short-term professional development that did not offer active learning opportunities and did not include the collaborative participation of peers. Using a national sample, research by Choy and colleagues (2006) had similar results. These investigators found that most professional development was short-term and did not reflect research on high-quality professional development.

In sum, it has proven much more difficult than anticipated to provide teachers with professional development that influences classroom practice. Expert-centered forms, which have been largely ineffective in this regard, result in few changes in classroom practice and seem to have limited utility in improving teacher practice to a level that reduces teacher attrition and improves student outcomes. These poor outcomes have led to the development and study of new forms of professional development that are significantly more effective in facilitating change in teacher practice (Desimone, 2009; Joyce & Showers, 2002; Lang & Fox, 2003; Richardson & Placier, 2001). Increasingly, these new forms of professional development are being used in school districts across the U.S. (Choy et al., 2006; Porter et al., 2000).

Normative-reeducative professional development. Professional development that facilitates the use of innovative instructional approaches in the classroom reflects a theoretical perspective that contrasts sharply with the empirical-rational approach that underlies ECPD. Chin and Benne (1985) have called this alternative framework *normative-reeducative*. Perhaps the most significant difference in these two approaches is the source or direction for change. When the empirical-rational approach is used, the source of change comes from outside the

classroom, while the normative-reeducative approach finds direction from those involved directly in teaching (Richardson & Placier, 2001).

The normative-reeducative approach to professional development is based on the concepts of personal growth and collaboration. This approach also assumes that teachers actively construct knowledge based on their past experience, the context of their classrooms, and the instructional strategies they are considering. As this occurs, teachers are active participants in identifying, learning about, adapting, and using instructional strategies to improve classroom practice. Given this approach, it is taken for granted that teachers have the power over change in their classrooms and may choose to share this power with collaborators (either other teachers or outsiders) who work with them to improve practice. Professional development then becomes a collaborative endeavor involving a group of teachers and others who can contribute to teacher learning and improved practice.

Learner-centered professional development [LCPD]. Much research has been conducted on new forms of professional development that facilitate the use of innovative practices in the classroom and integrate the roles of the researcher with classroom teacher in improvement efforts. This research, which until recently had targeted almost entirely GETs, has resulted in a consensus regarding a general approach to professional development that fosters instructional innovations (Boyle et al., 2004; Desimone, 2009; Elmore, 2002; Hawley & Valli, 2000; Joyce & Showers, 2002; Lawless & Pelligrino, 2007; Richardson & Placier, 2001; Sprinthall et al., 1996). This type of professional development has been called *learner-centered professional development* (Hawley & Valli). The components of a general approach to LCPD that often results in changes in classroom practice (Desimone, 2009; Joyce & Showers, 2002) are described below.

One component is a focus on knowledge that provides teachers with a deep understanding of an innovation, including a theory or framework underlying the innovation, a rationale for the use of the innovation, and how the innovation may be appropriately adapted to the needs of the teacher's classroom and students. In addition, evidence related to teaching math and science reveals that a focus on both content and how students learn that content is a critical feature of professional development. Lectures, readings, and discussion are used as teachers initially explore this information.

Along with a focus on knowledge, professional development activities should include demonstration or modeling of the innovation in a context that simulates the classroom. Videos of classroom instruction may be used to demonstrate or model a strategy, followed by discussion of the strategy. These activities facilitate gaining in-depth knowledge and understanding about the use of the innovation.

Teachers should practice the innovation under simulated conditions (e.g., using peer teaching), approximating the workplace as closely as possible to facilitate use of the practice in the classroom.

The focus of professional development should be consistent with teachers' knowledge and beliefs as well as with policies related to school reforms, standards, and accountability that influence the local school context. Professional development should be of sufficient duration to ensure that teachers gain deep knowledge of the innovation.

Teachers should collectively participate in professional development with other professionals who share similar interests and knowledge. This could include collaborative groups who meet as teachers are implementing an innovation to provide support through problem solving, responding to questions, modeling the use of the innovation, discussing adaptations that may be appropriate, and providing in-depth knowledge of the innovation. These activities provide teachers with the opportunity to reflect on and learn about when and how to use the innovative practice in ways that benefit students. A widely used collective approach to professional development is peer coaching, which provides ongoing, classroom support for teachers as they implement innovations.

In a research review, Joyce and Showers (2002) found that when there was a focus only on knowledge in a professional development activity, just a few teachers gained a thorough or deep knowledge of the innovation. Adding peer coaching significantly increased the number of teachers with deep knowledge. When demonstration and practice were added, the teachers with deep knowledge gained significantly. Looking at later use of the innovation in the classroom, the first three components—knowledge, demonstration, and practice—resulted in very limited use. Again, adding peer coaching significantly increased the number of teachers who used the practice.

Other reviews of research have reached similar conclusions (Birman, Desimone, Porter, & Garet, 2000; Desimone, 2009; Richardson & Placier, 2001; Sprinthall et al., 1996). These reviews note that while knowledge, demonstration, and practice are needed to gain a deep knowledge of an innovative practice, in-class coaching significantly increases the use of a practice in the classroom (Sprinthall et al.). Richardson and Placier found that LCPD was effective in facilitating the classroom use of new practices for many teachers. Offering the caveat that this approach does not work with all teachers, they note that some teachers prefer to learn about practices that they may immediately use in their classrooms rather than being offered the option of reflecting on practices and developing alternatives.

Research in general education has provided strong support for LCPD that facilitates the use of classroom innovative practices. In recent years, working with both GETs and SETs, special educators have begun to investigate these issues and address the use of innovative practices that are widely supported as effective in the special education professional literature.

Effectiveness Research on LCPD in Special Education

Over the last decade, professional development that addresses the use of innovative practices in the classroom has become a topic of interest to special education researchers (Klingner, 2004; Lang & Fox, 2003; McLeskey & Waldron, 2002a). This interest seems to have been precipitated primarily because of the dearth of documented, research-based practices in special education that are being used (Cook & Schirmer, 2003). This problem, which seems to be pervasive across disability categories and age levels (Browder & Cooper-Duffy, 2003; Odom & Wolery, 2003; Vaughn & Linan-Thompson, 2003), has been characterized as a research-to-practice gap (Gersten et al., 1997) or the lack of sustainability of research-based practices (Klingner, Vaughn, Hughes, & Arguelles, 1999).

Recently special educators have recognized that ECPD does not facilitate use of innovative practices in the classroom (Klingner, 2004; Lang & Fox, 2003; McLeskey & Waldron, 2002a,

2002b, 2006). For example, Klingner noted that the majority of professional development activities in special education that involve passive "sit and get" types of formats are marginally successful at best. McLeskey and Waldron (2002a) concur with this perspective that professional development in special education is often ineffective because of a failure to take into account the complexities of the classroom and the culture of the school. Finally, Lang and Fox note that typical professional development in special education involves the dissemination of information with little follow-up as teachers implement these new practices. They suggest that these activities are often piecemeal, addressing a series of disconnected topics, and lack the necessary in-depth focus on specific topics to ensure that teachers gain a deep knowledge of practices.

Given the lack of success of ECPD in special education, many special educators have begun to examine the potential of different forms of professional development to facilitate the use of innovative practices in classrooms (Klingner, 2004; Lang & Fox, 2003; McLeskey & Waldron, 2002a). These efforts have primarily addressed the extent to which research-based practices can be implemented in general education classrooms and how this implementation can be sustained over time (e.g., Klingner et al., 1999).

These studies include comparisons of ECPD and LCPD, in-depth case studies of learner-centered professional development, and collaborative forms of professional development involving researchers and teachers. A review of this research is followed by a summary of its implications for the practice of professional development as well as directions for future research in special education.

Comparison studies. Two investigations in special education have compared ECPD with new forms of professional development that include knowledge, demonstration, practice, and coaching (Boudah, Blair, & Mitchell, 2003; Little & Houston, 2003). Boudah and colleagues studied an Authentic Professional Development [APD] model to prepare teachers to use a learning strategy called Unit Organizer. The Unit Organizer strategy is part of a series of learning strategies that have been developed by Deshler and colleagues and documented as effective (e.g., Lenz & Deshler, 2004). One group consisted of 13 teachers who participated in ECPD using this strategy. These teachers met at a site away from their schools and participated in 5.5 hours of professional development that included a description of the strategy and how it can be used in the classroom. This professional development did not include modeling, teacher practice, feedback, or follow-up.

A second group of 44 teachers participated in APD in their local schools. These teachers initially met with the researchers to define instructional needs and select a strategy that would be the focus of professional development collaboratively. Teachers then participated in 1.5-2 hours of professional development that addressed knowledge and demonstration of the strategy and a debriefing session after the professional development. Teachers then practiced the routine over the next 2 weeks with feedback from the trainer. Finally, the trainer met as needed with individual or small groups of teachers to problem solve and modify the strategy.

At the end of the school year, teachers who participated in the two types of professional development were surveyed regarding their use of the Unit Organizer Strategy. Among teachers in the APD group, 95% reported using the Unit Organizer Strategy, while only 38% of teachers participating in ECPD reported using this strategy. In addition, 36.4% of teachers who

participated in the APD reported using the Unit Organizer Strategy more than once, while only 8.3% of those who participated in ECPD used the strategy more than once.

In a similar study, Little and Houston (2003) investigated the influence of professional development on classroom use of strategies as part of a state-wide project in Florida. Initially these investigators identified a menu of evidence-based practices in the area of phonological awareness. Professional development was then offered to teams of teachers in local schools where strategies for addressing phonological awareness had been identified as a major need. These teachers participated in institutes that used "the knowledge of effective professional development and adult learning theory (e.g., modeling the instructional practice, providing time for processing and practicing, delivering necessary materials)" (p. 79). These institutes included emphasis on knowledge of the strategy, modeling, and practice by teachers in using the strategy. Teachers then developed an implementation action plan and were provided support by project staff that included coaching during the early implementation of the strategy.

Little and Houston surveyed over 200 teachers within 1 year after completing the institutes. More than 75% of these teachers reported using one of the phonological awareness strategies included in the institutes. This compared to only 10% of participants who reported implementation of strategies in previous professional development institutes that did not include peer coaching.

These studies provide support for the components of professional development that are described by Joyce and Showers (2002) as important to ensuring the use of innovative strategies in the classroom, i.e., knowledge, demonstration, practice, and peer coaching. However, in both studies, the extent to which strategies were used in classrooms is based on teacher report and not on observation of teachers using the strategies. We next review several research reports that include detailed studies of smaller groups of teachers and direct observation of teachers using strategies. These studies provide further insight into the effectiveness of learner-centered professional development in facilitating the classroom use of innovative strategies and may have implications for the relationship between models of professional development and establishing PLCs in schools.

Case studies. As part of the Elementary and Middle School Technical Assistance Center [EMSTAC], Gersten and Dimino (2001) worked with two school districts in Oregon to bring research-based practices into general education classrooms. The authors report on two descriptive case studies of professional development conducted at one middle school and five elementary schools. At the middle school level, a change agent from the EMSTAC Project worked with all social studies and language arts teachers in grades 7 and 8. To determine a goal for their work, a needs assessment was conducted, as well as interviews with teachers and administrators. A general goal related to the need to increase the reading fluency and comprehension of students was collaboratively developed.

After determining a general goal for professional development, the change agent worked with the teachers to determine a strategy that would be used. The group decided to use Peer Assisted Learning Strategies [PALS], an evidence-based approach to peer tutoring (Fuchs et al., 1994) that may be used to promote both fluency and reading comprehension. The change agent and a mentor teacher from the middle school (who had experience using PALS) trained the teachers in

PALS, including knowledge and rationale, modeling, practice, and coaching support in the classroom. After 2 years, all 12 teachers were using PALS.

Gersten and Dimino (2001) conducted similar LCPD activities with 16 elementary teachers in kindergarten and first grade across five schools. The collaboratively determined goal of this work was to provide more explicit instruction in reading in the primary grades to address students' reading problems. To address this goal, the change agent worked with the teachers to rethink the literacy curriculum and to select a phonemic awareness program for use with their students. After selecting a program, *Phonemic Awareness in Young Children: A Classroom Curriculum* (Adams, Foorman, Lundberg, & Beeler, 1998), the change agent worked with teachers to learn about the program and address implementation issues. At the end of 2 years, all 16 teachers were using the phonemic awareness program.

In a similar study, Greenwood and others (2003) worked with 16 teachers and the principal in one elementary school to facilitate the implementation of evidence-based literacy practices. The researchers and teachers met to develop a common goal for this work, which addressed improving student learning, including the rate of acquisition and mastery of academic skills. The authors provided LCPD activities regarding evidence-based practices (e.g., class-wide peer tutoring, partner reading), as well as in areas of individual interest to teachers (e.g., phonemic awareness instruction). The professional development consisted of providing a rationale and in-depth information as well as modeling and practice of the strategies. Teachers were then provided with support in their classrooms as strategies were implemented and adapted to the particular needs of their classrooms. By the end of their 3-year project, teachers had successfully implemented 13 evidence-based practices in their classrooms. These practices included class-wide peer tutoring, partner reading, reciprocal teaching, writer's workshop, and phonemic awareness. Student evaluation data revealed that these strategies significantly improved students' reading comprehension but did not result in significant improvement in reading fluency.

Vaughn, Hughes, Schumm, and Klingner (1998) conducted professional development with seven teachers from two elementary schools to improve reading and writing practices. The teachers in this research identified writing and reading as areas where they were most in need of assistance. The researchers then selected four evidence-based practices that would be used: Writing Process (Graves, 1983); Collaborative Strategic Reading (Klingner, Vaughn, & Schumm, 1998); Class Wide Peer Tutoring (Abbott, Greenwood, Buzhardt, & Tapia, 2006); and Making Words (Cunningham & Cunningham, 1992).

Each instructional practice was the focus of professional development for 9 weeks. During this time, teachers were provided with conceptual information and a demonstration of each strategy. Teachers and researchers met twice to discuss implementation and practice the use of the innovations. Teachers then implemented the practices with ongoing support from the researchers in their classrooms. Support included coaching, co-teaching, and problem solving regarding implementation issues. During the 9 weeks in which each practice was the focus of professional development, all teachers implemented all practices except Collaborative Strategic Reading, which was not implemented by any teacher. During the following year, these teachers continued to implement almost 70% of the practices.

In a related study, Klingner et al. (1999) followed up 3 years after teachers had professional development with a goal of implementing Peer Assisted Learning Strategies (Mathes, Fuchs,

Fuchs, Henley, & Sanders, 1994); Collaborative Strategic Reading (Klingner et al., 1998); and Making Words (Cunningham & Cunningham, 1992) in their classrooms. Teachers were provided the same type of professional development as described previously for the Vaughn et al. (1998) study. Interviews and classroom observations documented the continued use of the instructional approaches. Seven teachers participated in professional development regarding the three strategies. Of a possible 21 strategies the teachers could have continued to implement, Klingner and colleagues (1999) found that over half of the teachers continued to implement the practices at a high level. The practice that was least likely to be continued was Collaborative Strategic Reading, which continued to be implemented at a high level by only two teachers.

Klingner and colleagues (2003) provided LCPD for 29 teachers in six schools during an intensive, 10-day summer institute. Four strategies were included in the institute: Partner Reading (Mathes et al., 1994), Collaborative Strategic Reading (Klingner et al., 1998), Making Words (Cunningham & Cunningham, 1992), and Phonological Awareness (Torgesen & Bryant, 1994). Teachers were presented with information about each strategy, discussion of how to use the strategies, demonstrations of the strategies, and opportunities for hands-on practice with support. Teachers were asked to choose one or more strategies to implement in their classrooms during the coming school year. Follow-up coaching in the use of the selected strategy was provided by project staff in the teacher's classroom. The researchers used teacher interviews, teacher and researcher logs, and classroom observations to document the use of the strategies. They found that all 29 teachers implemented the selected strategy in their classrooms during the academic year. About 60% of the teachers implemented the strategies with some frequency; 40%, infrequently.

In another study by Klingner and colleagues (Klingner, Arguelles, Hughes, & Vaughn, 2001), the investigators used LCPD with 110 teachers in two elementary schools to implement three effective reading practices: Making Words, Collaborative Strategic Reading, and Partner Reading. The elementary schools had a high percentage of students on free and reduced lunch, and almost half of the students spoke Spanish as their native language and were in English speakers of other language [ESOL] classes.

The authors used surveys, observations, and interviews to determine the extent to which the teachers used the instructional strategies. After 4 years in the schools, the investigators found that most of the teachers had used at least one strategy, and over one half of all teachers used one or more of the strategies regularly. Zetlin, MacLeod, and Michener (1998) worked for 1 school year with 25 primary-level teachers from five high-poverty elementary schools with a high percentage of students from Spanish-speaking backgrounds. These teachers volunteered to work with three university faculty to develop and implement a comprehensive, integrated language arts curriculum to improve instructional practices and student outcomes.

A pre- and post-intervention survey was used to determine the extent to which teachers changed their instructional practices. The researchers also used qualitative methods, including observations and field notes to document these changes. By the end of the school year, all 25 teachers were implementing from 4 to 10 of the elements of the integrated curriculum.

One concern raised about the use of researcher-teacher collaborative forms of professional development is the expense of this approach and the infeasibility of using this form of professional development in a wide range of schools (Abbott, Walton, Tapia, & Greenwood,

1999). To address these issues, two studies used train-the-trainer approaches to professional development, which reduced the cost and sought to make professional development more feasible in local schools. Using a train-the-trainer approach, Vaughn and Coleman (2004) provided professional development to three teachers in two elementary schools who volunteered to become mentors for other teachers in their schools. The mentors were prepared in the use of two practices (Partner Reading and Collaborative Strategic Reading) in a day-long workshop, with follow-up coaching on the strategies, material with explicit directions for training, and coaching in the classroom. The trainers were then assigned teachers for whom they presented professional development, classroom coaching, and support on the two strategies.

Follow-up teacher interviews, teacher logs, and classroom observations were used to determine whether the strategies were implemented appropriately in the classroom. The three teachers implemented all of the strategies in their classrooms two or more times per week. The investigators also found that teachers were highly satisfied with this form of professional development, enjoyed working with peers, and found the informal support provided by mentors related to specific classroom problems to be well suited to their needs.

Using a similar train-the-trainer approach, coupled with technology-based teacher support tools, Abbott et al. (2006) designed professional development to prepare teachers in five elementary schools to use Class Wide Peer Tutoring [CWPT]. Trainers were recruited who had previous experience implementing CWPT, including teachers, principals, and graduate students. Teachers meeting in one group were provided LCPD by the researchers that included in-depth coverage of a rationale for and use of CWPT, demonstrations, and hands-on practice. Local professional developers then provided onsite support and coaching in classrooms on CWPT. The researchers also provided participants with a CD set that included supplementary instruction and training that teachers could use at any time, a manual, and a gallery of videos illustrating the use of this innovation. The CD also included a Learner Management System [LMS] that provided the teacher with a "convenient way to create and deliver peer-tutored content, monitor student participation, and assess student performance and progress" (Abbott et al., 2006, p. 51).

The researchers followed up with teachers from each of the five schools to determine the extent to which they implemented CWPT and the LMS. They found that 57% of the teachers fully implemented CWPT and the LMS in their classrooms. The schools ranged from 100% implementation in two schools, to moderate rates of implementation in two schools (45%, 42%), to no implementation in one school.

These case studies further support the importance of LCPD components for promoting innovative practices in classrooms. Although not all teachers used innovative practices even with intensive LCPD support for the strategies in their classrooms, these results indicate that innovative practices are used more frequently after LCPD than ECPD (Boudah et al., 2003; Little & Houston, 2003).

Teacher-researcher collaboration. Several teams of researchers have worked collaboratively with teachers over extended periods of time to gain a better understanding of how the use of innovative practices in classrooms is enhanced (Abbott et al., 1999; Baker, Gersten, Dimino, & Griffiths, 2004; Englert & Rozendal, 2004; Englert & Tarrant, 1995; Fuchs & Fuchs, 2001; Fuchs et al., 1994). As a learning community, these teams addressed mutual goals for professional development and used LCPD with follow-up support in the classroom to implement

strategies. The concerns of Richardson and Placier (2001) for teacher agency in the professional development process are echoed by these researchers and are consistent with the movement toward PLCs. An early example of a teacher-researcher learning community that collaboratively addressed teacher practice improvement was developed by Englert and Tarrant (1995) focused on improving teacher literacy practices. Four SETs and seven researchers participated in this learning community as part of the Early Literacy Project. The teachers had expressed interest in improving their literacy practices for primary-level students with disabilities and volunteered to work collaboratively with the researchers to address this goal.

Initially, the teachers and researchers met weekly to discuss the goals of their work and agree on principles to guide these activities. They developed common principles for literacy instruction—embedding instruction in meaningful and integrated activities, guiding students to be self-regulated learners, using discussions to support literacy learning, teaching students responsively, and building classroom learning communities (Englert & Tarrant, 1995).

After the guiding principles for their work were agreed on, teachers and researchers continued weekly meetings to develop an early literacy curriculum for students with disabilities and determine strategies for enacting the curriculum. The researchers presented a videotape and practices or strategies that might be used. Researchers and teachers then selected strategies, learned about their use, and worked toward enacting the strategies in classrooms. The researchers gave feedback about the way the strategy was implemented, solved problems with teachers, and provided support about how the strategies might be used in the particular context of a teacher's classroom.

Depending on interests and needs, each teacher specialized in certain areas of literacy and shared this specialized knowledge and skill with other members of the learning community. The teachers enacted eight new strategies in their classrooms (e.g., choral reading, journal writing, author's chair, character maps) over the course of 1 school year. The researchers noted that the greatest change for each teacher occurred in their areas of greatest need and interest.

Building on the Early Literacy Project, Englert and Rozendal (2004) developed the Literacy Environments for Accelerated Progress [LEAP] project. The goal was to accelerate reading and writing performance by students with disabilities who were struggling to learn these skills. Participating during the 1st year of the project were six teachers, including two collaborative teams of GETs and SETs. These teachers met monthly after school with the senior researcher and four graduate student researchers.

The LEAP project was similar in format to the Early Literacy Project. Teachers and researchers developed shared goals, constructed methods that the participants could use to construct and disseminate knowledge collaboratively, and developed tools to monitor and adapt practices based on their effectiveness. Researchers worked with the teachers to develop in-depth knowledge of effective practices and enact the practices in classrooms. In this project, the teachers and researchers used videotapes of teachers enacting practices and discussion of these videos to foster the development and use of effective practices in classrooms. By the 2nd year of the project, all teachers were using new practices in their classrooms and evaluating the effectiveness of these practices.

Abbott and colleagues (1999) developed partnerships with eight elementary schools to evaluate the effectiveness of a professional development approach to facilitate research-based practices in the classroom. Their model allowed researchers and teachers "to work together in a sustained problem-solving process leading to evaluation of problem solutions, redesign, solution validation, and wide-scale use across teachers and classrooms" (p. 343). Activities included a partnership between researchers and teachers to determine the focus of the work toward improving practice, consultation by researchers in ways to bring practices to teachers that "evoke teacher-researcher interactions and sustainable support for classroom application" (p. 343), and professional development using LCPD and support in the classroom.

During the first 2 years of this project, Abbott and colleagues worked with 22 teachers. All teachers successfully implemented Class Wide Peer Tutoring (Abbott et al., 2006) and Skills for Learning Independence in Developmentally Appropriate Environments (Carta, Renauer, Schiefelbusch, & Terry, 1998) in their classrooms. Evidence collected by the researchers indicated that the interventions accelerated academic responses and reduced inappropriate behaviors for students in first and second grades. Interviews with teachers also revealed high levels of satisfaction with this form of professional development and the interventions that they implemented in their classrooms.

Finally, Baker et al. (2004) reported on the sustained use of an innovation based on researcher-teacher collaboration by Fuchs and colleagues (Fuchs et al., 1994). The focus of this study was the use of Peer Assisted Learning Strategies [PALS]. Fuchs and Fuchs (2001) had developed PALS collaboratively with teachers to ensure that the innovation was both workable in classrooms and effective. During the course of a research project conducted by these researchers (Fuchs et al.), teachers in an elementary school were provided LCPD and follow-up support and coaching in the use of PALS. Baker and colleagues (2004) followed up 4 years after project completion on eight teachers in one elementary school who had worked with Fuchs and colleagues (1994) on evaluating the effectiveness of PALS. Their findings showed that all eight teachers continued to regularly (at least 2 times per week) use PALS in their classrooms. The use of PALS was confirmed by both teacher interviews and direct observations in classrooms. Baker and colleagues note that the rate and quality of PALS use several years after the completion of the research project was extraordinarily high and suggest that a key in sustaining this use was the high-quality professional development that the teachers received.

These studies add further support for the use of LCPD to ensure that innovative practices are used in the classroom. In addition, these studies provide insight into how researchers and teachers may successfully work together to develop effective interventions that fit well into the realities of general education classrooms, thus enhancing the possibility that teachers will use the strategies (Gersten & Dimino, 2001).

Summary. Research on LCPD in special education reflects findings that are similar to those that have been reported previously for general education: an LCPD approach results in substantially more teacher use of innovative practices in the classroom. ECPD with relatively large groups of teachers results in 5%-10% of teachers who later use innovative practices in their classrooms (Boudah et al., 2003; Joyce & Showers, 2002; Little & Houston, 2003). LCPD results in classroom use of practices by 50%-100% of participating teachers, although some teachers only implement the practice at limited levels (Boudah et al.; Klingner et al., 1999, 2003).

The more frequent use of innovative practices in classrooms has been found across a range of studies, including those providing professional development for large groups of teachers (Boudah et al.; Little & Houston); smaller groups of teachers in one or a few schools (Gersten & Dimino, 2001; Greenwood et al., 2003; Vaughn et al., 1998); and teachers who were provided with professional development as part of research-teacher collaborative activities (Abbott et al., 1999; Englert & Tarrant, 1995; Fuchs & Fuchs, 2001).

This research confirms that the use of intensive LCPD results in significantly more frequent classroom use of innovative practices. This intensive professional development provides teachers with in-depth knowledge about an innovation, demonstrates the innovation in a context that simulates the classroom, offers opportunities for teachers to practice using the innovation, and uses peer coaching to support the teacher while the innovation is used in the classroom. LCPD is also built on the assumption that innovations that are the focus of professional development should fit into the classroom well and thus will be more readily accepted by teachers. LCPD offers an opportunity to bridge the research-to-practice gap more effectively and ensure that teachers are well prepared to use effective, research-based practices in their classrooms. However, several issues regarding this approach to professional development need to be investigated further to ensure that these improvements in practice become a reality.

Limitations

While a consensus has emerged regarding the relative effectiveness of LCPD compared to ECPD in facilitating teacher use of innovative practices, this research should be interpreted with caution for several reasons. First, most of this research has been done with GETs, with little mention of special educators. Even for research reported in the special education literature, many investigations included both general and special educators who were collaboratively addressing the needs of struggling students. Thus, very little research has been conducted with SETs using innovative practices in separate settings. Furthermore, scant research has been conducted with beginning SETs. Second, the research that has been conducted and reported in both the general and special education literature has seldom used rigorous experimental designs. Instead convenience samples, small samples, and poorly defined control groups have been employed, raising questions about the internal and external validity of this work.

Third, although this body of research has established an emerging consensus about the effectiveness of LCPD, little is known about the effectiveness of separate components of LCPD or how this approach may be delivered cost effectively. Finally, most criticism of ECPD has been directed at its ineffectiveness in increasing teachers' use of innovative practices in classrooms. It should be noted that ECPD is useful for disseminating information (e.g., new laws or procedures used in a school district or other critical topics).

Directions for Future Research on LCPD

Several key directions for future research on LCPD and how this intensive approach to professional development is delivered are suggested in the questions below:

1. How can LCPD be delivered to large numbers of teachers in a cost-effective manner? Much of existing research on LCPD in special education involves a small number of teachers (often no more than 20) and intensive involvement of outsiders (e.g., university faculty).

This type of professional development is too costly to be delivered to large numbers of teachers across a school system or state. Research is needed on alternative strategies for delivering professional development that retain the key features of LCPD, are directed toward large numbers of teachers, and result in significantly increased use of innovative practices in classrooms. For example, it may be that approaches used in schools with a strong professional learning community [PLC] that emphasize teacher inquiry (e.g., book study) could provide a cost-effective method for delivering LCPD if paired with follow-up peer coaching.

2. Why do expert-centered methods of professional development continue to be widely used to change and improve classroom practice? These methods are inexpensive, which may explain continued use. However, there are likely other reasons for the continued predominance of ECPD. For example, some professional developers may believe that implementing innovations with fidelity is necessary to achieve desired outcomes, and making adaptations for individual student needs is inappropriate. From a higher perspective, it is important to understand why those who fund large-scale professional development (e.g., state education agencies [SEAs] to change teacher practices) continue to use ECPD. Perhaps funding and accountability requirements (e.g., requirements to train a certain number of teachers per year in the use of an innovation) influence these practices. Further research is needed to better understand why these practices persist. Such research could provide insight into approaches to increase the use of more effective forms of professional development.

3. What issues influence the extent to which LCPD results in the increased use of innovative practices in the classroom? Although we know that LCPD results in increased use of innovative practices in general education classrooms, research reveals that not all teachers use these practices. Many other factors may influence teacher use of innovative practices, including the feasibility of the innovation for use in the classroom (Gersten & Dimino, 2001), the extent to which innovations address the local context including issues such as curricular goals and student needs (Englert & Tarrant, 1995), and administrative support for the innovation (Fuchs & Fuchs, 2001). More research is needed to better understand these and other factors that may influence teacher use of innovative practices, which are the focus of professional development.

4. What factors influence the frequency, sustainability, and appropriateness of practices used in the classroom? Research reveals that some LCPD results in limited use of an innovation by some teachers, while others sustain the innovation with frequent use (Boudah et al., 2003; Klingner et al., 1999, 2003). Furthermore, some teachers demonstrate a deep understanding of an innovation that allows them to make useful adaptations for their particular setting, whereas other teachers lack this deep understanding and make questionable adaptations that may influence the effectiveness of the innovation (Klingner et al., 1999, 2003). More research is needed to better understand factors that influence the level and appropriateness of innovations as used in the classroom.

5. Can teacher-led professional inquiry be used as a form of LCPD to improve outcomes for students with disabilities? Much of the research on LCPD professional development that has been conducted by special educators has focused on the implementation of highly specific instructional practices in close collaboration with experts. More research is needed to determine the effectiveness of teacher-led collaborative inquiry, which has been used widely in general education as a form of LCPD. This research would provide insight into the

potential value of collaborative professional development among teachers themselves as part of an array of professional development options.

6. Are there unique issues faced by beginning teachers when providing LCPD that is intended to facilitate the use of innovative practices in the classroom? Although no studies of professional development directly addressed this issue, Baker and colleagues (2004) noted that beginning teachers might have difficulty using innovations, as much of their time is consumed by learning to get through the day. Thus these novice teachers may view innovations that are addressed using LCPD as an overload or more than they can address given the basic teaching skills that they need to develop. More research is needed to better understand the issues faced by beginning teachers in learning to use innovations in their classrooms.

THE ROLE OF CO-TEACHING AND TEAMING IN INDUCTION

Co-teaching and teaming are well-recognized forms of teacher collaboration, but these methods are not often thought of in relationship to the induction of new teachers. Yet as collaborative models for how teaching is enacted, both practices have the potential to influence how new teachers experience their initial work in schools, and their relationship to induction merits exploration. Co-teaching emerged in 1989 (Bauwens, Hourcade, & Friend, 1989) specifically in relationship to building the capacity for inclusive education in the schools. This was 1 year after the establishment of the New Teacher Center at the University of California at Santa Cruz and 1 year before Huling-Austin's (1990) review appeared in the first edition of the *Handbook of Research on Teacher Education*. As such, co-teaching and induction have existed side-by-side for nearly 20 years. Team teaching has a long history (primarily in middle schools) and predates both co-teaching and induction. Recently team teaching has re-emerged related to the inclusion of students with disabilities. For the purposes of this review, *co-teaching* is defined as shared responsibility for teaching within the same classroom by a GET and a SET. *Team teaching* is defined as a group of teachers sharing responsibility for a group of students, usually but not limited to an interdisciplinary team.

The focus of this section is to describe the research on co-teaching and teaming and what it can contribute to an understanding of how best to support new SETs. Because co-teaching brings together SETs and GETs on a regular—and in some cases continuous—basis, it has the potential to contribute to the professional development of novice GETs as well. Unlike previous topics covered in this paper, there is a base of relevant research within the special education literature, especially on co-teaching and research on teaming designed specifically to support inclusive education. The majority of studies to be discussed, in fact, come from the special education literature. Research on teaming at the middle school level comes mainly from the general education literature. None of these studies, either within special or general education, addresses induction except in a most peripheral way.

Next we look at reviews of literature on co-teaching, followed by a consideration of studies of co-teaching that either were completed subsequent to the most recent review of the literature or that were not discussed in the reviews but include data applicable to induction. Then we address teacher teaming and its relationship to building collaborative school environments. We conclude this section with a discussion of the implications of this body of literature for the induction of SETs. **Table 4** provides a summary of the specific studies discussed in this section of the review.

Reviews of Research on Co-Teaching

Since its initial appearance in the late 1980s as a strategy for supporting inclusion, co-teaching has been a dependable, yet not ubiquitous, feature of special education practice, coexisting with more traditional approaches to special education, including resource rooms and self-contained classrooms. Efforts to include students who have disabilities in general education have increased and become institutionalized under multiple reauthorizations of the Individuals with Disabilities Education Act [IDEA]; and under NCLB, the practice of co-teaching has grown steadily. It has continued to provide a means for SETs and GETs to work collaboratively and support one another in their common goal: providing a high-quality education to all of their students in the common setting of a general education classroom, primarily but not exclusively, in relationship to students in categories of high-incidence disabilities.

Four major reviews of the literature on co-teaching and collaboration between SETs and GETs were completed from 1999-2007. These reviews each take different perspectives on the question of co-teaching and provide a multifaceted understanding of its dynamics as represented in the literature. In all reviews, issues related to induction and retention are notably absent. Typically, years of teaching experience is collected as part of standard demographic data; however, none of the reviews aggregated findings by years of experience and co-teaching across studies. What is also missing in most co-teaching studies is any discussion of the novice status of a co-teacher: how this may contribute to the knowledge base on co-teaching as well as the retention of novices who co-teach.

A broad delineation of the literature. The earliest review by Welch, Brownell, and Sheridan (1999), which used the term *team teaching* to refer to co-teaching, included studies of both team teaching and problem-solving teams. This early review was not limited to empirical studies but also included papers that contained no research question or methodology (referred to by the authors as "nonempirical anecdotal reports"), position papers, and technical guides, along with empirical studies using both quantitative and qualitative methodologies. Using this inclusive definition of the literature, Welch et al. identified 58 papers from refereed journals of which 40 pertained to team teaching. These 40 studies were published from 1982-1996; the two 1982 studies, which predated the term *co-teaching* by several years, were both technical guides. Of these 40 papers, 12 were identified as empirical studies, and 7 included student outcome measures. Given the range of articles, the major purpose of this review was to document a broad, general picture of the co-teaching literature rather than to provide a critical analysis of the research.

Welch and his colleagues (1999) concluded that (a) attitudes of teachers toward teaming were favorable and teachers were satisfied with teaming generally, and (b) teaming was socially validated as a form of collaborative work for teachers. Teachers' testimonials were also uniformly positive. Only seven studies included student outcomes, indicating a disproportionate focus on teacher-centered or teacher perspective studies rather than on whether co-teaching is a successful instructional strategy for students. In general, this review was supportive of co-teaching. But as the authors observed, the research reviewed reflected a very limited knowledge base on teaming, then still a relatively new trend.

A focus on original research on co-teaching. In the following year, Weiss and Brigham (2000) published an analysis of 23 peer-reviewed research studies from an original pool of over 700 articles and dissertations on the general topic of co-teaching and collaboration, many of which were determined to be opinion-only or how-to articles. To meet the criteria for inclusion in their review, studies were (a) conducted in the U.S., (b) based on data exclusive of program descriptions, and (c) not extracted from more extensive projects on inclusive education. The 23 studies (8 quantitative, 15 qualitative) that met these criteria were conducted from 1987-1999.

Weiss and Brigham documented evidence that co-teaching was frequently initiated by pairs of teachers who already respected each other or by one teacher encouraging another to become his or her teaching partner in a school that was trying out co-teaching—rather than by nonvolunteers. The findings suggested that volunteers were more satisfied with co-teaching experiences and that volunteers reported greater mutual respect for their co-teachers. When teachers did not ask to work together, turf and ownership problems were more likely to ensue. A major criterion for successful co-teaching as viewed by co-teachers themselves was the personal

compatibility of the teaching pair. Based on the program evaluation studies included in this review (e.g., Walther-Thomas & Carter, 1993; Wiedmeyer & Lehman, 1991), Weiss and Brigham noted that satisfaction with co-teaching on the part of teachers, parents, and students with disabilities was positive; but the small number of respondents across the five studies that focused on program evaluation/satisfaction led them to question the generalizability of these findings.

Despite general satisfaction on the part of co-teachers, however, there is confusion about the roles special educators play in co-teaching settings. For example, while the majority of special education co-teachers played subordinate roles, a small number did play a major role in instruction (e.g., Weiss, 1999). In some studies reviewed, special education co-teachers instructed in small groups, shared responsibility for large group instruction, or managed peer tutoring in relationship to the general education curriculum. On the other hand, they did not appear to provide "appropriate and specially designed instruction" that is responsive to the needs of students who have disabilities (Weiss & Brigham, 2000, p. 238). The question Weiss and Brigham seem to be raising, then, is what kind of instruction SETs are expected to provide in their roles as co-teachers and whether they are expected to possess readily identifiable expertise beyond that of GETs. If instructional roles are unclear for special education co-teachers, this may, they argue, have implications for teacher retention.

Barriers to successful co-teaching included lack of common planning time and lack of administrative support. Further, when a co-teaching model was implemented, the number of GETs with whom SETs could work was limited, reducing the capacity of co-teaching to implement a school-wide, systematic approach to integrating students with disabilities.

Student outcomes in quantitative studies of co-teaching. In 2001, Murawski and Swanson synthesized the data from quantitative studies of co-teaching only and analyzed student outcomes. Using the technique of meta-analysis, they examined whether the magnitude of student outcomes varied as a function of several different variables and also as a function of the dependent measures. Of the 89 articles they identified on co-teaching from 1989-1999, 37 contained empirical data. Only 6 met their criteria of (a) having sufficient quantitative data to calculate an effect size, (b) having four specific characteristics related to co-teaching as defined by the authors, and (c) having an intervention lasting at least 2 weeks.

Outcome measures used in these studies ranged from student absences and attitudes to grades and achievement in the content areas of mathematics and reading/language arts achievement. The effect size across all studies ranged from .08 to .95, with a mean effect size of .40, indicating that co-teaching had a moderate effect on student outcomes. In addition to student outcome data, in three studies teachers volunteered to co-teach and attempted to sustain an equal-status relationship; and in four studies teachers reported that they shared responsibility, resources, and accountability for their students' learning. All studies included appeared to have been conducted with teams of co-teachers that were successful, which may mitigate the impact of whether or not teachers volunteered to participate.

Based on the limited number of quantitative studies available for analysis, Murawski and Swanson (2001) concluded that co-teaching is only moderately successful in terms of student outcomes and recommended a much greater emphasis on experimental outcome studies in the future. Similar to a concern raised by Weiss and Brigham (2000), Murawski and Swanson

emphasized the need for research on co-teaching in both successful and unsuccessful settings rather than reporting exclusively on successful pairs.

Qualitative studies of co-teaching. After a 6-year lapse in reviews of co-teaching, Scruggs, Mastropieri, and McDuffie (2007) conducted a meta-synthesis of qualitative studies. The criteria they used for identifying studies included (a) a primary research question that specifically referenced co-teaching, (b) qualitative methods as the major research approach, and (c) the use of surveys only if followed by "substantive qualitative interviews" (p. 396) as opposed to brief open-ended questions. Based on these criteria, the authors identified and analyzed 32 qualitative studies conducted from 1995-2005.

The findings in this review indicated that special education co-teachers played subordinate roles relative to their general education peers, usually because SETs lacked sufficient academic content knowledge. However, when special education co-teachers did possess adequate content knowledge, they assumed greater instructional responsibility, as illustrated in the Rice and Zigmond (2000) study. Further, across the studies, time for joint planning and the support of building administrators was deemed essential but was not always in place (e.g., Austin, 2001).

Scruggs and his colleagues also suggested that teachers benefited from co-teaching as part of their professional development, but only when the co-teachers were personally compatible. Personal compatibility was central to the success of co-teaching, as was volunteering for co-teaching assignments. However, one teacher in a study by Ward (2003) argued that implementing co-teaching on a voluntary-only basis allows some teachers to bypass working with special education students altogether and thus, by implication, reduces a school's overall capacity and commitment to include students with disabilities. In contrast, Rosa (1996) noted that co-teaching partnerships that were not voluntary were "doomed." Yet nonvolunteer co-teaching partners can sometimes end up forging strong teaching relationships. Trent (1998) studied one high school GET teamed consecutively with two different novice SETs—each with 2 years of experience. One pairing worked out well, and one did not. Although Trent did not comment specifically on the novice status of the SETs, the contrast in the experiences of this veteran teacher has implications for how co-teaching pairs are constructed. None of the teachers in this study volunteered. Trent's findings suggest that despite the two SETs' status as novices, personal compatibility appeared to trump volunteering for this type of teaching assignment.

Mastropieri and colleagues (2005) described several case studies of secondary science and social studies co-teaching, including some discussion of co-teaching teams in terms of teacher experience. For all cases in this study, the external researchers provided support throughout the implementation of co-teaching. In two of the seven co-teaching teams studied, one teacher was a novice, one in a seventh-grade earth science co-teaching pair and one in a high school chemistry pair. In both of these situations the teachers did not volunteer but were assigned as co-teachers. The seventh-grade team had daily planning time; no mention of common planning time was made regarding the high school chemistry team. The authors did not identify which of the seventh-grade teachers was the novice but did state that the general educator took the lead the majority of the time and that the special educator saw this as an advantage because "she was learning so much that she could use later in her teaching" (p. 264). In the high school chemistry team, the chemistry teacher was the novice in the pair; the SET was a 15-year veteran. They shared all roles regularly and forged a mutually respectful, positive relationship.

In contrast, Morocco and Aguilar (2002) studied co-teaching in three of four interdisciplinary teams in a middle school; a novice language arts teacher in one team was the only teacher who was not comfortable in a co-teaching situation and left the school after her 1st year. Although the authors did not state so specifically, the implication was that this new teacher did not volunteer to work in a co-teaching situation with students who have disabilities. The authors identified this situation as atypical for the school and argue that it illustrates the degree to which the success of co-teaching depends on all members of the team holding similar strong commitments to inclusion. Compared with most other studies of co-teaching, Morocco and Aguilar focused on co-teaching as a function of interdisciplinary teams rather than as a stand-alone relationship between one GET and one SET. In this model, these authors indicated that co-teaching is embedded into the school's overall interdisciplinary team model. They found the following:

> Teams are responsible for the same students for 2 years ("looping") and serve as the first point of contact for parents. Teams, which include content teachers and a SET, develop curriculum units, assess students' progress, and plan interventions for students with specific needs. Coteaching is an extension of that collaborative planning into the content area classroom. (p. 330)

In contrast to the predominant co-teaching pattern in which SETs play subordinate roles, in this study the interdisciplinary model itself "made the status of the special education teacher equal to that of the content area teachers and made the interdisciplinary team…the special education teacher's primary reference group" (p. 332). In view of the phenomenon of dual socialization (Pugach, 1992), this suggests the potential for primary socialization to the general education community rather than to the special education community.

Consistent with the three preceding reviews, Scruggs et al. (2007) were concerned about the absence of attention to student outcomes in the research on co-teaching. They emphasize the lack of innovation with respect to co-teaching and conclude that "if the qualitative research to date represents general practice, it can be stated that the ideal of true collaboration between two equal partners—focused on curriculum needs, innovative practice, and appropriate individualization—has largely not been met" (p. 412).

McDuffie, Scruggs and Mastropieri (2007) reanalyzed these 32 studies according to school level (elementary, middle, high school, and mixed-level studies). In their reanalysis, one additional benefit reported in a study at the elementary level conducted by Thompson (2001) was teacher retention. The authors reasserted the value of co-teaching in terms of the benefits that accrue to SETs and GETs respectively in terms of learning the academic curriculum and learning about behavior management and adapting instruction. The concerns McDuffie et al. (2007) raise include the "back seat" role of SETs, the high need for personal compatibility and volunteers to make co-teaching work, the need for administrative support and planning time, and the relative absence of innovative instruction in co-teaching classrooms. "Co-taught classes," they argue, "should become far more dynamic and innovative than these research reports suggest they presently are" (p. 333). Thus, the focus generally on the need for research on student outcomes in co-taught classrooms has shifted over time with a more pointed focus on improving the quality of instruction in classrooms that, with co-teaching, have twice the human resources of traditional classrooms.

Additional studies addressing co-teaching. A small number of studies provide additional perspectives on co-teaching. A study by Jimenez-Sanchez and Antia (1999) examined three teams of two teachers each, one hearing and one deaf, regarding their perceptions of team teaching. In the only team with a novice teacher, the GET, who was hearing, had 3 years of experience and her co-teacher, who was deaf, had 13 years of experience. In the other teams, teacher experience ranged from 8-27 years. In describing the teachers' relationships in the team with a novice, the authors note that the more experienced teacher, who was a 5-year veteran of the school, directly helped his novice co-teaching partner by initiating her into the school's norms and procedures. In general, they noted that the more experienced teacher often "assumed the role of mentor within the team" (p. 219) for less experienced teachers at the school site. Another explanation for the idea that SETs take a back seat role in co-teaching pairs may be their relative lack of experience rather than any confusion about role definition.

A study of co-teaching by McDuffie, Mastropieri, and Scruggs (in press), which was completed after the studies included in the Scruggs et al. review (2007), compares the effects of a peer tutoring intervention in co-taught and non-co-taught classrooms. Randomly assigned treatments were made to four existing, co-taught middle school science classrooms where all teachers received assignments rather than volunteering to co-teach. In addition to outcome measures of student learning, teachers completed a 25-item survey on their perceptions of co-teaching. These results confirmed previous findings that teachers overall hold positive perceptions about co-teaching and peer tutoring. Not only did teachers in this study feel that co-teaching benefited their students with disabilities, but it also benefited their nondisabled students. Furthermore, teachers reported that co-teaching was an enjoyable experience and that their students with disabilities were able to receive greater assistance within the co-taught classes. No interaction effects between peer-tutoring and co-teaching were found. McDuffie and her colleagues concluded that peer tutoring and co-teaching may each increase time on task individually, but combining these factors does not necessarily result in additional engaged time.

Kilgore and Griffin (1998) followed four graduates of their inclusive preservice program into their first 2 years as SETs to determine how they defined their early problems of practice and how the school context influenced their work. Three graduates were employed in self-contained settings, and one moved from a self-contained to an inclusive setting (co-teaching in a general education classroom) midway through her 1st year of teaching and remained there during her 2nd year. Although not focused on co-teaching per se, this study sheds light on the different work contexts co-teaching environments can create. Drawing on data generated from three interviews with each teacher spread over 2 years, the authors found that the teachers in self-contained settings at both the elementary and middle levels experienced marginalization in their schools. This meant that they depended almost totally on other SETs for support and were isolated from their general education peers both spatially and interpersonally, potentially tipping the balance of socialization toward special education. They also expressed discouragement and questioned whether they could continue in this type of teaching context. In contrast, the teacher who had shifted from a middle level self-contained classroom to an inclusive co-teaching position described a high degree of integration with her general education colleagues, even serving as their team leader and taking charge of team projects. She underscored the similarities of her own experience as a teacher in a self-contained setting with the other teachers and the close relationship she had developed with her general education peers as a co-teacher.

In a related survey of 596 novice SETs, Griffin et al. (2009) found that new teachers rated collaboration and communication more often as accomplishments if they either taught in an integrated general education classroom or were located near one in the building. The finding that novice SETs do not necessarily rely on other SETs for support is consistent with several other studies (Billingsley et al., 2004; Billingsley & Tomchin, 1992; Kilgore, Griffin, Otis-Wilborn, & Winn, 2003; Whitaker, 2003).

Team Teaching and School-wide Collaboration

Co-teaching research has focused largely on the perceptions of and interactions among pairs of teachers, the supports needed to implement co-teaching and, to some degree, how co-teaching impacts student learning. It does not typically take into consideration the relationships among co-teaching, team teaching, and school-wide collaboration. Yet the issues raised by Morocco and Aguilar (2002) in relation to interdisciplinary teaming suggest the importance of research on this relationship more generally. This section of the paper explores six additional studies addressing some aspect of team teaching and school-wide collaboration that have implications for the role of school context for novice special educators.

The Beacons of Excellence studies. Morocco and Aguilar's 2002 study of co-teaching was one of a series of three major studies funded by the U.S. Department of Education [USDOE]'s Beacons of Excellence project (McLaughlin, 2002), a project that conducted in-depth studies of schools that demonstrated exemplary practices for serving students with disabilities in elementary, middle, and high school settings. The research by Morocco and Aguilar was the only one of these studies that focused explicitly on co-teaching. The two other Beacons studies (Caron & McLaughlin, 2002; Wallace, Anderson, & Bartholomay, 2002), while not focused on co-teaching per se, provide some interesting data on the role of co-teaching as one of several strategies to enact school-wide collaboration.

Wallace et al. (2002) drew on both qualitative and quantitative data to study what collaboration and communication looked like between GETs and SETs. They conducted interviews and focus groups and also administered an electronic survey to staff members at four schools. Their goal was to illustrate a range of collaborative strategies that high schools could implement to support high-quality inclusive education. All schools had multiple supports for students with disabilities and some form of teaming across GETs and SETs. The models in use were as follows:

- School 1 used a "shared teaching model" (p. 354), which was introduced at the same time that basic skills classes and resource rooms were eliminated. The school was also on a block schedule, a change that necessitated teachers' rethinking their instructional approaches, moving from lecture-only to a project orientation which, in the words of the authors, resulted in collaboration becoming a necessity rather than merely a desired outcome.
- In School 2, teachers themselves developed cross-disciplinary blocks as a way to meet their students varying needs; although the school did not formally subscribe to block scheduling, a grassroots effort across special and general education moved in this direction, and as a result affected the instructional methods used.
- School 3 housed an Integrated Settings Program in which GETs, SETs, and paraprofessionals worked side by side teaching academic subjects. Common planning time facilitated the quality of their work; working together was described as a strongly held and strongly shared value at the school.

- School 4, a technical arts high school organized into seven academies, had a substantial population of deaf students. Each academy had a teaching team that included a special educator; their roles were described more as consultative and less as instructional, but were characterized as highly responsive. SETs were described as essential to each team's functioning.

The authors reported on survey data that described the support SETs provided to GETs. In all four schools, SETs spent at least some time teaching academic content solo in general education classes. It was not reported whether the survey requested any data from GETs regarding supports they provided to SETs.

Across these schools and varying approaches designed to support the learning of students with disabilities, these four school cultures were described by participants as cultures of sharing, collaboration, and inclusion, and schools where special education was viewed as a support rather than as a crutch (Wallace et al., 2002). All valued their common planning time but also reported that communication was frequent in large part due to unscheduled meetings. Perhaps most important, collaboration took multiple forms within each school, which is likely why teachers viewed the school's approach to collaboration as the reason for its success.

The final Beacons study (Caron & McLaughlin, 2002) examined four elementary and two exemplary middle schools to identify indicators of collaboration in relationship to building capacity for collaboration. The authors interviewed 12 SETs and 17 GETs and conducted focus groups with an additional 25 GETs about collaborative elements in their schools. What they found in common across all six schools was a generally strong sense of a collaborative community as well as uniformly high expectations across all students, yet the schools differed in the ways collaboration was implemented.

Across the schools, collaborative work was not a function of co-teaching only. For example, two schools used co-teaching as their primary means for collaboration, but the others used many different ways of co-planning and consultation. In one middle school, the GETs felt confident working with their students who had disabilities and did not feel the need for continuous co-teaching. Instead, they called on SET team members when they were needed. In terms of capacity, the authors stated that in schools where collaboration was more pervasive, teachers utilized every available means for collaboration, including technology (e.g., frequent e-mail).

In schools not specifically characterized as having distributed leadership, teachers were consulted about major decisions even if the principal did not formally distribute leadership roles and responsibilities. In only one school was decision making centralized with the principal. In at least one school the SET was viewed as a school leader. The two schools with greater shared leadership were viewed by teachers as more collaborative, a finding that supports the concept of PLCs.

Despite school-wide commitments to collaboration and high expectations for all students, in two schools (one elementary and one middle), teachers were not mandated either to co-teach or to accept students who had disabilities. This raises an important question about what it means to support a philosophy of inclusion. The authors conclude that among the most important features

of a school's capacity for collaboration were (a) formal methods of communication, (b) shared leadership, and (c) a collaborative approach to decision making.

Structured collaborative teaming. Also in relationship to teaming, Hunt, Soto, Maier, and Doering (2003) investigated the effectiveness of a different type of collaborative teaming model, one not based on an interdisciplinary teaching structure. Teams of GETs and SETs who worked in two classrooms and had responsibility for students at risk as well as students with significant disabilities, met once a month with parents and classroom instructional assistants to figure out the best ways to support the targeted students. One GET was in her 1st year of teaching. The authors stated that their research "investigated the consolidation of human resources available in the classroom to increase the ability of a general education classroom to accommodate a heterogeneous student body" (p. 329). The structure for their collaborative planning was a Unified Plan of Support [UPS], which included both behavioral and academic instructional support activities. Monthly collaborative planning meetings assured that student progress was being attended to routinely; results indicated greater levels of student engagement and interactions with their nondisabled peers. Regarding adult interactions, results of interviews and a focus group identified six benefits of the UPS process: shared expertise and experience, routine parental input, support of the team for implementation, positive effect on students' academic learning and behavior, regular opportunities to monitor and revise how students are supported, and special and general education unified in a common community. The UPS process functioned as a structured form of instructional joint planning and assessment and also enabled SETs to gain a broader view of the general education classroom and its expectations. The authors concluded that having the time to engage in shared reflection may in and of itself have accounted for the positive outcomes team members described.

Middle school teaming research. A different perspective on teaming comes from a series of studies (Crow & Pounder, 2000; Kruse & Louis, 1997; Pounder, 1999) conducted in the mid-1990s to determine the effectiveness of the interdisciplinary team teaching model at the middle school level. Bolstered at the time by an interest in middle schools as a strategy for school restructuring, these studies provide a multi-faceted picture of the dynamics of teaching teams (Carnegie Council on Adolescent Development, 1989). None of these studies addressed teaming between SETs and GETs explicitly. Nevertheless, taken together they offer important insights into how teachers who team enact and view their work.

Kruse and Louis (1997) drew on interviews, observations, and document analysis to study interdisciplinary teaching units in four middle schools that served at-risk populations. In two schools SETs were part of these teams, in one school some of the teams housed students with disabilities and included SETs, and in the last school no information about special education was given. In their analysis, the researchers emphasized one critical finding, namely the tensions that exist between the team as a teacher's primary unit of professional identity and the school as the primary unit of identity. The authors called these professional socialization and identification issues "teaming dilemmas" (p. 271). They argued that although teaming conferred many important advantages—in terms of providing teacher support and supporting a teacher's ability to focus on the individual needs of students—the school culture as a whole probably suffered as a result. It was difficult for teachers to focus their lenses closely on their own team and also on the larger perspective of the school as a whole. For example, if one team focused on inclusion, as was the case at one of the schools, that same issue may not be a priority for the rest of the school. Kruse and Louis concluded that even if an individual team models the school's value, e.g., to

meet the needs of individual students, teaming as a structure "may simultaneously undermine collaboration and collective responsibility of teachers for those very issues" (p. 275). Limited time for meeting can pit team meeting time against whole-school meeting time and thus inhibit whole-school discussions about essential issues. Further, it appears that teachers who team most likely rely on their own team members for assistance. Principals have to manage conflicts that may emerge as a result of the strength of team allegiance, encourage informal communication networks across teams, and work to integrate teachers who feel marginalized. For these reasons, the authors finally conclude that teaming cannot on its own do the work of creating a school community.

These authors make the additional point, directly related to induction, that it may be difficult for novices to break into teams of veteran teachers. At one school where novice SETs were on the team, veterans were not pleased with the need to constantly support new teachers and socialize them to the team and the school. Thus, teacher turnover itself within special education may negatively impact the support new teachers receive and the way their professional socialization develops.

Pounder (1999) conducted a survey to compare teachers in two schools—a teamed and a nonteamed middle school in one district—on a series of work-related variables and job characteristics. About 30 teachers from each school participated. Only GETs in major academic subjects and teachers of electives were included; for purposes of this study, SETs were identified as support personnel with counselors, school psychologists, and librarians, all of whom were excluded from the survey. Results of the survey indicate that in schools that practiced teaming teachers reported that their jobs required a significantly greater variety of skills than nonteamed teachers. Further, teachers at teamed schools reported having significantly more knowledge about their students' characteristics, histories, and family circumstances than nonteamed teachers reported. Finally, teachers who teamed reported significantly higher general levels of job satisfaction and satisfaction with their growth as professionals.

To document the implementation of interdisciplinary teaming and, in particular, teachers' attitudes toward and perceptions of teaming, Crow and Pounder (2000) conducted a qualitative study of four middle school teams in one suburban school. Team members included teachers in major academic content areas as well as teachers in exploratory subjects, for example, art, music, physical education, and foreign language; but special educators were not identified as team members. The authors observed team meetings for periods of 8-10 weeks. Team members, principals, assistant principals, and guidance counselors were interviewed as part of the data collection process.

Of the four teams, three focused their teamwork on student interventions more than on curriculum. All teams had common planning time but believed they needed more time to work together. Also three teams believed that the absence of block scheduling at the school was problematic in trying to achieve an interdisciplinary curriculum. Not all teams worked well together; the team that was least experienced, a seventh-grade team, had the most problems, specifically with team leadership and participation.

Comparing the various types of teaming structures, including special services teams, these authors believe that "interdisciplinary instructional teams may hold greatest promise for substantive and significant school reform" (p. 220) because teams affect instruction, change the

character of a teacher's work, and should connect school reform to student learning. Crow and Pounder do not appear to see a role for special education in this important teaming dynamic. Given the emphasis on student interventions in the majority of the teams, the lack of discussion about a role for special education is concerning. Further, the authors view multiple kinds of expertise on a team as important to its functioning, including interpersonal skills and flexibility, leadership expertise, and teaching experience. They did not appear to view special educators as having or contributing to these areas of expertise. In contrast, 5 years later, Erb (1995) argued that the interdisciplinary teaming model at the middle school level was an effective strategy for implementing inclusive education and saw a major role for SETs on core academic teacher teams.

Implications of Research on Co-teaching and Teaming for Beginning Special Education Teachers

What implications can be drawn from this body of literature on co-teaching and teaming? How can this research contribute to our understanding of how a school context supports novice SETs? This research suggests that co-teaching and teaming continue to be viewed as beneficial to most teachers who participate in these practices, especially in terms of personal and professional support. When SETs participate closely with their general education colleagues, they are more likely to view these colleagues as sources of support rather than relying solely on other SETs (Kilgore & Griffin, 1998) and as equals sharing roles (Mastropieri et al., 2005; Morocco & Aguilar, 2002). They also tend to appreciate the opportunity that has been created for them to gain knowledge about the general education curriculum (Mastropieri et al.), which may widen their base of support and contribute to their socialization as members of the school as well as members of the professional special education community.

However, in co-teaching contexts, most SETs are in the background, serving as assistants rather than fully engaged in instruction (McDuffie et al., 2007; Weiss & Brigham, 2000). Although SETs welcome the opportunity to learn by observing and interacting with the GETs, when their major job is to assist, the potential of co-teaching to enhance instructional innovation in the classroom is diminished. If curricular and instructional innovations are viewed as hallmarks of co-teaching (McDuffie et al.; Pugach & Wesson, 1995), practice appears to be lagging behind the ideal. When the role of novice SETs is only to assist, two things can happen. First, like the seventh-grade SET in the Mastropieri et al. study, having the time to observe a GET in action daily can be a useful form of professional development, especially for learning academic content, which is typically limited in preservice programs in special education. But this depends on how assisting is defined and how much real time a novice has to observe the GET. In contrast, when novice special educators assist in the classrooms of teachers who are not high-quality role models for instruction, novices do not gain knowledge of innovation or develop a sense of what their roles as fully recognized teachers actually are. When SETs are part of an interdisciplinary team, the issue of assisting rather than teaching may not surface as readily; rather the teaming structure itself appears to encourage parity (Morocco & Aguilar, 2002). If interdisciplinary teaming is a new school-wide strategy, teachers may focus on student behaviors well before they begin to address curricular and instructional innovation (Crow & Pounder, 2000) rather than pairing the two and looking at the relationship between the quality of instruction and behavior problems in the classroom.

A different issue for novices involves lack of planning time, an issue raised in nearly every study related to teacher perceptions. This concern surfaced both in the co-teaching and teaming literature, even when co-teaching pairs or interdisciplinary teams had regular, structured planning time. Novices are still carrying full-time teaching loads as co-teachers or members of interdisciplinary teaching teams. If veterans are feeling constrained by insufficient time, novices are likely to experience even greater constraints. Further, the absence of sufficient planning time may exacerbate having one teacher play a subordinate role. Without the opportunity to identify individual roles and co-teaching approaches, the default practice may let the stronger teacher take the lead.

The question of how to construct co-teaching pairs or teams of teachers remains unresolved. Volunteers nearly always seem to achieve success, but nonvolunteers may or may not be successful (Trent, 1998). This is important because the preponderance of the studies included teams that were already deemed successful, so less is known about unsuccessful teams and what contributed to their lack of success. If an entire school is participating in some form of teaming, the assignment of new teachers requires careful monitoring to achieve compatibility and to support their success in teaming situations. The aim is to avoid rapid turnover, as occurred with the seventh-grade language-arts teacher in the Morocco and Aguilar (2002) study. Further, some nonvolunteer novices may enjoy greater success when they are part of co-teaching teams that are involved in instructional innovation that is externally supported (e.g., Mastropieri et al., 2005). Although co-teachers or team teachers may be in the position of serving as natural mentors (e.g., Jimenez-Sanchez & Antia, 1999), veterans may also have negative feelings about this role if they are constantly having to "break in" new teachers who are assigned to their teams (e.g., Kruse & Louis, 1997). This is especially important given the persistent low retention rates and high turnover for SETs.

A final implication involves how schools conceptualize the roles of SETs in relation to a school-wide philosophy. In schools that explicitly make the learning of students who have disabilities a central value and commitment, SETs may play a variety of roles to support student learning (Wallace et al., 2002). Within the larger context of inclusive practices in a school, novice SETs may experience less ambiguity about their roles and more acceptance as full members of the school community when they are viewed as central to enacting the school's philosophy for educating students with disabilities. This contrasts with comments in several studies of co-teaching in which teachers observed that, without school-wide co-teaching, some teachers were always able to circumvent teaching students who have disabilities, which disproportionately placed that responsibility on a small group of teachers (e.g., Weiss & Brigham, 2000).

A related school-wide issue is how SETs conceptualize their primary identities. Kruse and Louis' (1997) work on team teaching suggests that the interdisciplinary team itself may be the primary locus of identification rather than the school. An interdisciplinary team may provide a novice special educator with a home among general educators on the team. This increases the SET's scope of identification beyond special education alone, thus attending to the challenge of dual socialization (Pugach, 1992). But such a team's work may not necessarily lead to school-wide practices that support students with disabilities.

Co-teaching and team teaching seem like natural allies for providing support to novice SETs and for GETs as well. These practices represent a routine form of collaborative work and counteract the historic isolation of SETs. Despite the pronounced benefits in terms of support and teacher

learning, the literature suggests that, in practice, the full potential of co-teaching and teaming have not yet been demonstrated— to build collaborative, inclusive school communities for SETs that could reduce attrition or to support curricular and instructional innovation to build skills.

Limitations of the Research on Co-Teaching and Teaming

In general, one of the biggest limitations of this body of literature is that it is not extensive. Although there are hundreds of publications about co-teaching—Weiss and Brigham (2000) identified over 700 articles and dissertations on the topic—the percentage of empirical studies is quite small, particularly in studies of student learning, which was the focus of the six studies analyzed by Murawski and Swanson (2001). Given the wide presence of co-teaching, it is an uncommon topic for study by either special or general education researchers. The research on team teaching in the general education literature is likewise quite sparse, is roughly a decade or more old, and does not readily invoke connections between the concept of interdisciplinary teaming and inclusion, except perhaps as a recommendation.

Consistent with early critiques of the research on co-teaching, this work continues to be based primarily on documentation of the experiences of successful teams of teachers rather than on a range of teams. It is a literature that is heavily dependent on teacher self-report; and several of the qualitative studies are interview-only studies, which precludes the rich, thick description that is the hallmark of qualitative research.

Recommendations for Future Research

The literature reviewed in this section includes some references to the experiences of novice teachers, whose induction experiences have not generally been a focal point for research on either co-teaching or team teaching. Several possibilities for future research emerge from the possible alignment of co-teaching or team teaching with induction. Examples include the following research topics:

- comparisons of the experiences of novice SETs who volunteer and those who are assigned to co-teaching or team teaching settings
- comparisons of the experiences of novice special education co-teachers and team teachers in stronger and weaker collaborative school cultures
- studies of novice SETs' primary professional identities when all novices are either co-teaching or team teaching
- studies of the various sources of support valued by novice teachers who are co-teaching or team teaching
- studies of how novices who are co-teaching or team teaching implement curricular and instructional innovations
- comparisons of student learning in co-teaching and team teaching settings that have either novice or veteran SETs
- descriptions and comparisons of the early career experiences of novice SETs who co-teach compared with those who team teach.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this review has been to identify issues raised in the literature related to collaboration—specifically, ideas that can contribute to our thinking about how better support can be provided to novice SETs at the level of the school community itself. The purpose of support at the induction stage is to increase both retention and quality of teaching for this important group of professionals. To that end, four areas of literature were addressed: schools as PLCs, the role of school principals, professional development, and co-teaching and team teaching. From these analyses, three major themes can be directly related to how the school context itself can serve a strong induction function.

Establishing Schools as Non-balkanized, Integrated Workplaces

PLCs have the potential to push back against the functioning of schools as balkanized workplaces in which teachers interact primarily only with smaller groups of teachers in their schools. Balkanization, which can occur not only at the departmental level but also at the team level, can distract such bounded groups of teachers from making school-wide commitments (e.g., Kruse & Louis, 1997). So it would be possible, for example, for novice SETs to gain parity with their general education peers as members of a middle school interdisciplinary team. Ideally, this team can be the novice's primary reference group (e.g., Morocco & Aguilar, 2002). At the same time, the new SET could be distanced from the rest of the school by their overwhelming team allegiance and responsibilities. Likewise, for successful co-teaching pairs, co-teaching appears to play an important support function. For the co-teaching pair, a supportive immediate teaching context may be formed; however, co-teaching can also divert attention away from implementing a whole school philosophy and have the effect of releasing many teachers from taking the responsibility for working with students who have disabilities.

Further, if co-teachers or teachers who team do stake their primary professional identities on their pair or team, this could have the effect of limiting their interaction with other teachers in the building who may also be able to provide support in a specific area of knowledge or skill. A different, more diffuse, kind of balkanization can take place when new SETs rely chiefly on veteran SETs for support (Kilgore & Griffin, 1998). These veterans, who may or may not be working in their own buildings, may not really identify the school itself as their first professional home or seek support from their knowledgeable general education colleagues. How SETs view what constitutes their own primary professional communities, then, becomes a critical consideration relative to building induction support as a school-wide function.

The concept of an integrated school culture, which Kardos and colleagues (2001) found so critical to the success of new teachers, is closely related to the PLC concept, especially in having the entire school staff share responsibility for the quality of teaching and learning that takes place. In such school cultures, the assumption is that the school's goals drive teachers' work, as opposed to having contrasting goals for different subsets of teachers. Essential characteristics of PLCs (e.g., Hord, 1997) include the supportive role of the principal, a culture of collaboration, a commitment from all staff, the presence of a catalyst, and the use of change facilitators. Characteristics of an integrated school culture (Kardos et al.) include veteran and novice teachers sharing responsibility for all students and being engaged in discussing curriculum and instruction, strong principal leadership to support collective teacher development, and a commitment by the principal to support new teachers. Both PLCs and integrated school cultures

function more as naturally occurring communities of support for which Cole (1991) advocated than as cultures where external mentors are assigned to novice teachers as the principal form of induction support.

Whether such natural, school-based collaborative communities embrace SETs and a commitment to students who have disabilities may depend largely on whether meeting the needs of students with disabilities is an up-front, public, school-wide issue or not. It does appear that SETs can move from the periphery to the center of collaborative activity in schools (Grossman et al., 2001), mitigating their potential isolation (Curry, 2008). Further, when they are members of interdisciplinary teams, SETs can take leadership roles (Kilgore & Griffin, 1998). But as indicated in the Achinstein (2002) study of one school community, special education can readily become a source of conflict and tension as teachers begin to work together on a school-wide basis (see also Hargreaves, 2001). If not resolved, this can cause SETs to leave. It appears that issues related to special education are likely to surface as sources of tension and conflict when teachers initially engage in collaboration as a community. School leaders—whether principals or teacher leaders—should anticipate this issue and make developing a shared vision (Westheimer, 1999) a public part of a collaborative school. When meeting the needs of students with disabilities is addressed as part of a school's basic philosophy and practice (Wallace et al., 2002), it does appear that teachers can work together successfully in multiple ways to address this challenge. In initiating collaborative cultures, it is important for school leaders to recognize that narrowing forms of support for students who have disabilities to one structural option, such as one-to-one co-teaching, may not be the only approach to creating flexible, responsive structures and approaches to instruction. Further, building a strong professional community across co-teachers and teams appears to be an essential element in school leaders' practice if issues related to educating students who have disabilities are to be brought to the forefront.

Supporting the Quality of Novice Special Educators' Practice

Retention of novice special educators is valuable only to the degree that the teaching practice of those who are retained represents high-quality instruction that results in student learning. The professional development literature supports a learner-centered approach to teacher learning and emphasizes the role of collaboration in the implementation of innovative practice, specifically, peer coaching at the early stages of implementation (Joyce & Showers, 2002). Peer coaching is viewed as pivotal to teacher development and learning when it is combined with modeling and practice. At the school-wide level, it may be the case that PLCs lead to improved student outcomes for students who have disabilities (Vescio et al., 2008). Yet the absence of innovative practice with a focus on student learning has been identified repeatedly in the literature as a missing element in co-teaching specifically (McDuffie et al., in press; Scruggs et al., 2007; Weiss, 2004). Further, when groups of teachers are in the early stages of collaboration, they may be more likely to attend to issues of student behavior rather than innovative approaches to curriculum and instruction (Crow & Pounder, 2000) that may also have a positive effect on students' behavior.

Taken together, these issues suggest that a direct focus on innovative practice as a means to improve the quality of teaching and learning for students with disabilities (and all students in fact) would be a critical undertaking for novice and veteran teachers alike. The literature on LCPD suggests that this approach can be successful on a school-wide basis, with small groups, and in collaborations between teachers and university-based researchers (Englert & Rozendal,

2004). A focus on improving practice is consistent with creating responsive school-wide contexts as represented in the PLC literature and in the notion of an integrated school culture. But precisely how those school cultures embed teacher development for novice teachers (and in fact for all teachers) will be critical to the project of teacher retention across the profession. Some questions:

- Do veteran teachers in a school who are capable of providing modeling, demonstration, and peer coaching—and who may formally hold such roles as literacy or mathematics coaches—focus on supporting novices in their buildings, and special education novices in particular?
- Instead, do they assume that providing this level of classroom assistance is the job of an externally identified mentor? This is not to say that such coaches should be focused exclusively on working with novices. Yet to build a strong and stable school culture, it is particularly critical to get these kinds of instructional supports to new teachers.
- Do building-level coaches include novice SETs in their conception of which teachers they are to serve? Alternatively, is the assumption that SETs will always require their own forms of professional development separate from what is offered to the school staff generally? Given the interest on the part of special education co-teachers in learning from their general education colleagues (Mastropieri et al., 2005), it would seem critical to increase these opportunities.
- Do principals, who necessarily play an essential role in how the human resources within a school building are dispersed, foster relationships that will encourage veteran general educators to intersect with novice special educators?
- Is there a focus on curricular and instructional innovations early on in the development of a teaming structure or in the early implementation of block scheduling that may assist groups of teachers in emphasizing the quality of teaching and learning from the outset of their work together rather than to focus only on student behavior?

Establishing a school-wide culture of teacher learning in which novice SETs are fully included as members of—and eventually maybe also leaders of—that culture would require novice SETs to be fully included in their school's teacher learning goals. Establishing such cultures is a major role of school leaders. At the same time, the question of who provides such modeling and peer coaching to novice SETs is complicated by the multiple individual needs they may have for professional development (Brownell, Adams, Sindelar, Waldron, & Vanhover, 2006). In terms of teacher quality, the foundation of their professional development should mirror that of their general education colleagues; professional development that is specific to their areas of expertise in special education should be offered additionally. For example, a teacher of students with vision impairments may require professional development that is specifically tailored to this population of students. Whatever the innovation, an approach to professional development that is learner-centered should characterize the innovative efforts that are being implemented.

Similarly, one veteran teacher alone cannot provide all of the expertise a single novice teacher needs, whether he or she is in special or general education. New teachers require multiple forms of support (Smith & Ingersoll, 2004) from multiple experts to resist leaving. This suggests that distributed responsibility for providing induction support may be superior to assigning a single mentor. This approach does not require the formal assignment of multiple mentors, one from general and one from special education, as some have suggested (e.g., Whitaker, 2000). In fact, teachers who responded to Whitaker's survey identified personal qualities of veterans as being of greater importance than special education expertise. Billingsley's (2004) observation that new

SETs found informal relationships more valuable than formally assigned mentors is also instructive. What this suggests is that novice SETs need to work in schools where distributed responsibility for their success is a natural outgrowth of a strong, integrated school culture (e.g., Cole, 1991; Kardos et al., 2001) rather than an artificial set of relationships between an assigned mentor and a novice.

Yet even in a school culture that is focused on teacher growth and collaboration, some sources of expertise may not reside within the school. Then it is the responsibility of the principal, working alongside a district's special education staff, to assure that novice SETs have access to knowledge, demonstrations, and peer coaching in the specific areas of special education expertise for which they are responsible.

Learning How School Leaders Can Build Teacher Communities to Include Novice Special Educators

This review suggests that building principals are consistently identified as critical to a school's achieving a sense of professional community. They are instrumental in developing and sustaining PLCs (e.g., Hord, 1997) as well as integrated school cultures (Kardos et al., 2001). Further, because team teaching may work against setting and implementing school-wide goals due to the primary allegiance teachers may have toward their teams, it is principals who must create a sense of collective, school-wide responsibility; identify the appropriate balance between strong allegiance to a team and a school context that depends on the participation of every teacher (Kruse & Louis, 1997); and provide routine and systematic opportunities for the integration of general and special education. Further, it is up to principals to launch programs of professional development that incorporate the tenets of a learner-centered approach.

Principals must also make decisions about novice teachers' assignments. If a school practices some form of co-teaching or team teaching, principals have to consider which co-teachers or teams of teachers will willingly be supportive of a special education novice, especially because this can sometimes be a challenge when frequent turnover in special education staff has taken place. Further, it is principals who will have to make decisions—often with minimal knowledge—about which GETs are likely to get along and work well with a particular special education novice. There is evidence that co-teaching pairs can be successful even if participants are not volunteers. Principals or other teacher leaders will need to monitor how well such relationships are doing over the course of the year and make adjustments that enhance the success of the novices in these teaching conditions. If a school does not practice some form of collaboration between special and general education, it is the responsibility of a school's principal to create the conditions in which novice SETs have colleagues in general education and do not belong solely to a bounded community of special educators.

As a general set of practices, what is it then that principals must do for all new teachers and what must they do specifically to support novice SETs? For all teachers, these practices include establishing a positive hiring climate, clearly communicating expectations, practicing distributed leadership, providing time for co-planning, and making careful mentor-mentee matches when formal mentoring programs are in place. There are also a specific set of practices principals need to take into account regarding novice SETs. These practices, listed below, span the three roles identified in this paper: principals as builders of school culture, as instructional leaders, and as supporters of induction and mentoring:

- combat the sense of isolation for beginning SETs by paying special attention to the orientation program and creating a sense of inclusiveness and community
- understand not only special education laws/legislation and policies, but also evidenced-based instructional and behavioral practices for working with students with disabilities in order to provide appropriate assessment and feedback to beginning SETs
- participate in ongoing professional development regarding changes and trends in the field of special education, particularly on models of inclusion, response to intervention, and co-teaching
- participate in ongoing professional development regarding leadership philosophy and strategies that facilitate the development of site-based management to foster PLCs integrated with inclusive practices
- ensure that workloads for beginning SETs are reasonable
- provide specialized instructional materials and additional clerical support for the heavy burden of special education-related paperwork
- provide beginning SETs with relevant, authentic, and ongoing professional development activities focused on evidenced-based practices in general and special education.

Finally, principals are sometimes put in the position of hiring unqualified teachers—either non-SETs or SETs who work outside of their area of disability expertise. The policy practices that lead to having the least qualified teachers work with our most vulnerable students persists, and among these are students who have disabilities. The hiring and retention of qualified teachers for underserved and marginalized populations is dependent on a restructured profession writ large. While a substantive analysis of the issue is outside the scope of this paper, essential to the project of improving the retention of novice SETs—and all qualified novices who work with our most challenging populations—is addressing how the systemic problems impact teacher retention. At the least, principals should make every attempt to hire teachers certified in the appropriate disability category and, if not, provide appropriate professional development opportunities to give them the skills necessary to work with the category of students they teach.

Although novice SETs are members of two professional communities, namely, their school and their professional special education community, it appears to be their day-to-day interactions at their school sites that most impact the support they experience. This is not to diminish their identities as special educators, but rather to emphasize the fundamental role of the larger general education school community in their early professional experiences and the role of the principal and general education colleagues in making the lives of novice SETs less complicated.

Each of these three themes is driven by a core action that serves as the foundation for thinking about how schools can better support novice special educators. For integrated and non-balkanized workplaces to exist, it is critical to make the issue of educating all students, including those with disabilities, an upfront, public, school-wide issue. This may initially create conflict and tension, but that will assist all teachers with the reality that they are responsible for every student—those with disabilities as well as those who do not have disabilities. If the quality of novice special educators' practices is to be supported, the support must come in multiple forms and be distributed among all participants in the school. Finally, schools are dependent on strong leaders with the knowledge and skills to build teacher communities for all teachers from the outset, including the novice special educator.

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Authors' Note

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Table 1. Professional Learning Communities [PLCs].

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Achinstein, 2002	Analyzed how teachers in communities manage conflicts Framed theoretically by a micropolitical perspective (use of formal and informal power to achieve goals in organizations)	Case study approach: urban public middle schools recognized as strong professional communities Study of conflict Mixed methods, mostly qualitative, with ongoing interviews, observations, document analysis, and teacher survey	2 school-wide teacher communities in urban middle schools Studied one school for 2 academic years and another school for 1 academic year No direct indication that SETs were included, but discussion included SETs.	Conflict is inherent in collaboration. Much group focus and conflict is related to students with academic and behavior problems or diversity. This research developed a continuum of micropolitical processes about conflict within PLCs.
Berry, Johnson, & Montgomery, 2005	Explored the role of National Board-certified teachers in school improvement	Qualitative data: site visits, document review, classroom observations, interviews of teachers and administrators	1 teacher community in one rural elementary school (25 teachers) Data collected for 1 calendar year With consultant support, teachers organized professional learning teams	Student achievement changed dramatically. After 4 years, more than 80% of students met grade-level standards. Results were attributed to several strategies. PLCs focused on analysis of school data. National Board-certified teachers contributed to these discussions because of their rich understanding of assessment and other skills developed through the Board process.
Bolam, McMahon, Stoll, Thomas, & Wallace, 2005	Identified characteristics of and generated models for effective PLCs Investigated the relationship of PLC characteristics and student outcomes	Surveys schools at all levels and types (one solicited from each school)	2300 schools in England surveyed 34 month project Case studies conducted in 16 schools over 18 months	Characteristics of effective PLCs and three stages of development in PLCs (starter, developer, mature) were identified. The more developed a PLC, the more positive the association was with pupil achievement and professional learning. Four key processes that support the creation, management, and sustainability of PLCs were found.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Curry, 2008	Analyzed how teachers' PLCs at the high-school level constitute a resource for school reform and instructional improvement	Case study organized around four design features of Critical Friends Groups [CFG]	6 mature, school-based inquiry groups CFGs in an urban high school. conducted over 3 years Data sources included interviews, observations, document collection 25 teachers & administrators were informants	Positive outcomes found in the study of CFGs were contrasted to issues found in the study; e.g., CFGs allowed for more open debate about controversial issues, but having this debate did not necessarily lead to follow-up in the school. The paper includes a discussion of an isolated journalism teacher who "gets involved" through the CFG.
Dooner, Mandzuk, & Clifton, 2008	Analyzed interactions of teachers as they implemented Egan's theory of Imagination and Learning in their teaching Also used Weick's four developmental stages of collaboration to understanding why conflict occurs in learning communities	Qualitative data: analysis of journal entries, focus-group discussions, and individual interviews	7 middle school teachers studied in a suburban school for 2 years	This research focused on understanding learning communities as they develop, provided insight into the cycles through which PLCs progress, and identified conflict that is inherent in PLCs.
Dunne, Nave, & Lewis, 2000	Evaluated Critical Friends Groups [CFGs] initiated in 62 schools Commissioned by the Annenberg Institute commissioned a 2-year study of the CFGs. This paper reported on a theory-based evaluation of 12 of the 62 schools	Evaluation data: observations of CFG meetings, interviews, teacher and student work samples, surveys Used skilled coaches to guide the CFGs	12 schools were selected: 5 high schools, 5 elementary schools, and 2 middle schools Data gathered over 2 years	Differences were identified between teachers involved in CFGs (e.g., CFG teachers were more willing to put in time beyond what is expected, collaborated more with other teachers, and were eager to hear about ways to improve teaching). CFG teachers said CFG involvement helped them focus on teaching and student learning, become more student centered in instruction, and set higher student expectations. In schools where teacher practices changed, principals fostered "a spirit of shared responsibility for student learning."

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Englert & Tarrant, 1995	Focused on the creation of a teacher-researcher community and the changes 3 teachers (in PLCs) made in their classroom practice as a result of the teacher community	Discourse analysis	Community of 3 SETs, 3 university researchers, and 4 doctoral students	Literacy practices changed from the use of a few restricted instructional practices to a variety of new interactive practices. Findings also revealed that teachers' talk changed from a focus on practical activities to discussions that included the theoretical underpinnings of activities.
Giles & Hargreaves, 2006	Examined whether innovative schools that establish themselves as learning communities can sustain their early promise of success	Case study: interviews, observations, document analysis; grounded theory approach	Findings focused on 1 innovative high school in a middle/upper income area Data collected over 4 years	The school showed some resistance to conventional processes, but also showed signs of defaulting to conventional processes.
Grossman, Wineburg, & Woolworth, 2001	Described and proposed a model of teacher community	Qualitative: transcripts of group discussions, field notes, e-mails, journals, notes of telephone conversations Teachers paid a stipend to join a teacher community	1 urban high school; involved 22 English and social studies teachers and 1special education/ESL teacher 18-month study	The research showed how a group came together, struggled at common language, and worked to create a collective vision for ongoing professional development. The paper identified four dimensions that distinguish a *community* of teachers from a *group* of teachers One major point is how a SET began on the periphery of the group and then emerged as a leader.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Hargreaves, 1991	Focused on the micropolitical nature of school culture and teacher collegiality Highlighted micropolitical perspective of collegiality that emerged from data but that may not be emphasized Investigated the meanings that teachers and principals attached to preparation time and other noncontract time and the interpretations they put on its use	Qualitative based on semi-structured interviews with teachers and principals	6 principals and 14 teachers were interviewed in 6 elementary schools in one district in Canada Schools chosen were part of a collaboration planning initiative	This research determined that contrived collegiality emerged in several forms: mandated preparation time use (teachers found the time to be too short for real use); consultation with special education resource teachers (teachers saw this as inflexible and unresponsive to student needs; teachers often met when there was no reason to meet); and peer coaching (teachers were paired with incompatible colleagues).
Hargreaves, 2001	Studied the emotions of teaching and educational change Focused on "teachers' reports about significant emotional episodes involving interactions with colleagues"	Qualitative based on interviews	53 teachers in 15 elementary and secondary schools	Areas of response that were emotionally significant and discussed in this paper were: appreciation and acknowledgement; personal support and social acceptance; and cooperation, collaboration and conflict (teachers viewed conflict as negative and avoided it). In one example, conflict arose over whether special education students should be included or excluded in classrooms.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Hipp, Huffman, Pankake, & Olivier, 2008	How does a school becomes a sustainable PLC?	Qualitative based on interview data and assessments of beliefs	2 schools, 1 elementary and 1 middle, that the authors considered to be advanced in the development of PLCs. Data were collected at intervals over 5 years.	Although the schools were different in some ways, they had similarities in how they evolved and sustained themselves as PLCs, e.g., commitment to students, strong leadership, and history of involvement in educational change projects.
Hollins, McIntyre, DeBose, Hollins, & Towner, 2004	Investigated a structured study-group approach to promoting self-sustaining learning communities Supports teachers in developing the "habits of mind" necessary for improving literacy acquisition and development for urban African American students attending a low-performing, high-poverty school	Qualitative: interviews, transcriptions of meetings, recording field notes, and informal conversations Quantitative data collected via student performance on the Stanford Achievement test	One urban elementary school serving predominately underachieving African American students 12 teachers in K-4 3-year analysis of student performance on the Stanford Achievement Test	Five themes emerged for discussion of study-group outcomes: delineating challenges, identifying and implementing new approaches, evaluating new approaches; role transmutation, and continuous dialog regarding approaches. Stanford Achievement Test showed the greatest gains, with the poorest readers in the second and third grades.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Hord, 1997	Reviewed literature by the Southwest Educational Development Laboratory [SEDL] that explored three questions: What do PLCs look like and how do they function? Why are PLCs important for both staff and students? How are PLCs introduced and developed in schools as a new organizational arrangement?	Focus of study on PLCs with entire school staffs Included all published books and articles in educational journals related to PLCs. Focus on school reform, some papers are research- based while others are not	Journal articles and books relating to attributes of PLCs, outcomes of PLCs, and the processes for developing PLCs	This research identified attributes of PLCs that are supported in literature, research on the impact of PLCs on teacher practice and student learning, and suggestions for developing PLCs.
InPraxis Group, 2006	Explored three questions: What are the attributes and structures of PLCs? What is the impact of PLCs? What are the benefits of PLCs?	Literature review focused on PLCs with entire school staffs	Annotated bibliography of educational journal articles, book chapters and books, and reports	Findings were: PLCs are increasingly important in schools. Resources are needed to sustain PLCs. PLCs improve teacher practice and student achievement.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Lieberman, 1995	Case studies commissioned by National Center for Restructuring Education, Schools, and Teaching [NCREST] to document the work of restructuring	Case studies	6 schools: 5 elementary and 1 middle school in 5 states	This research demonstrated how PLCs develop among teachers and principals and documented that communities are built in different ways at different places.
Little, 2003	Aimed to understand how interactions among teachers promote the positive outcomes often attributable to PLCs Explored notion of "unpacking the black box" of community Examined notion of bounded professional communities and related issues	Case studies using observations, interviews, pen/pencil instruments, school documents, audio and video recordings	2 existing teacher-led groups – those that named themselves (e.g., Algebra Group) – in 2 high schools	Teachers supported their learning/improvement by allocating time to openly talk about problems in their teaching, sharing materials, and seeking solutions
Louis & Marks, 1998	Examined the impact of PLC involvement on classroom organization and student performance / achievement	Case studies: teacher surveys of teachers in all schools, classroom observations, teacher interviews, assessment tasks (authentic/classroom), and student work samples	24 schools Surveys of 910 teachers and 5,943 students Schools nationally selected—restructuring elementary, middle, and high schools. Data collected over 3 years Student samples on a subset of 144 teachers	Professional communities are more frequent in elementary schools. Professional communities are associated with social support for student academic performance. Achievement is higher in schools with strong professional communities; the researchers explain that the use of authentic pedagogy (quality of learning that is occurring) is a contributor.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
McLaughlin, 1993	Examined the school workplace as part of the research effort of the Center for Research on the Context of Secondary School Teaching [CRC] at Stanford	Qualitative: CRC's core research program included 3 years of fieldwork, including interviews and surveys	16 public and private secondary schools in 8 communities in 2 states	Departments were viewed by teachers as the professional community of greatest significance to them. How collegial a department is influences teachers' practices and their attempts to enhance student learning. This includes teachers' willingness to work with *all* students. PLCs may have negative consequences such as resistance to change.
Morrissey, 2000	Explored the literature since 1997 on the dimensions that characterize benefits and development of PLCs	Review of literature available since the 1997 SEDL review by Hord General overview and findings relative to attributes in low-performing schools	SEDL project to work with low-performing schools as these schools initiated comprehensive reform efforts for 2 years 5 schools in 5 states – urban, suburban, rural represented	Dimensions of PLCs remained similar to those described in Hord's 1997 review. Findings revealed that five themes emerged as critical to PLC development: supportive role of principal, a culture of collaboration, a commitment from all staff, the presence of a catalyst, and the use of change facilitators.
Phillips, 2003	Traced the evolution of a PLC as part of a larger school reform initiative	Case study: interviews and focus groups, classroom observations, document reviews, and student work samples	1 urban middle school 5-year effort;	A strong PLC emerged as teachers gradually took over responsibility for a staff development plan originally created by school leaders.
Strahan, 2003	Examined the dynamics of school culture	Case studies: demographic and achievement data, teacher and administrator interviews, observations of lessons and meetings	3 elementary schools serving low-income and minority students	Strong PLCs that focused on data-driven dialogue resulted in achievement gains for students in the schools.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Supovitz, 2002	Evaluated a team-based schooling initiative Looked at the story of one school district's efforts to improve instruction through a teaming structure within its schools	Annual survey (school culture scale) of teachers and administrators, interviews, visitations of schools, document examination, and student test results Comparison of teachers (both GETs and SETs) in team-based schools with teachers in non-team-based schools Data aggregated across SETs and GETs	Schools in medium urban district (Cincinnati) Data from CPRE's evaluation of team-based schooling 4-year evaluation	Differences between team-based and non-team-based teachers on 3 of 5 survey scales (more involved, higher levels of collaboration, more interaction) favored team-based teachers. Few differences were found between groups on instructional practices scales. No pattern of higher student performance in team-based schools was found compared with non-team-based schools. However, an analysis of team instructional focus revealed that the extent of a teams' use of instructional practices was positively related to student achievement.
Supovitz & Christman, 2003	Large-scale evaluations of school district reform initiatives designed to foster the development of instructionally focused communities	Evaluation data: surveys, observations, and achievement tests	2 urban school districts (large: Philadelphia and medium: Cincinnati)	Reform iniatives had positive influences on school culture. Findings relating to instructional practice were uneven within each site. Although instructional practice was discussed in small learning communities, initiatives did not often support deeper levels of teacher discussion / collaboration about issues (e.g., student work). Student achievement was positively influenced under certain conditions in both sites (see Supovitz [2002] for findings in Cincinnati). In Philadelphia, elementary schools showed test score gains; however, these gains were generally attributed to a literacy initiative in the schools

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Vescio, Ross & Adams, 2008	Reviewed research on the impact of PLCs on student learning and teacher practice	Two key sources to identify research: ERIC and EBSCO databases for published articles from 1990-2005 Publication links of organizations that are associated with PLC work: Annenberg Institute for School Reform, National School Reform Faculty, Coalition of Essential Schools, Wisconsin Center for Education Research	10 American studies and one British report (included because it was vetted and published by England's Department of Education and Skills). Criteria for inclusion: articles and book chapters that reported data on the impact of school site PLCs on teaching practice and/or student learning Definition of PLCs as school-based entities exhibiting major characteristics identified in the literature	Overall findings of the research show that PLCs result in positive outcomes on teacher practice and on student learning.

Table 1. Professional Learning Communities [PLCs]. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Westheimer, 1999	Examined learning communities in schools known for having strong teacher communities; considered the notion of "community" Questions: What are teachers' goals and beliefs about professional communities? What experiences shape these beliefs? What organizational conditions and processes contribute to the development and sustenance of teacher professional communities? What are teacher professional communities like and how are these perceived by reformers, by teachers, and by key administrators?	Case studies using ethnographic techniques Observations within school schedule and also before and after school, between classes, and other nonclass time	Focused on how teacher communities differ in practice Teacher professional communities in 2 middle schools in CA Spent 15 months in 2 schools Initial and follow-up observations and interviews with follow-up taking place 1 and 2 years after the initial study	Both communities shared specific characteristics (e.g., beliefs, traditions, participation) but took different forms in their approaches to doing things (e.g., professionalism, work and play, curriculum, and classroom management). These schools were distinguished as "liberal individualistic" or "collective."
Wood, 2007	Followed creation and implementation of learning communities [LC]; Explored four themes: teacher agency, purposes for teacher collaboration, challenges to and impact on district culture, and influences on institutional and policy conditions	Qualitative: interviews, focus groups, observations, document review, and visits	Urban school district located in a mid-Atlantic city: involved every school: 23 elementary, 2 middle, 1 secondary Involved all teachers; assumption that SETs were included 2 1/2 years of data collection	Many participants saw little relationship between LC and student learning. Teacher efficacy was constrained by high-stakes accountability. Within LCs, more time was spent on community building than on critical inquiry. The sustainability of LCs came into question. Leaders seemed to support (but may have created) conditions that undermined LCs. Overall, positives outweighed the negatives.

Table 2. Leadership/Principal's Role.

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Andrews, Gilbert, & Martin, 2006	Questions: Types of support new teachers say they receive and value compared to what administrators say is provided; types of support beginning teachers value and what they actually receive; types of support administrators value and what they believe are provided for the beginning teachers in their schools	Quantitative: Support for New Teachers Survey (12 items) through mail and online to beginning teachers, administrators, and mentoring teachers	276 first- and second-year teachers 33 administrators 57 mentor teachers 2 universities (Valdosta State and University of Georgia) working with school districts in 2 large areas of the state to support induction	Strategies teachers valued most were related to opportunities to collaborate and learn from other teachers. Four strategies most often provided were having an assigned mentor; a special orientation session; special handbooks, guides, or other materials; and new-teacher professional development sessions. Only two strategies were valued by teachers: mentors and orientation. Administrators should recognize that new teachers may have special needs and special problems, discuss administrator or district philosophies about certain supports in order to clear up misconceptions, assure new teachers and mentors that the administrator supports the time and effort given by the mentors, make such a dialogue a planned part of new-teacher orientation, conduct nonevaluative feedback, and provide opportunities to observe other teachers and provide coplanning time.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Billingsley, Carlson, & Klein, 2004	Questions: What are the working conditions of early career special educators? What types of induction are provided? Who provides beginning teachers with suggestions for enhancing their teaching? Is induction support significantly related to beginning special educators' ratings of their effectiveness, job manageability, and plans to remain in teaching?	Large-scale quantitative study using a two-phase sample design	Subset of the SPeNSE database of beginning SETs (5 or fewer years). N=1153 with a mean of 2.8 years teaching experience	Certain work factors are problems for teachers (e.g., having principals who do not understand what they do and feelings of not being included in their schools). In spite of formal mentoring supports, teachers valued informal supports. Central office administrators or principals provided teachers little feedback. Educational leaders need to understand what SE teachers do and help improve their working conditions (e.g., relieving paperwork burden).
Brock & Grady, 1997	Questions: What differences exist between reports of beginning teachers and reports of principals regarding the problems first-year teachers experience? What role expectations do beginning teachers and principals have for each other? What differences exist between the kinds of assistance that beginning teachers want and the kinds of assistance that principals provide?	Survey of first-year SETs	Study in Nebraska: Phase I: 51 beginning second- year teachers beginning Phase II: 56 principals	Beginning teachers want the principal to communicate the prevailing criteria for good teaching. Principals reported mentors and personal interactions with beginning teachers were the most useful induction strategies. Most principals (71%) indicated they had no formal program and no training for mentors. Beginning teachers identify the school principal as a key source of support and guidance.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Cherian & Daniel, 2008	Questions: What new possibilities existed for administrators in teacher induction programs? How do the roles of principals support the unique needs of novice educators?	Qualitative pilot study based on interviews	Ontario schools (2 high schools, 1 elementary) 22 participants: 3 principals, 1 department head , 13 novice teachers and 5 veteran teachers/mentors	Principals set the tone for the PLC and positive school culture, have a key role in induction process, value but do not have time for role as instructional leader, should create school environments that are stimulating to new teachers, need to visit classrooms on an informal basis, should provide regular feedback to new teachers, need to help set professional goals and build a professional culture of learning in the school community, and should share induction with others, e. g., community, school board, IHEs.
Cole, 1991	Studied the relationships new teachers form Examined socialization process of new teachers	Qualitative approach with in-depth interviews, group discussions, and observations based on Miles' (1990) vignettes and prestructured cases	13 new teachers from one school in Ontario involved in a participatory induction program development study. Administrators (principal and VP) in the focus school known for their support and great rapport with the teachers	New teachers need time to define their roles and experiment with their identity as teachers. Confidence building was important; the administrator's role in allowing questions and understanding their stress was also important to their confidence building. Other important factors included belonging to the overall school culture, formative evaluation, opportunity to develop relationships, group planning provided by the administration to clarify and collaborate with others, support without pressure, clustered classroom locations based on grade level, and subject area to facilitate professional growth between teachers. Administrators should create caring and helping communities as well as collegiality and authenticity between new and experienced teachers. Teachers preferred natural pairing up in mentoring and finding supports versus contrived "buddy systems."

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Flores, 2004, 2006	How, what, and under which circumstances do new teachers learn at work? How do they develop professionally over time? What are the factors that hinder or facilitate their professional growth?	Qualitative: longitudinal study using semi-structured interviews; case records Grounded theory—constant comparative analysis (Glaser & Strauss, 1967)	14 new GETs 18 elementary and secondary schools in Northern Portugal 2-year study	The results had three themes: balkanization, competition and lack of collaboration among teachers,and leadership (normative, effective, laissez-faire). Most teachers became compliant and less enthusiastic about teaching; 2 maintained optimism. Leadership qualities were key factor to successful collaborative school cultures. Much more attention was needed on induction by policymakers, teacher educators, and school leaders
Kardos, Johnson, Peske, Kauffman, & Liu, 2001	Learned from new teachers about their experiences with their school-based colleagues Identified how easy or difficult it was to access other teachers: were interactions comfortable or strained, encouraging or discouraging, meaningful or perfunctory? Aimed to understand organizational structures and ways that principal leadership influences those interactions	Interviews of 1.5 to 2.5 hours related to career, incentives and rewards, professional culture, and curriculum and assessment	50 first- and second-year teachers No mention of special education Massachusetts schools, charter and public schools, all levels, urban and suburban	There were three types of cultures veteran-oriented, novice-oriented, and integrated. New teachers felt alone in the veteran-oriented culture. Principals ignored teaching and focused more on teachers' ability in keeping order. Principals were rarely present and when visible were "monitoring." New teachers in novice cultures were not supported. Integrated cultures were the most supportive with mentoring and curriculum planning. The principal is the key to developing an integrated culture where both veteran and new teachers have a collective mission. Principals need to be visible and responsive, focusing on instructional issues, organizing support for professional growth, and promoting teamwork.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Quinn & Andrews, 2004	Determine if the amount of support first-year teachers perceived they received from their principals was significant compared to the total amount of support they believed they received	Questionnaire on principal support and total support	106 first- year teachers in school district in Reno, Nevada; special education school included in data 56 phone interviews No separate analyses done on SETs	First-year teachers reported needing an orientation for beginning teachers, more information on policy and procedures, and information on where materials and resources were located in the school. Principals must be trained to run effective induction programs and provide a nurturing and supportive school climate.
Schlichte, Yssel, & Merbler, 2005	Examined the extent of collegial and administrative support and related stress factors perceived by first-year SETs Examined any protective factors that made the first year of teaching successful	Qualitative case studies	5 first-year SETs in Indiana	Strong relationships with administrators, mentors, and students were protective factors and critical to retention. Emotional well-being was also important to retention. Most teachers (4 out of 5) experienced lack of collegial support and expressed having no one to talk to. At the end of the first year, 2 teachers resigned. Lack of administrative support was a factor in one case. Mentoring is important, and new teachers should have access to multiple sources of support. Collaboration should be taught at the preservice level.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Singh & Billingsley, 1998	Examined the effects of professional support on commitment to the teaching profession (both principal and peer support)	Quantitative: SASS data Nonexperimental, structural equation modeling method	N=9,040 experienced and new teachers including a national subsample of SETs Mean years of teaching =12 years	Peer support had greatest influence (.30) on commitment; principal support had great influence (.28) and also indirect influence on peer support for a total influence of .48. Principals need to know how to support teachers. Strong leaders foster supportive learning communities where teachers work collaboratively and share common sense of purpose. Principals enhance commitment through fostering a collegial environment. Principal support appears to be generally important to teachers' well-being. In order to create more collegial environments, principals should foster a shared vision, goals, values, professional growth, solidarity, and a supportive learning community.
Stanulis & Floden, 2009	Examined the impact of an intensive mentoring program on beginning teachers	Quantitative analysis using a matched comparison group design of pre- and post-scores of experimental and comparison group teachers' scores on the AIMS Qualitative analysis of open-ended statements on a survey	Comparison of 24 beginning teachers' practice (12 treatment, 12 control). 1 beginning teacher was a SET.	The beginning teachers in the treatment group did significantly better on the Atmosphere, Instruction/Content, Management, and Student Engagement (AIMS) observation instrument. Intensive mentoring programs should involve mentors who observe, coplan, analyze student work, and collect and analyze teacher data together with the beginning teachers.
Weiss, 1999	Investigated whether workplace conditions (e.g., school leadership, student behavior, and teacher autonomy) influence commitment, morale, and intent to stay compared to class size, subject area, or demographic information	Logistical, ordinal, and hierarchical regression analysis	Comparison of national SASS data from 1987/1988 and 1993/1994. 2,676 first-year teachers in 1987/1988 sample and 2,412 first-year teachers included in1993/1994 sample	Actual variables were not as influential as perceived variables (e.g., it wasn't the actual class size but the way the teachers felt about class size). Strongest influences were teachers' perceptions of administrators' leadership, culture, autonomy, and discretion. Administrative support and encouragement were key factors. Poor student behavior led to lower morale. Induction programs should be designed to take into account all variables and new teachers' needs for autonomy and support.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Whitaker, 2000	Question: What do beginning SETs perceive as an effective mentoring program?	Quantitative survey approach	156 first-year SETs from South Carolina	Scheduled and unscheduled meetings were the most frequent forms of support and the most valued by teachers. One fourth of mentors never observed the beginning teacher. The most frequent communication methods were telephone and written communication. Only 12 of the 156 teachers had mentors in the same building. Beginning teacher support was more emotional than instructional, with frequency of emotional support influencing teachers' rating of the effectiveness of the mentoring program. Mentors need to provide more support on instructional, discipline, and management.
Wood, 2005	Questions: What roles do principals play in supporting novice teachers? How do principals participate in a large, urban, standards-based teacher induction program?	Mixed methods: survey and case study; focus group of induction coordinators; focus group of mentors; one-on-one with novice teachers; principal interviews	California's Induction Program (BTSA): induction coordinators, mentors, novice teachers, and principals in 5 schools	Five leadership roles in supporting novice teachers were culture builder, instructional leader, coordinator of mentors, novice teacher recruiter, and advocate/retainer. Positive aspects of principal support included face-to-face interactions with novice teachers, taking the same PD and induction training, time to discuss PD, and conducting formative evaluations and unannounced observations. Secondary principals were not as active in induction as elementary principals. The paper cautions not to delegate all the induction responsibilities to the vice-principal or induction coordinator. Principals need training in induction.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Wynn, Carboni, & Patall, 2007	Questions: What are beginning teachers' perceptions of their mentoring experience? How do beginning teachers rate the school climate of their school site? How effective do beginning teachers feel their principals are? Do significant relationships exist between beginning teachers' perceptions of these three areas and their decision to remain at the school or in the school district?	Quantitative: survey	217 first- and second-year teachers in North Carolina	No correlation between mentoring and teachers' decision to stay was found. A positive correlation between school culture/working conditions and teachers' decision to stay was found. Satisfaction with principal leadership was positively correlated with teacher decisions to stay (strongest correlation). Mentors did not observe beginning teachers often, beginning teachers did not observe mentors, and they had little time for planning.

Table 2. Leadership/Principal's Role. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Youngs, 2007a	What is the influence of principals on the induction experience? What is the effect of background and beliefs on the approach to induction?	Interviews, observations of meetings with new teachers (principal and mentor-mentee, and observation of other induction activities)	6 elementary principals 3 school districts First- or second-year teachers, mentors, or other teachers in Connecticut	Three principals (3) were found to be effective with beginning teachers because they had direct interaction or facilitation of mentors' work; the other 3 had little impact on beginning teachers. Effectiveness was related to principals' background, leadership beliefs, actions about induction/evaluation, and response to policy. Strategies used by principals included scheduling regular time for mentors, beginning teachers to meet, interacting with beginning teachers to promote teacher development, attending to beginning teachers' curricular and instructional needs, increasing content knowledge, maintaining professional cultures, and sharing responsibility with veteran teachers.
Youngs, 2007b	Questions: What is the nature and quality of the induction support experienced by first- and second-year teachers in two urban districts? What is the nature of the possible connections between district policy and induction support?	Qualitative: methods using interviews included questions about teacher collaboration and principal leadership for induction in the new teachers' schools and teacher evaluation and professional development in their districts	4 first-year teachers and 4 second-year teachers from each of 2 urban districts in Connecticut 5 mentors 7 principals School district administrator for the induction program A member of the teachers union Both elementary and high school teachers included	Grade-level and content-area matches were important for the beginning teachers. Understanding of induction by mentors, principals, and others seemed to mediate the district policy. Attempts were made to match teachers and mentors by grade-level and content area. If this was impossible, then mentors were verified to be skilled in curriculum and instruction. Principals who are instructional leaders and see induction as a developmental process may provide a better school culture for beginning teachers.

Table 3. Professional Development.

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Abbott, Greenwood, Buzhardt, & Tapia, 2006	Described and evaluated the use of technology-based teacher support to scale up Class-Wide Peer Tutoring [CWPT] Based the research on the assumption that technology to support teachers as they implement CWPT could be an efficient way to increase awareness and provide access and implementation support as part of a professional development model	Data on implementation of CWPT in each teacher's classroom Implementation based on the teacher's completion of five tasks related to participating in training, assessing student progress, implementing the CWPT instructional process, completing weekly progress-monitoring data, teacher fidelity in completing implementation checklists	5 K-5 elementary schools in 4 states Local consultants with CWPT experience Number of teachers ranged from 14 to 73	CWPT was implemented by 57% of participating teachers with fidelity. All teachers in 2 schools implemented CWPT, while in the other 3 schools, 45%, 42% and 0% of teachers implemented CWPT. Schools with high implementation had strong administrative support. Schools with lower levels of implementation had problems with limited administrative and/or technical support, or weak training. Teachers need a strong professional development structure (summer training, fall training, ongoing PD) for success, as well as principal support, and strong technical support.
Abbott, Walton, Tapia, & Greenwood, 1999	Evaluated a "blueprint" for closing the research-to-practice gap in local schools based on the work of staff at Juniper Gardens Children's Project [JGCP]	Multiyear, multi-measure, single-subject research design Examination of student outcomes, JGCP model indicators, and practice outcome indicators	8 urban, Title I elementary schools in Kansas City 15 teachers implemented strategies in year 1; increased to 22 teachers in year 2	Innovations increased academic responses and decreased levels of inappropriate behavior in a group of target students. Grassroots support of teachers in a building needed for a partnership to develop. Translating research findings into interventions that are accessible to teachers is a major task and requires much collaborative time. Teacher participation is never instantaneous, but is grown from year to year. It is important that teachers learn a problem-solving method of inquiry that links change in practice directly to change in student performance.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Baker, Gersten, Dimino, & Griffiths, 2004	Explore factors influencing sustained use of a research-based intervention, Peer Assisted Learning Strategies [PALS] math in an elementary school	Observation and teacher interviews to determine if PALS was still being used	8 GETs in 1 elementary school who originally participated in a research study of PALS math 8 years earlier	All teachers continued to use PALS 8 years later. Five were routine users (i.e., didn't worry about logistics), three were refined users (teachers mastered and went beyond the logistics to improve PALS for use in their class).
Boudah, Blair, & Mitchell, 2003	Compared transfer of training of a Strategy Intervention Model [SIM)] intervention to classroom practice using an Authentic Professional Development [APD] model compared to a traditional model of professional development	Teacher Implementation and Student Performance Questionnaire and Training Evaluation Questionnaire Feedback from teachers and observations in classrooms	57 teachers participated in one of two forms of professional development: 44 in the APD model 13 in traditional PD 88% general education secondary content teachers 12% secondary SETs in experimental group 38.5% GETs, and 61.5% SETs in control group APD model at 4 school sites; traditional professional development at 1 school	Almost all teachers (95%) in APD responding to questionnaire reported implementing the Unit Organizer routine. Only 5 (38%) who participated in traditional professional development reported using the Unit Organizer routine. 16 of 42 teachers (36.4%) used the unit organizer routine more than once in 1-3 months after training. Only 8.3 % of teachers in the control group used the routine more than once.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Englert & Rozendal, 2004	The Literacy Environment for Accelerated Progress [LEAP] project was evaluated. Project goal was to accelerate literacy (reading/writing) performance of students with disabilities who teachers viewed as nonreaders or nonwriters	Descriptive, qualitative methods used to describe teachers during the change process Data used for this investigation: transcriptions of teacher-researcher meetings, artifacts developed by teachers and researchers to support their learning, and interviews with teachers (Teachers and researchers met once a month to talk about and reflect on literacy practices; meetings were recorded and transcribed) Researchers visited classrooms once per week, observed, made videotapes, and teachers were interviewed after observations	6 teachers (4 special education and 2 general education) participated to design and implement the curricular approach 4 teachers were co-teaching in inclusive classrooms 1 researcher and 4 graduate students also participated	In the second year of the project, all teachers appropriated innovative practices and there was a growing alignment of teachers shared practices Teachers evaluated the effectiveness of the practices.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Englert & Tarrant, 1995	Study of a teacher-researcher learning community called the Early Literacy Project [ELP] and the influence this community had on teacher practice in literacy instruction for students with mild disabilities in primary grades	Descriptive, qualitative methods used to describe teachers during change process. Weekly meetings of the Early Literacy Project work group over the course of a school year 5 ELP meetings were recorded and transcribed. Data analyzed as the researchers 'carried on a conversation' with the data, asked questions, categorized, searched for patterns, and looked for major developmental milestones in determining how these discussions shaped educational change	4 teachers, 3 researchers, 4 doctoral students worked collaboratively in a learning community	Teachers had different goals, settings, activities, and ways of teaching. Teachers learned best in areas where they had the greatest needs and interests. The greatest change occurred when the community came to share the theoretical framework and goals that formed the conceptual basis of the project. Conditions had to be created where teachers felt motivated to make changes in their practices that reflected this shared agenda. This resulted in deeper changes in teacher practice than traditional professional development.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Gersten & Dimino, 2001	The Elementary and Middle School Technical Assistance Center [EMSTAC] Project was designed to bring research-based practices into general education classrooms to help teachers meet needs of students with disabilities Focused on the use of a change agent from the project to facilitate sustained use of practices	Action research study to evaluate the effectiveness of the EMSTAC approach to professional development Data collected on student outcomes, interviews with teachers, and classroom observations	2 districts in Oregon At the elementary level, 16 teachers were involved across five schools 12 Language Arts and Social Studies teachers in Grades 7 and 8 in 1 middle school	Across the 2 years of the project, all 28 teachers used the innovations in their classrooms. At the middle school level, solid documentation of growth of students on oral reading fluency was demonstrated.
Greenwood, Tapia, Abbott, & Walton, 2003	Investigated multiyear effects of school-wide implementation of evidence-based literacy practices in 1 elementary school	Observation in classrooms of evidence-based practices implementation and student progress monitoring	Annual participation of 12 K-5 teachers and the school principal 4 teachers who replaced teachers who left the school A team of 4 to 5 researchers were collaborators for all 3 project years	Teachers implemented 13 evidence-based practices over the 3 project years. Implementation was stronger in the first 2 years of the project. The results support the effectiveness of professional development practices that extend beyond a workshop to the classroom. The results also support a focus on the interests and concerns of teachers as related to their continuing participation in, planning of, and implementation and evaluation of new practices. Most teachers continued to use practices in year 3 that were previously developed, but did not increase use of new strategies.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Klingner, Ahwee, Polonieta, & Menendez, 2003	Scale up four research based practices: partner reading collaborative strategic reading Making Words Phonological Awareness	Interviews, observation, researcher logs, and teacher logs	29 teachers in 6 elementary schools participated 21 GETs 8 SETs	All teachers implemented the strategies. Only 1/3 were high implementers with high fidelity, and the selected strategy became part of their regular instruction. About 1/3 were medium implementers with medium fidelity. 1/3 were low implementers. High implementers said that administrative support was important in high use; medium users said administrative support was lacking. Modifications made by teachers was a concern to the researchers. Some classroom support provided by the researchers was insufficient, as the support personnel likely lacked a deep knowledge of the strategies.
Klingner, Arguelles, Hughes, & Vaughn, 2001	Provided LCPD using three evidence-based practices: partner reading collaborative strategic reading Making Words PD	Instructional practices survey, implementation validity checks, focus group, and individual interviews, observation, and video-simulated recalls	110 teachers in 2 high-poverty elementary schools Teachers included English as a second language, bilingual, and SETs 91% of students were Hispanic, 47% used English as a second language Support continued over 4 years	Most teachers had used at least one of the practices, and more than half continued to use one or more of the practices on a regular basis.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Klingner, Vaughn, Hughes, & Arguelles, 1999	Followed up on teachers from a previous study to examine the extent to which teaching practices had been sustained	Focus group interviews, classroom observations, and an intervention validity checklist	7 teachers who participated in a year-long professional development effort who were still teaching at one of 3 target schools	All teachers continued to implement at least one of the practices, all but one frequently used at least one practice, and two teachers frequently used all three practices.
Little & Houston, 2003	Evaluated the extent to which a model of high quality professional development resulted in transfer of training of evidence based practices to the classroom	Surveys were used to follow up with teachers	Teachers from across the state of FL were provided training and follow up support. For example, over 200 teachers were trained in the area of phonological awareness	Evidence from previous research showed that using traditional PD in Florida, only 10% of teachers implemented instructional strategies. Most teachers (80%) implemented evidence-based practices based on surveys and observations of outside evaluators. Three quarters (75%) used phonological awareness training in their classrooms.
Vaughn & Coleman, 2004	Investigated an approach to expand the use of research-based practices in schools by using mentoring or a teache- teaching-teacher approach	Teacher interviews, teacher implementation logs, and observations during implementation using validity checklists Mentors trained in a day long workshop to implement selected effective practices (Collaborative Strategic Reading or Partner Reading) and provided follow-up and coaching Teachers volunteered to participate and were compensated	12 teachers from 2 elementary schools participated: 6 mentors, 6 mentees	Mentees implemented strategies two times or more per week. They were very supportive of this approach to PD. The results for teachers using the strategies were: 3 provided good instruction with the strategy; 2, inadequate instruction; and 1, adequate to good.

Table 3. Professional Development. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Vaughn, Hughes, Schumm, & Klingner, 1998	Describes a collaborative professional development effort to enhance reading and writing instruction in inclusion classrooms	Teacher interviews, observations, checklists regarding practices, and researcher logs	7 GETs in 2 urban elementary schools 6 researchers	Most teachers (5) partially or fully implemented the practices during 9 weeks. Sustained use of the interventions was maintained by 4 of 7 teachers; 3 of these teachers were high implementers. Some teachers did not implement the practices, regardless of the support provided. Most teachers did not have a deep understanding of the practices.
Zetlin, MacLeod, & Michener, 1999	Purpose of this study: to implement in partnership with a local university a learner-centered professional development model Comprehensive language arts program. designed, planned, and implemented by teachers	Qualitative data (field notes, observations) used to determine the extent to which teachers implemented ten elements of the integrated language arts program Pre- and post-survey of teachers used to determine changes in teacher practice	5 inner-city elementary schools with high-poverty, language-minority populations 25 primary-level teachers who volunteered to participate Average experience of the teachers was 13 years; all fully certified	By the end of the school year, all 25 teachers were implementing from 4-10 elements of the integrated curriculum.

Table 4. Co-Teaching/Teaming.

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Caron & McLaughlin 2002	Questions: How do schools define exemplary results for students with disabilities? What indicators can schools and systems use to monitor the progress of all students toward these exemplary results? What organizational and instructional features of schools foster achieving exemplary results for students with disabilities?	Multiple embedded case study design (after Yin) to explore key indicators of collaboration Comparative case studies Interviews and observations targeting collaboration	6 exemplary schools from "high performing" states: 4 elementary and 2 middle schools in Colorado, Kentucky, Nebraska, including urban, rural and suburban. State directors and colleges/universities nominated districts 12 SETs, 17 GETs, additional 25 GETs in focus groups	There were shared school-wide expectations across GETs and SETs that they had responsibility for improving student learning. Multiple structures for collaboration were successful; 2 schools used co-teaching as the primary means for collaboration; others used coplanning and consultation. In one middle school, GETs felt confident and didn't have to co-teach, but instead called on SETs when they were needed. One middle school had inclusion teams. Schools with and without distributed leadership were identified as collaborative. In both kinds of schools, principals worked with teachers on decision-making and in 1 school a SET was a teacher leader. Where collaboration was more pervasive, all strategies for communication possible were used, including technology.
Crow & Pounder, 2000	Applied a theoretical model of effective work groups to the study of teacher teaming	Qualitative design to describe implementation of teaming using observation and interviews with a focus on attitudes and perceptions of teaming and how teaming has affected teachers' work Interviews with teachers, principal, assistant principal and guidance counselors	Weekly observations of team meetings at a suburban middle school 817 students 34 teachers 8-10 weeks	Most teams (3/4) focused on student interventions as opposed to curriculum and had weekly common planning time but needed more. Other teams (3/4) saw absence of block scheduling as problematic in achieving teaming. Teams did not all work well together; the least experienced team (7th grade) had the most problems.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Hunt, Soto, Maier, & Doering, 2003	Question: How effective is a structured collaborative teaming process—Unified Plan of Support [UPS]—on student participation, including the views of teachers participating in the process?	Qualitative methodology using behavioral observations of students (Interaction and Engagement scale) Interviews—once before and once after— teaming intervention Group interview to determine ecological validity of teaming process	2 urban elementary schools in the Bay area; students with significant disabilities included in 2 general education classrooms Study focused on at-risk students and students with significant disabilities Full-time aide in each classroom Intervention:UPS, which required that collaborative teams met 1x/mo for 1.5 hours, 2 students discussed at each meeting Adult participants included GETs (1 in her first year); SETS; parents; and paraprofessionals	High levels of implementation of plans for students were found. There was a consistent reduction in nonengagement by target students. Team members viewed UPS as a collaborative effort with regular parent input. Team members felt supported by the process. UPS process provided SETs with a more "global" view of general education, and they became a support to all students. A nonjudgmental nature was a characteristic of teaming discussions. A sense of community was established in classrooms due to sharing of human resources.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Jimenez-Sanchez & Antia, 1999	Questions: What are teachers' perceptions of their jobs as educators? What are their perceptions of the benefits and challenges of a team-teaching model?	Qualitative study using interviews only 60-90 minute videotaped interview with each informant	Public schools within a partnership for DHH students in California Elementary and middle school teams identified as successful All hearing teachers could sign 5 teachers; made up 3 successful teaching teams 2/3 hearing teachers had general education backgrounds (1 hearing teacher had both general and deaf education background) 1 teacher who was deaf had both certifications 1 teacher who was deaf had DHH certification 1 supervisor with doctorate in special ed 1 teacher had only 3 years of experience	Consistent philosophies were found among partners. Partners compromised to meet common goals. Roles were assigned by areas of expertise, not by hearing status. Role differentiation was not always apparent in teaching lessons. An experienced teacher mentored a novice in one team. Specific benefits were found for deaf teachers, who did not feel as isolated or "hidden" in the school. Challenges included finding planning time and sharing responsibilities.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Kilgore & Griffin, 1998	Questions: How do first- and second-year SETs define and act on the problems of practice they encounter? How does the school context influence their problem solving?	Qualitative: interview-only study; 3 interviews per participant Data from earlier study during participants' internships included for analysis	4 graduates of program followed into first- and second-year of teaching 3 in middle school (2 in self-contained special education class and 1 in elementary self-contained special education class)	Most help came from SET peers. If they were not co-teaching or not working in an inclusive setting, experienced SETS were viewed as their main support and there was little interaction with GETs. Most (3/4) felt isolated from general education. When one novice was transferred to an inclusive setting and became a co-teacher, she was accepted by GETs, indicating high levels of support from them.
Kruse & Louis, 1997	Questions: What relationships may exist between administrators' and teachers' efforts to simultaneously create interdisciplinary teams and a professional school community?	Qualitative: case study tradition using interviews, observations, and document analysis	4 middle schools serving at-risk populations selected from a larger study; all strongly committed to interdisciplinary teaming 1 school: 3 years 3 schools: only 2 one-week visits at the start/end of 1 academic year	There were tensions between teamwork as primary identity and school as primary identity. Teams can undermine the faculty's ability as a whole to work from a school-wide perspective (teaming dilemmas). Team membership is often the primary identity location of support teachers see. Team allegiance can weaken collective responsibility on a school-wide basis. Not all teams may be hospitable to SET novices. Principals have to manage balance between teaming and schoolwide professional community.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Mastropieri, Scruggs, Graetz, Norland, Gardizi, & McDuffie, 2005	Question: What can be learned from examining cases of effective co-teaching in a variety of contexts?	Qualitative: case study methodology, multiple cases Videotapes of classes, interviews with teachers and students, and artifacts Combination of volunteers and nonvolunteers	4 cases (schools) including 7 teams: Case 1: 2 teams of earth science (1 upper elementary, 1 middle); 1 seventh grade teacher was a novice Case 2: 1 team of middle school social studies Case 3: 3 teams of high school world history with 3-20 years experience Case 4: 1 team in high school chemistry (1 teacher in her first 2 years of teaching)	Multiple factors interact to influence co-teaching, including planning time, amount of content knowledge, and compatibility of perspectives on teaching. Examples of successful co-teaching were found among volunteers and nonvolunteers. . SETs played subordinate roles (assisting) when content knowledge was not robust; when SET content knowledge existed, roles were more interchangeable. Seventh-grade team nonvolunteer novice learned content from GET and valued the opportunity.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
McDuffie, Scruggs, & Mastropieri, 2007	Question: What can be learned from a traditional review of the co-teaching literature about the state of co-teaching?	Qualitative studies of co-teaching Qualitative studies that also used some quantitative methods Analysis by school-level (elementary, middle, and high school) and studies that combined levels	No time limits on studies that were included, but first qualitative studies appeared in the 1990s Searched PsychINFO, ERIC, Dissertation Abstracts, Dissertations online, and did hand-searches of selected major special education journals Yielded 32 usable studies spanning preschool-high school	For co-teaching to be successful, administrative support, communication, compatibility, and flexibility are required by co-teachers. SETs most often played subordinate role. Whole class instruction was predominated by GETs.
Morocco & Aguilar, 2002	Questions: What vision of co-teaching is being practiced? What co-teaching roles exist and how do they vary across co-teachers? What supports does co-teaching provide for challenging academic curricula?	Qualitative: interviews and classroom observations; analysis of expert co-teaching vignettes	Low-income, culturally diverse middle school in the southern U.S. that had implemented co-teaching school-wide Observations of 11 co-teachers on 3 interdisciplinary teaching teams Interviews with teachers and administrators	The interdisciplinary team was the co-teachers' primary identity. When SET co-teachers knew academic content, content was more accessible to students with disabilities. SETs still assisted often .

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Murawski & Swanson, 2001	Question: What can be learned from quantifying the co-teaching literature in terms of the magnitude of outcomes?	Meta-analysis	Reviewed studies from 1989-1999; searched ERIC, Psychlit & Ed Info, hand-searched all articles cited in review articles; hand-searched three major special education journals 37 empirical studies found; 6 studies from 1991-1998 met criteria (effect size could be calculated, co-teaching occurred for more than 2 weeks, co-teaching defined as GET and SET share teaching space, co-planning time, and heterogeneous group of students, including special education)	The mean effect size was .40 (range: .08 to .95). There was a moderate effect of co-teaching on student outcomes. Conducting more studies on outcomes is needed.
Pounder, 1999	Investigated differences in work and work-related variables between teachers who team and teachers who do not team	Survey in one district with 1 teamed and 1 nonteamed middle school	Moderate-sized urban/ suburban school district with a total enrollment of about 6,800 students and almost 300 teachers (years of experience ranged from 1- over 30) Survey given to about 30 teachers in each school; deliberately excluded all support teachers (e.g., SETs) in both schools	Teachers in teamed school reported that their jobs required a greater variety of skills than nonteamed teachers, including having more knowledge about their students' characteristics, histories, and family circumstances than nonteamed teachers. Significant difference were found also for greater growth satisfaction and greater professional commitment for teamed teachers.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Scruggs, Mastropieri, & McDuffie, 2007	Questions: What can a review of qualitative studies of co-teaching contribute to understanding the following questions: How is co-teaching being implemented? What are teachers' perceptions? What problems are encountered? What are the benefits perceived to be? What factors are needed to ensure success of co-teaching?	Meta-synthesis of qualitative studies including dissertations and masters theses published from 1995-2005 Criteria for inclusion: qualitative study or survey that included "substantive" interviews and referenced co-teaching	32 studies across all grade levels and across rural, urban, suburban schools	Administrators and teachers were enthusiastic about co-teaching. Students were benefited by additional attention. Teachers benefited by learning from co-teachers and being supported by them. Co-teachers need administrative support and planning time. Volunteer pairs and personal compatibility were important. SET assisting was the most common model. When SET has content knowledge, there was more parity. Whole class instruction dominated.
Wallace, Anderson, & Bartholomay, 2002	Described collaboration and communication between GETs and SETs working in secondary general education classrooms when students with disabilities have achieved success	Qualitative methods using interview and focus groups Coded using pre-existing categories from Baldridge conceptual framework Survey of special education staff	4 high schools using collaboration/inclusion Interviewed 7 principals, 4 superintendents; 3 special education coordinators, state director of special education at 1 school Focus groups of 8-10 participants including school advisory group, SETs, GETs, and community members; 12 interviews and 20 focus groups conducted	Surveys were completed by SETs with response rates ranging from 62% at 1 school to 100% at 1. There were school-wide cultures of inclusiveness, and a variety of collaborative school structures. SETs were active team members; often there was little observable difference between SETs and GETs with equal authority roles in the classroom. In fewer teams, SETs had a minimal teaching role. On the survey, SETs were viewed as providing GETs with moral support, curricular modification, and behavior management.

Table 4. Co-Teaching/Teaming. (continued)

Study	Research Question/Focus	Research Tradition/Methods	Data Sources	Findings
Weiss & Brigham, 2000	Reviewed original research evaluating co-teaching from 1966-1999	Literature search using keywords (co-teach, co-teaching, collaborative instruction, collaboration, and cooperative teaching) in ERIC, Psyclit, and DAI 1966-1998; hand search of special education journals 1998-1999; Selected criteria: study had to evaluate co-teaching relationships or relationships between SETs and GETs; peer-reviewed or dissertations only; Search yielded articles and 350 dissertations identified.	23 studies met criteria (8 quantitative and 15 qualitative). 19 journal articles 4 dissertations from 1987-1999	For program evaluation studies, the sample was small, indicating caution about satisfaction data. Co-teachers need support to improve instruction and kinds of supports they offer to students. Instruction provided by SETs was not distinctively designed for the unusual needs of students who have disabilities. Co-teachers who volunteer were more satisfied than those who do not. Co-teaching limits the number of GETs with whom SETs interact/serve; lack of shared planning time as barrier.
Welch, Brownell, & Sheridan, 1999	Empirical and nonempirical articles on team teaching (co-teaching) and school-based problem-solving teams Summarized conclusions and trends	Description of article characteristics rather than critical analysis. Major characteristics: model used, outcome measures if included, design if applicable, assessment of consumer satisfaction, procedures for maintaining integrity of collaborative process, and attempts at follow-up or generalization	1980 start date for school problem-solving teams 1982 start date for team teaching; journal search, keywords and ancestral search	Research focused primarily on satisfaction and attitude change, not on outcomes or efficacy. Empirical support outweighs implementation.