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Mentor-Novice Relationships and Learning to Teach in Teacher Induction: A Critical Review of Research

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Mentor-Novice Relationships and Learning to Teach in Teacher Induction: A Critical Review of Research

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Abstract

This review examines the influences of teacher-mentor relationships on novice teachers' learning to teach and the program and school contexts shaping this relationship during teacher induction. It reviews systematically four bodies of empirical literature since 1995. They include the studies on the consequences of what mentors and novices do for novices' learning to teach and their student performances, the role of what mentors and novices brought into their relationship that shapes teacher mentoring relationship, the impacts of mentoring programs on mentor-novice relationships, and the influences of school contexts on mentor-novice relationships. The findings, research methodologies, and future directions for research about teacher mentoring relationship are synthesized and discussed in each section and at the end.

Keywords: Mentoring Relationship, Teacher Induction, and Teacher Learning.

Although good teacher mentoring is presumably important to support beginning teacher retention and professional development during teacher induction (Feiman - Nemser, Schwille, Carver, & Yusko, 1998), it is less conceptually clear what the good relationship means, what shapes this relationship, and what are the empirical bases for this assumption if any in the teacher induction literature (Wang & Odell, 2007). The major problem for a clear conception about mentoring relationships is that teacher induction programs are often developed for different purposes. Some are designed to keep beginning teachers in the teaching profession as many quit teaching within five years (Ingersoll & Smith, 2004; Smith & Ingersoll, 2004). Some are developed to socialize beginning teachers into the existing culture of teaching (Feiman-Nemser & Parker, 1992a). Others aim to support beginning teachers to develop professional teaching practices as expected by the professional standards and communities that are assumed to influence the important learning of all kinds of students and different from existing teaching practices (Cochran-Smith & Lytle, 1999). The various goals of mentoring often require different kinds of mentor-novice relationships that again can be constrained and facilitated by different factors and contexts in the schools and districts where these relationships are situated (Wang & Odell, 2002).

Substantial earlier research on teacher mentoring at the induction level has been systematically reviewed and synthesized with a focus on the interpersonal and technical aspects of the mentoring relationship that serves for the purposes of beginning teacher retention (Gold, 1990; Ingersoll & Strong, 2011; Strong, 2005). A conceptual review has been conducted to help define the role of teacher mentoring in helping beginning teachers develop professional teaching practice (Feiman-Nemser et al., 1998). The research studies on whether teacher mentoring programs and practices in teacher induction can influence beginning teachers' teaching practices has also been reviewed (Ingersoll & Strong, 2011; Wang, Odell, & Schwille, 2008).

These reviews help clarify the theoretical and empirical understandings about the role of teacher mentoring programs in helping retain beginning teachers in teaching and develop a clear understanding of the purpose and reasons for using teacher induction programs to

improve beginning teachers' teaching practice as expected by the profession. However, few systematic reviews have been conducted to synthesize and clarify the empirical literature on the nature and characteristics of mentoring relationships and their role in mediating the influences of induction and mentoring programs and school contexts on beginning teachers' learning to develop teaching practices that are in alignment with the professional knowledge and standards (Wang & Odell, 2007).

We believe that such a review on teacher mentoring relationships is necessary for several reasons. First, any expected results of beginning teachers' learning to teach professionally under the influences of mentoring in induction have to be realized through mentor-novice relationships with certain characteristics (Wang & Odell, 2007). These characteristics may not serve well for all the other purposes of the induction program and thus, it is important to develop an appropriate understanding about these characteristics of teacher mentoring relationships.

Second, these important characteristics of mentoring relationships can be shaped, to an extent, by many factors (Feiman-Nemser & Parker, 1992b; Wang & Odell, 2002), which may include the personal characteristics of the mentor and novice themselves, the relevant induction program policies, implementations, and supports, and the culture and organization of teaching in the school contexts where various mentoring relationships are situated (Carver & Katz, 2004). Thus, it is necessary to understand properly the influences of various personnel, programs, and school factors that can shape the teacher mentoring relationships.

Third, although many empirical studies have been conducted to address the above issues, they are scattered and embedded in different kinds of literature in the fields of teacher education, teacher induction, teacher learning, and various subject education. Thus, it is necessary to develop a clear conception and a systematic synthesis about the body of literature on mentoring relationships that serve for beginning teachers' learning to teach professionally (Wang & Odell, 2007).

This review study conceptualizes and reviews the relevant literature on mentor-novice relationships during induction that influence the outcome and process of novice teachers' learning to teach professional-

ly. We believe that such a review can help clarify and strengthen the necessary knowledge base for policy makers and program developers to develop effective mentoring that supports novice teachers learning to teach professionally and identify the useful and specific directions towards which the teacher mentoring researcher community can further move the field forward.

Review Focuses and Rationales

In this review, we focus on the kind of mentoring relationship with two conceptual boundaries, which guide our search and selection of the literature. First, we focus on the teacher mentoring relationship in the teacher induction period when beginning teachers are in the first two years of their teaching after receiving their initial teacher preparation as typically defined by the literature (Odell & Huling, 2000). In some cases, we include the studies on beginning teachers' yearlong internship within the five-year teacher education programs or in alternative route programs since these teachers are often considered as first year teachers in the literature.

Second, we limit this relationship to the traditionally defined mentoring relationship in which an experienced teacher works with a beginning teacher in the school context (Cochran-Smith & Paris, 1995). We do not include other forms of mentoring relationships such as on-line mentoring, peer mentoring, and team mentoring, etc.

We structure our review around the following four bodies of literature relevant to the mentor-novice relationships in teacher induction. First, we examine the empirical literature on whether and to what extent what mentors and novices do in their relationships supports beginning teachers' learning to teach professionally as suggested (Achinstein & Athanases, 2005; Achinstein & Barrett, 2004; Wang, Strong, & Odell, 2004). Here, the term, "teach professionally," indicates the kind of teaching expected by the professional standards and/or developed based on professional knowledge of teaching and learning to influence student learning effectively, which can be different from the kind of teaching in the existing school contexts where the teacher mentoring relationships are situated since two kinds of teaching may or may not share these same characteristics and con-

ceptual bases (Wang & Odell, 2007).

Second, we also explore the empirical literature on what mentors and novices expect of themselves or each other to function in their relationship, how they conceptualize teaching and teacher mentoring, their knowledge and skills for teaching and mentoring, and other personal factors that they each bring into their relationships. We develop this focus for our review because the teacher mentoring relationships are assumed to be shaped by what mentors and novices bring into their relationship based on the analysis of the cases of mentor-novice working with each other in the school settings (Bullough & Draper, 2004; Wang & Odell, 2003) and the research on mentoring relationships conducted in non-school environments (Feldman, 1999).

Third, we also review the literature on the contexts, such as the policies, resources, and implementation of the induction program and the cultures and organizations of teaching in the schools where mentoring relationships are situated. As suggested in the literature (Feiman-Nemser & Parker, 1992b; Flores & Day, 2006), these contexts can work well, compete, or interfere with each other in exerting consistent or inconsistent influences on mentoring relationships and consequently, the different outcomes of novices' learning to teach professionally.

Review Methodology

An integrative approach is used for this review. In such a review, we describe how the issue of our focus is conceptualized within the literature, analyze how research methods and theories have shaped the outcomes in the field, and critique the strengths and weaknesses of the relevant literature as suggested (Whittemore & Knafl, 2005).

The literature for this review came from three sources. First, we searched three databases: ERIC, Education Full Text, and Professional Development Collection using the terms, mentor, novice, and relationship and then using the terms, mentoring and induction. Second, we used our personal collections of articles and book chapters on mentor-novice relationships over the years. Third, we also used those relevant studies cited and referenced in the literature we found

through the above search processes. Together, these three searches produced about 240 references in all, which included research papers, literature reviews, position papers, and book chapters published between 1995 and 2011. We limit our literature review to those publications after 1995 because the research before this time focused on teacher mentoring as a practice to retain beginning teachers rather than their learning to teach professionally for which many reviews have already been conducted (Feiman-Nemser et al., 1998).

For the process of review, we first read each of these studies that we found carefully and eliminated those that did not address any aspects of the mentoring relationship as defined earlier. This elimination led us to about 83 articles and publications with 43 empirical studies for this review. Then, we read and categorized these articles based on our focuses, synthesized, analyzed, and critiqued them within each category, and made connections across different categories. The specific studies including the authors, participants, methodology, and brief findings of each study that we reviewed in each of the above section are listed in Table 1 (annexed at the end of this article). In the following sections of this review, we first present the findings around each of our four review focuses. Then, we synthesize our overall findings and discuss how well we have accomplished our tasks that we intended.

What Do Mentors and Novice Do in Their Relationship and Its Consequences

What mentors and novices do in their relationships should be the central focus in examining the kinds of influences of mentoring relationships during induction on novice teachers' learning to teach professionally (Schwille, 2008; Wang et al., 2008). In this section, we review the studies on what happened in the mentoring relationships with a strong focus on their interactions around teaching (Lee & Feng, 2007; Shank, 2005; Tharp & Gallimore, 1988) and the influences of what mentors and novices did in their mentoring relationships on what novice teachers learned through their relationships (Feiman-Nemser, 2001; Feiman-Nemser, Parker, & Zeichner, 1993).

Various mentoring relationships and the relationships that mentors and novices prefer

Several studies were developed to explore the kinds of mentoring relationships that exist in induction contexts and what kind of relationship mentor and novice teachers themselves prefer or they think most useful for novice teachers' learning to teach. Emerging from this body of literature are the following kinds of relationships and the kind of mentoring relationship that mentors and novices liked most themselves.

First, three general mentoring relationships are identified by Young, Bullough, Draper, Smith, and Erickson (2005) in different periods of mentoring during the induction based on their analysis of interview data from 18 mentors and 26 novices from an induction program. They are (1) *the responsive mentoring relationship*, in which novices set the action agenda through questioning and posing concerns for mentors while mentors serve as an aide, advisor, cheerleader, resource, or guide. (2) *The interactive relationship*, in which mentors and novices would recognize each other as peers, bring to the relationship their own contributions, develop, and adjust the action agenda jointly in response to interests and desires of both. The mentor in this relationship was characterized as a friend, colleague, and trusted advisor. (3) *The directive mentoring relationship*, in which the mentor would take charge, set the action agenda, develop a clear expectation for novice's performance, guide novices toward the expected performance through modeling, and offering feedback and direct suggestion. In this relationship, the mentor assumed a role as a master teacher, guide, and coach.

Second, mentors and novices in different cultural contexts tended to favor *the responsive mentoring relationship* more and see such a relationship as effective because it allowed novice teachers' freedom to pursue their own agenda of learning to teach while offering novices the support that they needed. Abell, Dillon, Hopkins, McInerney, and O'Brien (1995) interviewed 29 mentors and novices from a state-mandated internship program in the US and found that the novices needed the support from their mentors as fledgling teachers while expecting their mentors to assume flexible roles based on the interns'

personal needs. Both mentors and novices in the study preferred to construct their relationships jointly based on mutual respect and trust. Lofstrom and Eisenschmidt (2009) came to a similar finding based on the analysis of thematic interviews with 16 beginning teachers in the induction program in Estonia. They found that the novices in their study favored the reciprocal mentoring relationship with mutual trust, in which, novices had freedom to pursue their own personal professional development while expecting their mentors to be available for offering feedback and suggestions for their learning to teach. Drawing on the interviews with 12 secondary and elementary beginning teachers in Canada, Hellsten, Prytula, Ebanks, and Lai (2009) also found that the novice teachers in their study favored those mentors chosen by themselves based on their own personal needs instead of those mentors assigned by the program. They stressed that their mentors needed to do more than just share their ideas, such as spend more time in socializing them into the teaching profession. Drawing on pre- and post surveys and semi structured interviews with beginning teachers in three schools in England, researchers (Harrison, Dymoke, & Pell, 2006) identified beginning teachers' favorite mentoring relationships on their professional development. In this expected relationship, mentors were able to model teaching that novice teachers would like to learn, engage them in discussions, and provide feedback on their teaching while being flexible enough to let novice teachers broaden their own teaching experiences and to recognize the challenges that they were facing.

Third, other researchers confirmed that novice teachers tended to see mentors' professional expertise and local knowledge as less useful when they judged the effectiveness of their mentoring relationships based on their own personal and psychological needs as assumed in the literature (Wang & Odell, 2002). Greiman, Torres, Burris, and Kitchel (2007) surveyed 40 beginning teachers working with mentors in their subject areas but not from their own schools and 40 working with mentors from their school but not in their same subject areas on the psychological support they received from mentors, their compatibleness with their mentors, and their satisfaction with their mentoring relationships. These researchers found that no matter whether beginning teachers were working with mentors with expertise

in subject content or local knowledge about their schools, their preferred relationship with their mentors and the kind of support that they received from their mentors were not statistically different.

Focuses and patterns of mentor-novice interactions around teaching

A few studies explore the focuses and patterns of mentor-novice interactions around teaching and analyze whether and to what extent, these interactions offered and limited the chances for novices to learn to teach professionally. These focuses and patterns showed in three areas.

First, some researchers (Achinstein & Barrett 2004) showed the potential role of effective mentors in supporting novices in improving their teaching practice through looking at teaching events alternatively around teaching. These researchers collected interviews with mentors, observations of novices' teaching, and mentor-novice conversations on novice teachers' teaching from 15 mentor-novice pairs in a U.S. comprehensive induction program over 2 years in the US. They found that the novices in their study often framed the issues related to student learning in their teaching from a managerial perspective while their mentors tended to frame these issues from either human relations or political perspectives, which led to different judgments about student learning. Through mentor-novice conversations around novices' lessons, the effective mentors were often able to engage novices in reexamining student learning from an alternative perspective, diagnosing the challenges, and thus, developing alternative teaching approaches to meet the learning needs of diverse students.

Second, other researchers (Strong & Baron 2004) showed that very few mentors from the same program as the above were able to directly engage their novice teachers in examining their teaching carefully from a more useful yet alternative perspective. They analyzed 64 lesson-based conversations between 16 mentors and their novices and found that most mentors tended to avoid giving direct advice or simply offered indirect suggestions for novices' teaching, of which only one-third produced elaborated responses from their novices in order to sustain their relationship with their novices.

Third, the other study (Wang, Strong, & Odell 2004) showed the focus and patterns of mentor-novice interactions around novices' lessons in different countries were varied, which offered different learning opportunities for novices to learn to teach professionally. Drawing on the observations of novices' lessons and mentor-novice discussions about novice teaching from two U.S. and two Chinese mentor-novice pairs in induction contexts, the study showed that in US mentor-novice conversations, mentors often solicited novices' comments and assessments on their own lessons using frequent questions, seldom offered suggestions and critical comments on their lesson, and focused more on individual student learning and management. Such mentor-novice interactions reflected the U.S. decentralized curriculum control and individualist culture of teaching, in which, teachers did not have to rely on each other in improving their teaching and the direct critique of one's teaching was often seen as an intrusion into an individual teachers' private arena. In Chinese mentor and novice conversations, mentors were more likely to offer direct assessment, suggestions, and comments on novice's lessons and focus on subject content and student understanding related to the lessons and the alternative approaches to teaching. These interaction characteristics were more consistent with the Chinese centralized curriculum control and the contrived teaching organization with subject content as a base, in which teachers with the same subject content backgrounds had to rely on each other in improving their teaching and their teaching practice was public and open for comments and suggestions from each other.

Influences of different mentoring relationships on novices' teaching and student learning

A number of studies explored the influences of different kinds of mentoring relationships on novices' teaching and student learning in novices' classroom. They came to somewhat consistent findings about the influences of mentoring relationships on novice teachers' teaching but the inconsistent findings about the influences of mentoring relationships on student learning in novices' classroom.

First, two studies examined the influences of different kinds of mentoring relationships on novices' conceptions of teaching and teaching practices and found the frequent interaction between mentors and novices about novices' teaching practices shaped novices' professional knowledge and practice of teaching. One study (Stanulis & Floden 2009) pre- and post- assessed 24 beginning teachers in a U.S. induction program on their ideas of classroom atmosphere, instruction and content, management, and student engagement. It compared the scores from those novice teachers who interacted weekly with their mentors who were partially released and had intensive training with those scores from novice teachers who did not have weekly interactions with their mentors who were not released and did not receive intensive training. The researchers found that the scores of beginning teachers in intense and interactive mentoring relationships increased more than those who were not in such mentoring relationships, which suggested that frequent mentor-novice interactions with novices on novices' teaching increased novices' professional knowledge of teaching. A case study (Wang & Paine, 2001) analyzed the interviews, observations, reflections, and documents from a Chinese mentor-novice pair in the induction context. It found that the frequent mentor-novice interactions in which the mentor modeled, analyzed, and reflected with the novice on each other's teaching following a progressive process changed the novice's mathematics teaching substantially toward the professional standards as evidenced by observations of the novice's teaching over a year.

Second, other researchers examined the effects of having or not having mentoring relationships on the student performances in the beginning teachers' classrooms. They came to conflicting findings about the effects of having a mentoring relationship on student performances in novice teachers' classrooms. Fletcher and Barrett (2004) compared the student reading performance data from the classes of 70 beginning teachers who had an intensive relationship with mentors in an induction program in California with those data from the classes of their colleagues with moderate teaching experiences and the classes of their experienced colleagues. They also online surveyed the beginning teachers on the support that they received from their mentors.

The researchers found that the students in the beginning teachers' classrooms had almost equal and slightly higher performance scores than those in the classes of their experienced colleagues although lower than those in the classrooms of their colleagues with moderate teaching experiences. They attributed such performances of beginning teachers' students to the influences of their intensive mentoring relationship because the survey data showed that most beginning teachers thought that their mentors helped them improve their instruction, planning, strategies, and management through their interactions about student learning and assessment data.

However, another study (Huling & Resta, 2010) challenged the above finding using the data from a different U.S. state. It collected the student performance scores in reading, writing, mathematics, science, and social studies on the state level standardized tests from the classes of beginning teachers and their colleagues in 165 elementary, 183 middle and 103 high schools. It calculated the student performance gap between the classes of beginning teachers who interacted frequently with mentors on their teaching and the classes of their experienced colleagues, and the student performance gap between the classes of beginning teachers who did not receive mentoring support and the classes of their more experienced colleagues. Then, they compared the two performance gaps with each other. The study showed that the student performances of beginning teachers with and without mentoring relationships lagged behind those of their experienced colleagues respectively and there was no statistically significant differences between the two gaps. The two findings suggest that the substantial support that beginning teachers received through their mentoring relationships did not transfer to the gains of student performance in the classrooms of these beginning teachers' classrooms.

Third, several studies were developed to examine whether different kinds of mentoring relationships affected student performances in the beginning teachers' classrooms differently. The findings from these studies again demonstrated conflicting results. Fletcher and Strong (2009) compared pre- and post-student performances in mathematics and language arts from the classrooms of 14 fourth and fifth grade beginning teachers who worked with fully released mentors with those from the classrooms of 16 beginning teachers who worked with school-

based mentors in California. They found that students in the classrooms of beginning teachers with full release mentors showed greater gains in their performances than those in the classrooms of beginning teachers with school-based mentors. The researchers concluded that the intense mentoring relationship that beginning teachers with full released mentors experienced played an important role in producing the better student performance gain.

In contrast, a series of studies conducted by researchers at the Mathematica Policy Research, using much larger databases in a three-year stage, came to mixed findings about the effect of intensive mentoring (Glazerman, et al., 2008, 2010; Isenberg et al., 2009). In the first year study, the researchers interviewed and surveyed the elementary beginning teachers and their mentors, observed the beginning teachers' mathematics and reading lessons, and assessed their student performances in mathematics and reading. They compared the data collected from those teachers in 210 schools where the intensive mentoring relationships were implemented with those teachers in 208 schools without intensive mentoring relationships. The researchers found that beginning teachers in the intensive mentoring relationships had more stable mentors and more frequent mentor-novice interactions than those without intensive mentoring relationships but the teaching practices and student performance in mathematics and reading were not statistically different between the two groups.

In the second year study, the researchers interviewed and surveyed those beginning teachers still involved in teacher induction, and assessed their students' performances in mathematics and reading in the two groups of schools. They found that beginning teachers with intensive mentoring relationships still had more stable mentors and more frequent mentor-novice interactions than those without intensive mentoring relationships but they received less support in their second year. Again, the student performances in mathematics and reading were not statistically different between the two groups.

In the third year study, the researchers collected data similar to the second year from the two groups and found that beginning teachers in the intensive mentoring relationships were no longer different from

those without the intensive mentoring relationships in terms of the level of support they received from their mentors. However, their student performances in mathematics and reading in the classrooms of beginning teachers with intense mentoring support were statistically higher than those in the classrooms of beginning teachers without intensive mentoring.

Section Summary

Several findings emerged from our review in this section. First, we identified three kinds of mentoring relationships in the induction period including those of responsive, interactive, and directive. These relationships could occur to a particular mentoring pair interchangeably during the induction. However, beginning teachers and many of their mentors in various cultural and national contexts tended to value the mentoring relationships with responsive characteristics, in which beginning teachers were able to set the agenda for their interactions with mentors based on their individual needs, concerns, and problems and what they offer on an a needed basis.

In this line of research, few studies were developed to analyze the characteristics of the conceptions and practices of teaching that beginning teachers preferred to develop through their mentoring relationship. Even fewer used these characteristics as a basis to examine their perceptions of effective mentoring relationships and the similarities and differences between these characteristics and those of well-conceptualized teaching based on professional knowledge and standards. Without such studies, we cannot be sure whether the mentoring relationships beginning teachers perceived as effective for learning to teach professionally. In addition, the findings about different kinds of mentoring relationships in induction were based on a limited sample from one program, which can prevent its generalization to the boarder contexts.

Second, we also captured several interesting patterns and characteristics of mentor-novice interactions on novices' teaching that might extend or limit novice teachers' chances in learning to teach professionally. Effective mentors in the US were able to engage

novices in the conversation about teaching practice, in which they often challenged their novice teachers' idea and judgment of their teaching practice and pushed their novices to examine issue of teaching and learning from alternative perspectives. Chinese mentors were more likely to offer direct assessment, suggestions, and comments on novices' lessons, on subject content, and relevant student understanding than their US counterparts. The unique contexts of curriculum control and teaching organization in each country could shape the above differences in the focuses and patterns of mentor-novice interactions in each country.

However, few studies in this area were developed to tie these interaction patterns and characteristics to what novice teachers actually learned and how they used what they learned in their classrooms. Again, studies in this area either involved a few cases or used samples from one program, which again prevent a careful examination about the causes of these interaction focuses, patterns, and characteristics and whether or to what extent these focuses, patterns, and characteristics were more likely to occur in the mentoring relationships in broader contexts.

Third, emerging from our review are the examples of how intensive mentor-novice interactions on teaching could contribute to beginning teachers' conceptions and knowledge necessary for teaching professionally and their actual teaching as envisioned by the professional standards. However, studies in this area were few and underdeveloped. The conceptual base for measuring the above relationship is also weak. What are the necessary knowledge and skills for effective teaching and relevant mentoring relationships? What are the characteristics of effective teaching for student learning? These are still questions that are not properly answered and yet these answers play an important role in developing a conceptual base for the above-suggested studies.

Fourth, our review further showed mixed findings about the impacts of intense mentoring on student performance through influencing beginning teachers' teaching practice. Some studies showed that beginning teachers involved in intensive mentoring were able to produce higher student performances than their more experienced colleagues and those who were not involved in such mentoring

relationships while other studies challenged these findings. One reason for these mixed findings can be that the influences of intensive mentoring were based pretty much on whether and how often mentors and novices met and talked about teaching, leaving what they actually talked about and how they talked about teaching unexamined and uncharacterized. Thus, the potential variation in quality of the intensive mentoring might have different influences on novice teaching quality and compromise the results in different studies.

Another reason can be that teaching and student performances can be influenced by many other factors directly and indirectly. Without a clear understanding about these factors and their competing and/or interactive influences and taking these influences into consideration in designing studies, the mixed findings can easily occur. All the existing studies are based on the assumption that teaching is the only direct factor responsible for student performances; however, this assumption is again not well sustained (Kennedy, 2010). If it is, whether teaching can be changed alone by the reform policy and practice, such as structured intensive mentoring relationships, have not been clearly conceptualized and sustained (Cuban, 1993; Sykes, Bird, & Kennedy, 2010).

What Mentors and Novices Bring into Their Relationship and Its Consequences

Research on teacher mentoring before the 90s has been flooded with studies focusing on the characteristics of mentors, their dispositions, and skills necessary for their mentoring work. The underlying assumption of this body of research is that mentors are more powerful and dominant than their novices in developing positive mentoring relationships and bring about positive outcomes for the novice teacher. However, as shown in the analyses of mentoring in the contexts of organization management (Feldman, 1999) and reform-minded teaching (Wang & Odell, 2007), both mentors and novices can contribute to the characteristics and functional or dysfunctional outcomes of their relationships with either consistent or inconsistent expectations, experiences, knowledge, and skills. In this section, we present specific findings from our review in relation to the above

assumptions in teacher induction.

Influences of matching and mismatching expectations between mentors and novices

Several studies explored the influences of matching and mismatching expectations and conceptions between mentors and novices on the effectiveness of mentor and novice communication about teaching. These studies also examined whether such differences in matching could lead, eventually, to different results of beginning teachers' learning to teach professionally.

Drawing on interviews and conferences with the participants and their own logs and documentation about their relationships from a U. S. induction program, researchers (Bullough & Draper, 2004) demonstrated a case study on a triad relationship between a mentor, a university supervisor, and an intern. In the relationship, the incompatible initial positioning of their own role and that of others shaped the negotiation of power and position and the dysfunctional communication on teaching among three parties. This negotiation and communication ultimately interfered with the intern's effective induction into teaching. Another case study (Bradbury & Koballa, 2008) analyzed the data of interviews, observations, and lesson-based conferences from two mentoring relationships in the year-long internship program in US. It found that the compatible initial conceptions of mentoring, expectations for mentor-novice communication, and beliefs about teaching in one pair lead to a more harmonious relationship between the mentor and the novice. The incompatible initial conceptions of mentoring, expectations for mentor and novice communication, and beliefs about teaching in the other pair led to a more contentious relationship between the mentor and novice. Using interview and observation data from two elementary mentoring relationships over a two-year period in US, Norman and Feiman-Nemser (2005) showed that mentors with effective teaching and mentoring skills could only be effective in supporting their beginning teachers to learn to teach professionally when their beginning teachers developed compatible personal history and dispositions for their role in their relationship with mentors.

Influences of mentor and novice initial recognitions about each other's teaching

Other studies investigated the influences of the initial recognitions that mentors and novices developed about each other's practice and knowledge of teaching on the dispositions that the mentor and novice assumed for their roles in their relationship. They further explored whether and how these dispositions shaped the interaction patterns in their mentoring relationships.

Drawing on survey, observation, interview, and artifact data from six pairs of elementary mentoring relationships in the US, Roehrig, Bohn, Turner, and Pressley (2008) found that in contrast to less effective mentoring relationships, the mentoring relationships that supported beginning teachers' use of effective teaching practices often had the following characteristics. The mentors were more effective teachers while beginning teachers had more accurate self-awareness of their own strengths and challenges related to their mentors' teaching practices in the beginning. Consequently, the mentors were more willing to engage beginning teachers in frequent interaction around instruction while beginning teachers were more open to learn from their mentors. Wang and Odell (2003) analyzed the survey, interview, observation, and document data from two mentoring relationships in one elementary classroom in an alternative route program in the US urban school context. They found that although the two mentors had developed effective writing instruction as envisioned by the professional standards, their interactions with two beginning teachers in their classroom were quite different as shaped by their understanding of what each beginning teacher wanted to learn about writing instruction. Each beginning teacher also positioned themselves differently towards their relationship with the mentors based on their assessment of the mentors' teaching practices and whether such practice was what they wanted to emulate. In another case study with two elementary mentoring relationships in a fifth year internship program in two US schools, Wang (2010) showed that in one relationship, both the mentor and novice recognized that they had compatible conceptions of good mathematics teaching and thus, developed consistent expectations for each other's role in their relation-

ship. These consistencies led to effective and frequent communication in the relationship that focused on moving the beginning teacher towards mathematics teaching as expected by the professional standards. In contrast, the other beginning teacher moved toward mathematics teaching encouraged by the school but discouraged by the standards due to the mentor and novice's inconsistent images of each other's teaching and expectations for their roles in their mentoring relationship.

Influences of novices' thinking and mentors' emotion on their relationship

Two studies explored how the quality of novices' thinking about teaching and how the mentors' emotional needs has an important influence on their mentoring relationships. Bullough, Young, Hall, Draper, and Smith (2008) collected the scores of nine U.S. beginning teachers on the reasoning tests measuring cognitive complexity and the reflections from these beginning teachers and their mentors about their role expectations for mentoring relationships, conceptions of teaching problems, and the use of evidence for justifying their beliefs. By comparing two kinds of data sources, these researchers found that the levels of beginning teachers' cognitive complexity were associated with the different conceptions and expectations that mentors and novices held for their relationships, which might cause different levels of tensions and disappointments in their mentoring relationships. The higher the level of beginning teachers' cognitive complexity, the lower the level of tension and disappointment the mentor and novice teachers would experience and vice versus.

Drawing on individual and group interview data from nine secondary school mentor teachers in a U.S. internship program, Bullough and Draper (2004) explored the emotional aspects of mentoring relationships and their consequences on mentoring relationships. They found that mentors were not only expected to attend to both the emotional and professional needs of their novice but also they often hid from their novices the intensity and complexity of their work and wanted to be liked, respected, and appreciated by their novices and their colleagues. Consequently, their relationships with

novices were under the stress of their complex duties as mentors and their own personal emotional needs, which could shape their focuses and the ways of working with their novices in their mentoring relationships.

Section Summary

Our review in this section sheds some light on several conceptual assumptions in the literature of mentoring about the influences of what mentors and novices brought into their relationships on their relationships and thus, what novices learned about teaching. First, the roles that both mentors and novices expected for themselves and each other to play in their relationships, to an extent, influence the focuses and patterns of mentor and novice interactions in their relationship, which could either support or limit beginning teachers' opportunities to learn to teach professionally. Second, their role expectations for themselves and each other could be influenced by their initial assessment of whether there was matching or mismatching between their conceptions and practices of teaching, existing knowledge and skills for working in their relationship, as well as novices' cognitive complexity and mentors' emotional preparation for their relationship. These findings seem to be useful in helping explain why the results from mentoring relationships from similarly structured induction programs and in similar school contexts can be substantially different from each other (Wang & Odell, 2007).

However, these findings were generated pretty much from limited case studies involving a few pairs of mentoring relationships in one program. Such a limitation in methodology, to an extent, prevents the generalization of these findings to the broader context of teacher induction. Deeper qualitative studies involving different mentoring relationships at different grade levels, in different subject areas, and school contexts and the large scale studies that survey and observe the relationships between what mentors and novices bring into their relationship, what they do in the relationships, and what beginning teachers learn from their relationship are necessary. To conduct these studies, a further and clearer conception of what they bring into, what they did in, and what beginning teachers learn from their relationships

is necessary in guiding the design and interpretation of these studies.

In spite of the above limitation, these findings offer several implications for policy makers and practitioners in teacher induction. First, it is important to select mentors carefully for their mentoring relationships by considering their conceptions and skills of teaching and mentoring necessary for supporting beginning teachers' learning to teach professionally. Second, it is also important to match mentors and novices with compatible personal qualities for the mentoring relationship. More importantly, proper initial training needs to be developed for both mentors and novices in preparing them for their relationships along with on-going support for both mentors and novices in their relationships.

The Influences of Program Contexts on Mentor-Novice Relationships

Most mentoring relationships in teacher induction are structured and supported through various induction programs with multiple components, such as policy mandates, financial and human resources, training, implementations, and evaluations (Ehrich, Hansford, & Tennent, 2004; Feiman-Nemser et al., 1998; Sweeny & DeBolt, 2000). However, the influences of different components of induction programs on what mentors and novices do in their relationships and the ways in which such influence occur are not well understood.

One popular assumption is that the components of comprehensive induction programs have a strong influence on what mentors and novices do and the results of beginning teachers' learning to teach professionally and effectively (Barnett, Hopkins-Thompson, & Hoke, 2002; Smith & Ingersoll, 2004). These components include the orientation for mentors and novices, professional development activities for novices, and selecting, training, and guiding mentors to observe, reflect, and formatively assess beginning teacher's teaching (Hobson, Ashby, Malderez, & Tomlinson, 2009). In the following, we present our review findings about the influences of various induction program components on the mentoring relationships.

Components of induction program that influence mentor-novice relationships

Several studies examined the induction program components that influence mentor-novice relationships and its outcomes based on perceptions of mentors and novices. Nielsen, Barry, and Addison (2007) analyzed the surveys of 826 elementary, secondary, and special education beginning teachers from a US induction program that structured a formal mentoring relationship as a key component over multiple years. They found that the novices tended to view their chances to have a formal relationship with the mentors who had time to observe and discuss their teaching. They also valued the professional development activities for them during the program. The study (Bickmore & Bickmore, 2010) that surveyed and interviewed 27 beginning teachers and 16 of their mentors in a US comprehensive induction program in which mentoring relationships as a main component came to a similar conclusion. Most participants in the study valued their mentoring relationships and team professional development.

Drawing on journals and interviews from 16 elementary and secondary beginning teachers who completed their induction program in England, McCormack, Gore, and Thomas (2006) found that most participants felt the orientation sessions at both the district and school level regarding the policies, regulations, resources and supportive personnel available were the most useful component of their induction program. While the elementary participants welcomed a strong relationship with their mentors from the same grade level, who were able to engage them in professional conversation, offer suggestions based on the observation about their teaching, or even teach with them. The secondary participants placed less value on their mentors who were often not from the same subject areas and were responsible for assessing their qualification officially while placing greater value on their colleagues in the same subject area from other schools as informal mentors to discuss and share their ideas and concerns of teaching.

Influences of program policy implementation on mentor-novice relationships

Several studies examined the influences of induction program policies and implementation on mentoring relationships. They together suggest that the program implementation process is worth a careful exploration as it impacts the mentoring relationship differently even in the same program. These studies showed the combination of influences of program policies and implementations impacted the mentoring relationships from the perspectives of mentors and novices.

Interviewing 374 randomly selected first- and second-year teachers on their experiences of official mentoring in their induction program in three US states, researchers (Kardos & Johnson, 2010) found that although assigned experienced teachers as their mentors, new teachers often had inappropriate mentor-novice matches. Low percentages of them were observed by or had conversations with their mentors about the core activities of teaching, especially in low-income schools or in mathematics, science, and technology areas. Bauer and LeBlanc (2002) examined the beginning teacher perceptions about the impact of mentoring in one US induction program using focus group interviews with 35 groups of beginning teachers as its data base. They revealed that many beginning teachers in the study were not aware of how mentors were assigned with attention to time and location. However, the participants in those effective relationships reported that mentors were able to focus on improving participants' teaching practice, modeling effective practice, and acting as a critical friend.

Other studies examined carefully the influences of induction program policies on the mentoring relationship and its result. Alhija and Fresko (2010) surveyed 118 mentors working in comprehensive induction programs in Israel, where mentoring was a key component and revealed that mentoring policies were significantly correlated to mentoring activities and mentors' attitudes. The satisfied mentoring relationships were often related to the program policy on the recruitment, training, and matching of mentors with beginning teachers. Youngs (2007) interviewed elementary and secondary first- and second-year teachers, their mentors, principals, and district administrators and observed mentor-novice interactions and other

induction activities in two US induction programs and made the following findings. Although the two districts served similar student populations and had similar policies about mentor training and work conditions, their policy differences in mentor selection and assignment allowed the beginning teachers in one district to experience higher quality assistance through their mentoring relationships than their counterparts in the other district in light of acquiring curricular knowledge, planning instruction, and reflecting on practice. A study (Kilburg, 2007; Kilburg & Hancock, 2006) surveyed and interviewed 149 mentoring teams in four US school districts over a 2-year period. They showed that the insufficient time assigned for mentoring work and inappropriate mentor-novice matches based on personality, grade level, and the same school impacted the effects of mentoring relationships the most. These problems were associated with inadequate program policies about mentoring programs and mentoring relationships, assessment, financial commitments, mentor selection, and training for problem solving. They were also associated with the school principal's role and how program coordinators and administrators used their time in implementing the program.

Influences of mentor-training on mentor-novice relationships

The other component of the induction program examined by the research in this area was kinds of mentor training in induction programs and their influences on mentoring relationships and their outcomes. These studies explored several focuses and ways of mentor training and their expected influences.

Koballa, Kittleson, Bradbury, and Dias (2010) collected and analyzed interviews, group discussions, written cases, and postings from 37 secondary mentor teachers who participated in a US science-specific mentor training program. They found that the training program was able to help participants learn to use the discourse of science teaching, classroom observation, and interpersonal mentoring strategies to mediate their thinking about mentoring. These skills and strategies were assumed important to help mentors respond to the challenges and dilemmas that beginning teachers might encounter in

their science teaching. Tang and Choi (2005) examined the influences of the theory-and-practice connection model of mentor training on the mentoring competences of 52 mentors using group interviews in Hong Kong. They found that participants were able to connect the research-based knowledge conveyed in their training course with their structured mentoring practice in the program. Such a connection helped improve their conceptual understanding of mentoring, empathetic understanding of beginning teachers, and their competence in mentoring. However, some participants expressed difficulty in applying what they learned to the actual mentoring in their schools. Researchers (Crasborn, Hennissen, Brouwer, Korthagen, & Bergen, 2008) collected and analyzed the pre- and post- mentor training observations from 40 elementary mentors in a mentor training program on versatile supervisory skills for communication with novice teachers in England. They found that although mentors had acquired seven supervisory skills for communication before receiving any type of training, after receiving training, an increase in the frequency and duration was observed among the mentors in using these supervisory skills for stimulating reflection among beginning teachers. Other researchers (Harrison, Lawson, & Wortley, 2005) examined the influences of mentor training that engaged 30 secondary mentors in England in learning how to support novices for using self-evaluation about their learning to teach. They analyzed the audio- and video-taped meetings that the mentors developed with beginning teachers at different points of their training and found that mentors who participated in this project were able to use the “prompts” and adopt different styles in engaging novices in self-reflection about their teaching.

Section Summary

Our review in this section leads us to the following findings about the relationship between various components of comprehensive induction programs and mentor-novice relationships. First, mentors and novices seemed to agree that the formal and properly structured mentoring component in the program could help develop more frequent professional conversations and careful observations of and feedback on beginning teachers’ teaching in their mentoring relationships. This is

the case especially when mentor-novice relationships were matched according to compatible personality and grade level and when mentors did not have the role of assessing the qualifications of their beginning teachers.

However, few studies were devoted to capturing what actually happened in the mentoring relationships and their discussions and its impacts on the specific conceptions and practices of beginning teachers' teaching based on observation. It is even rare that a literature-based conception of effective teaching was used as a base for the analysis about the influences of mentoring components on beginning teachers' learning to teach professionally. Especially, it is rare to see the studies that examine the above influences by comparing those who are exposed to the mentoring component of the program with those who are not or by pre- and post-assessments of those in the mentoring program based on professional standards of teaching (Shavelson & Towne, 2002).

Second, when these induction program policies were not implemented consistently, their influences also varied from substantial to little. Again, few studies in our review assessed the influences of program policies and implementations based on a careful literature-based conception of effective teaching. It is even rare to see that any studies were devoted to examining the relationship between what actually happened in the mentoring relationships and its impacts on the specific conceptions and practices of beginning teachers' teaching under the influences of these program policies and implementations.

Third, our review in this section suggests that the carefully conceptualized and thoughtfully delivered mentoring training could influence various kinds of conceptions, knowledge, and skills necessary for mentoring practices that support beginning teachers' learning to teach professionally. However, whether and to what extent these influences could be sustained and become generative is still a question that has not been well explored.

The existing studies in the field failed to examine the relationship between what actually happened in the mentoring relationship and its impacts on the specific conceptions and practices of beginning teachers' teaching under the particular kinds of influences of mentoring training. It is rare to find studies that examine how well beginning

teachers are prepared and supported through novice training in order to be engaged in mentoring relationships for learning to teach professionally. Such an examination is important since, as we pointed out earlier, mentoring relationships could be shaped by what both the mentor and novice bring into their relationship (Feldman, 1999; Wang & Odell, 2007).

Overall, the studies reviewed in this section are few, either qualitative in nature or using smaller sample sizes from one program. Such a situation prevents the findings in this section from being generalized to broader contexts of teacher induction, on the one hand. On the other hand, it also limits the chances to conduct a reliable meta-analysis about the influences of specific induction program components using accumulated and consistently focused studies.

Influences of School Contexts on Mentoring Relationships and Novices' Teaching

The influences of school contexts on mentor-novice relationships can be reasonably assumed for several reasons. First, beginning teachers' learning to teach is situated in the school where their teaching practices are exposed to the various influences in their school context. These influences include the demographic characteristics of students (Ladson-Billings, 1999), ways in which curriculum, instruction, and assessment are developed and required for teaching (Cohen & Spillane, 1992), how teachers are organized to work, and the cultural traditions of the teaching and social relationships in the school (Feiman-Nemser & Floden, 1986; Lortie, 1975). These school contexts play an important role in shaping teachers' identities as teachers in their early teaching careers as shown in the longitude documentation of their development (Flores & Day, 2006). Second, mentors themselves are often experienced teachers in the school contexts and their expertise are shaped by the existing school cultures and organizations, which may not reflect or support the kind of teaching that beginning teachers need to develop as expected by the professional knowledge and standards (Cochran-Smith, 2001; Cochran-Smith & Lytle, 1999; Puk & Haines, 1999). Third, the effects of induction programs have to be realized through school organization

and contexts, in which mentors can not avoid the tension and conflicts between various influences in schools, the needs and expectations of the program, and personal characteristics of mentors and novices even if mentors can be selected, trained, and assigned to work with novice externally (Devos, 2010). In this section, we present our review findings about the influences of school contexts on mentoring relationships and beginning teachers' learning to teach professionally.

Influences of school culture, organization, and curriculum on mentor-novice relationship

Some researchers explored the direct influences of school culture, organization, and curriculum assessment systems on how mentors and novices thought about mentoring, their interaction patterns, and behaviors in their relationships. The review results of these studies are presented below.

Drawing on the interview data from 50 second year teachers in Massachusetts, Kardos, Johnson, Peske, Kauffman, and Liu (2001) characterized three types of professional cultures in different schools, each of which influenced mentoring relationships differently. In *veteran-oriented cultures*, veteran teachers determined the norms of interactions with little attention to the needs of beginning teachers. Mentors were assigned to novices to strengthen and transfer the school culture to their novices while novices seldom met their often inaccessible mentors, who either taught in different subjects or grade levels or were uninformed about the instructional issues that novices most wanted to discuss. In *novice-oriented cultures*, the inexperienced teachers determined the norms of professional interaction with little experienced guidance. Schools often had great difficulty providing mentors to beginning teachers and mentor-novice interactions were infrequent with a focus on moment-to-moment crises. In *integrated professional cultures*, beginning teachers received sustained support from colleagues across experience levels. Mentor-novice interactions were regular and frequent, in which both parties shared their thoughts about teaching, and the new approaches of teaching were often discussed and tried through the mentoring relationships.

Wang (2001) analyzed the interviews and weekly logs collected over a year from twenty-three US, UK, and Chinese mentors and novices including some US and all the Chinese mentoring pairs in the induction programs. He found that the decentralized curriculum and teacher-controlled assessment shaped the beliefs of US mentors and novices about the importance for beginning teachers to know individual students and develop their own styles and philosophies of teaching. The responsibility of working with many novices in different school, of which they were outsiders, pushed US mentors to have fewer but longer interactions with their novices focused on general issues of students and teaching. In contrast, the centralized curriculum and assessment influenced the beliefs of Chinese mentors and novices in that novices should learn how to understand the centralized curriculum and textbooks. Furthermore, Chinese mentors taught in the same grade level and subject areas as their novices, and they taught larger classes but fewer lessons each day. These contexts allowed them to develop frequent interactions around the issues of subject-related pedagogy.

Influence of compatible and incompatible program and schools contexts

A few studies examined the influences of the compatible and incompatible situations between school contexts, mentoring programs, and mentor and novice personal characteristics on mentoring relationships. These studies showed to what extent, school contexts, mentoring programs, and mentor and novice's personal characteristics can be compatible with each other often influence greatly the functions of the mentoring relationship in supporting novice teachers' learning to teach.

Drawing on interview data from seven second-year beginning teachers, four department heads in schools, and five mentors in England, Dymoke and Harrison (2006) examined the incompatible situation between the expectations of an induction program and the expectations of the school contexts and its influences on the mentoring relationships. Their analysis indicated that the expectations of a school where students and teachers were not held accountable for their performances did not encourage their beginning teachers to become

self-monitoring or critically reflective practitioners as envisioned by the program. Consequently, the beginning teachers experienced a form of mentoring with a focus on teaching procedures inconsistent with their personal and professional goals. By surveying 243 Israeli beginning teachers in the comprehensive induction programs, Nasser-Abu Alhija and Fresko (2010) found that the compatible expectations and practices between the induction program and school contexts led to the satisfied experiences of mentors and novices about their programs. Their hierarchical regression analysis suggested that these compatible supports included the ecological support from the mentor, help from the principal, assistance from other school colleagues, reasonable workload, and relevant teacher training. Among these compatible supports, mentors and school colleagues had the greatest impact on beginning teachers' socialization into teaching. In another survey study involving 169 Israeli science and technology secondary teachers, the researcher (Shapira-Lishchinsky, 2009) came to some challenging findings. The mentoring relationships with a focus on conceptual understanding of teaching were associated with beginning teachers' perceptions of mentoring effectiveness in different kinds of department cultures in different schools. No significant "fit" between any mentoring relationships and particular department cultures in different schools was found related to beginning teachers' perceptions of mentoring.

Section Summary

Our review in this section led us to the following understandings about the influences of school contexts on mentoring relationships in the induction programs and thus, on novice teachers' learning to teach professionally. First, the curriculum and assessment systems used, the ways in which teaching and mentoring were structured, how students are organized for teaching, and the professional culture in the schools could exert powerful and direct influences on the beliefs of mentors and novices about mentoring and their focuses and patterns of interactions in mentoring relationships. However, the consequences of the mentoring relationships shaped by these school contexts on the specific conceptions and practice of beginning teachers' teaching were not captured based on interviews and observations. Thus, whether or to

what extent the influences of school contexts on mentoring relationships can prompt beginning teachers' teaching practices is still a question that deserves further investigation.

Second, the influences of compatibility between the program expectations and requirements and the school contexts on mentoring relationships were not sufficiently sustained with consistent evidence. One reason can be the differences between what mentors and novices perceived as effective mentoring for beginning teachers' learning to teach and what actually happened in their relationships that positively impacted their learning to teach professionally. These differences can lead to compromised results. Few studies in the relevant literature assessed the influences of the compatibility or incompatibility between the program expectations and the school contexts on what mentors and novices did in their relationships and on the specific conceptions and practices of beginning teachers' teaching professionally based on careful observations. Research that compared those who were in the compatible situation with those who were not in capturing the influences of either situation on what novices learned were also rare.

Conclusion

In the beginning, we conceptualized several focuses for this review as suggested in the literature (Carver & Katz, 2004) including: What kinds of mentor relationship are out there? What happens in these relationships? What are the influences of these relationships on novice teachers' learning to teach professionally and student learning? How these relationships are shaped by the combination of competing factors, among which, what mentor and novice bring into their relationship, their program, and school contexts? Our review of the existing empirical research helped us develop a much clearer picture about these focuses and questions

First, through this review, we have developed a better understanding about the kinds of mentoring relationships that mentors and novices preferred and what and how mentors and novices talked about teaching in their mentoring relationships. Our review seems to suggest positive link between what mentors and novices do in their relationship and

their beginning teachers' teaching practice is emerging from the existing literature. However, a possible positive link between an intensive mentoring relationship and student performance in beginning teachers' classrooms is still assumed rather than sustained empirically as argued in the literature (Darling-Hammond, 2005).

Second, we have identified substantial evidences for the assumption in the literature (Feldman, 1999; Wang & Odell, 2007) that the expectations, conceptions, knowledge, and skills of teaching and mentoring, and the cognitive and emotional preparation that mentor and novice bring into their relationships could shape their relationships toward functional or dysfunctional directions. However, the link of these expectations, conceptions, knowledge, skills of teaching and mentoring to the quality of novice teachers' learning to teach professionally is still unable to be sustained empirically.

Third, our review also found that the implementation of program policies and training for mentors can be important in influencing the quality of mentoring relationships in the programs as assumed (Feiman-Nemser & Parker, 1992a). However, few studies focused on the program training to prepare novices for their relationship with mentors. Again, we are still not clear whether mentoring relationships under the influences of the program components, implementation, and mentor training has anything to do with what actually novice teachers are able to teach professionally and find their way into the student performances.

Fourth, we have recognized in the relevant empirical literature that the school professional cultures, curriculum and assessment systems and teaching and mentoring organizations can also play an important role in shaping the mentoring relationship situated in these contexts as assumed (Wang et al., 2008). We still have insufficient empirical support for the connection between different kinds of school contexts, induction programs, mentoring relationships, and what novice teachers are able to learn to teach professionally.

In short, our review suggests that the research on mentoring relationships and mentoring practices as influenced by the personal factors of mentors and novices as well as the program and school contexts, and the influences of these relationships and practices on novice teachers' conceptions, knowledge, and skills of teaching profes-

sionally are still fragmented, less well conceptualized, and scattered everywhere. This review is only to draw the attention of the research community to the important issues and directions of research in the field and inspire further conceptions and research. These further conceptions and research studies will help build a more solid knowledge base upon which policy makers and program developers will be able to develop effective mentoring programs that support novice teachers' learning to teach professionally and effectively.

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Table 1: Basic Information of Studies Reviewed in Relation to Teacher Mentoring

Study	Participants	Methods	Major Findings
What Mentors and Novices Do In Their Relationship and Its Consequences			
<u>Roles of Mentors and Novices</u>			
Young, Bullough, Draper, Smith, & Erickson (2005)	18 mentors, 26 novices - induction program	Interview	Three general mentoring relationships – responsive, interactive, directive
Abell, Dillon, Hopkins, McInerney, & O'Brien (1995)	29 mentors and interns - state-mandated internship	Interview	Preferred relationships constructed jointly on mutual respect and trust
Lofstrom & Eisenschmidt (2009)	16 beginning teachers - induction program	Thematic interview	Novices prefer reciprocal mentoring relationship with mutual trust
Hellsten, Prytula, Ebanks, & Lai (2009)	12 beginning teachers	Interview	Novices prefer relationships established through self-identification of needs rather than a program
Harrison, Dymoke, & Pell (2006)	32 beginning teachers in England	Pre- and post-surveys, semi structured interviews	Novices prefer mentors who are able to model lessons, initiate discussions, provide feedback, broaden experiences, and recognize challenges
Greiman, Torres, Burris, & Kitchel (2007)	40 beginning teachers assigned to mentors in subject area but different school & 40 beginning teachers assigned to mentors not in subject area but in school	Surveys	Mentors' professional expertise or local knowledge are not important in supporting novices' personal and psychological needs

<u>Focuses and Patterns of Interactions</u>			
Strong & Baron (2004)	16 mentors and their novices - induction program	Lesson-based conversations	Mentors provide indirect suggestions, of which 1/3 produce responses, rather than direct advice
Achinstein & Barrett (2004)	15 mentor-novice pairs - induction program	Interview w/ mentor, observations of novices' teaching, mentor-novice conversations	Novices frame issues from a managerial perspective, while mentors frame issues from a human relations or political perspective. Effective mentors engage novices in reexamining issues from alternative perspectives.
Wang, Strong, & Odell (2004)	Two US and two Chinese mentor-novice pairs - induction program	Observation of novices' lessons, mentor-novice conversations	US mentors solicit novices' comments and assessments of their own lessons, seldom offer suggestions or critical comments, and focus on individual students and management. Chinese mentors offer direct assessment and suggestions and focus on subject content and student understanding.
<u>Influences of Different Kinds of Relationships</u>			
Stanulis & Floden (2009)	24 beginning teachers - induction program	Scores from assessment of professional teaching practice	Intense mentoring influences beginning teachers' understanding of what it means to teach professionally
Wang & Paine (2001)	Chinese mentor-novice pair - induction program	Interview, observations, reflections, and documents	Support from a mentor substantially changed a beginning teacher's mathematics instruction towards what it means to teach professionally
Fletcher & Barrett (2004)	70 beginning teachers	Online survey	Higher student performance scores of beginning teachers were associated with support from an intensive mentoring relationship

Huling & Resta (2010)	165 elementary, 183 middle school, 103 high school beginning teachers and their mentors	Interview of novices, survey of mentors, mean scores of students' state level standardized examinations	Student performances of beginning teachers, involved in mentoring or not, lagged behind student performances of experienced teachers
Fletcher & Strong (2009)	14 beginning teachers with fully released mentors & 16 beginning teachers with school-based mentors	Student performance scores in mathematics and language arts	The students of beginning teachers who had fully released mentors versus school-based mentors showed greater gains
Glazerman et al. (2008)	Beginning teachers in 210 schools with intense mentoring & beginning teachers in 208 schools without intense mentoring	Interview, survey, observations of beginning teachers' mathematics and reading lessons, student performance in mathematics and reading	Those involved in intense mentoring had more stable mentors and more regular and frequent mentor-novice interactions; however, teaching practices and student performance were not statistically different
Glazerman et al. (2010)	Beginning teachers in 210 schools with intense mentoring & beginning teachers in 208 schools without intense mentoring	Interview, survey, student performance in mathematics and reading	The relationships between mentors and novices were similar in terms of support provided, but student performance was higher for those who had had intense mentoring
Isenberg et al. (2009)	Beginning teachers in 210 schools with intense mentoring & beginning teachers in 208 schools without intense mentoring	Interview, survey, student performance in mathematics and reading	Those involved in intense mentoring had more stable mentors and more regular and frequent mentor-novice interactions, although they received less support in their second year. Student performance was not statistically different

What Do Mentors and Novices Personally Bring Into Their Relationship and Its Consequences			
<u>Expectations and Conceptions</u>			
Bullough & Draper (2004)	9 mentors, 14 secondary education interns	Interview, logs, documentation, conferences	Dysfunctional communication interfered with the intern's effective induction into teaching
Bradbury & Koballa (2008)	2 mentor-novice pairs - internship program	Interviews, observations, lesson-based conferences	Compatible initial conceptions about the mentor-novice relationship, in terms of communication and beliefs, led to a more harmonious relationship
Norman & Feiman-Nemser (2005)	2 mentor-novice pairs - induction program	Interviews, observation	The degree of mentor effectiveness depended on the beginning teacher's development of a compatible personal history and dispositions for their role in the relationship
<u>Initial Recognitions</u>			
Roehrig, Bohn, Turner, & Pressley, (2008)	6 mentor-novice pairs	Survey, observation, interview, artifacts	Mentoring relationships are more effective when beginning teachers are aware of their own strengths and challenges related to their mentors' effective classroom practices.
Wang & Odell (2003)	2 mentor-novice pairs - alternative route program	Survey, interview, observation, documents	The interactions between mentors and novice are shaped by what the beginning teachers want to learn as well as the beginning teachers' assessment of whether they want to emulate their mentor or not. (Wang & Odell, 2003)
Wang (2010)	2 mentor-novice pairs - internship program	Interview, observation, and documents	Compatible conceptions of good mathematics instruction led to consistent expectations of roles within the relationship and effective and frequent communication, which led the beginning teacher to learn and implement practices consistent with professional standards

<u>Emotional and Professional Aspects</u>			
Bullough, Young, Hall, Draper, & Smith (2008)	9 mentor-novice pairs	Reflections	The cognitive complexity of beginning teachers could play a role in difficulties that arise between the conceptions and expectations held by mentors and novices
Bullough & Draper (2004)	9 mentor-novice pairs	Individual and group interviews	The mentor-novice relationship may be shaped by a mentor's personal emotional needs as well as the stress from the complex duties of mentoring
The Influences of Program Context on Mentor-Novice Relationships and Its Consequences			
<u>Components of the Induction Program</u>			
Nielsen, Barry, & Addison (2007)	826 elementary, secondary, and special education beginning teachers - induction program	Survey	Novices valued formal relationships in which the mentors had time to observe and discuss their teaching. They also valued professional development focused on their needs
Bickmore & Bickmore (2010)	27 beginning teachers and 16 mentors - induction program	Survey, interview	Structured mentoring relationships and team professional development were valued by most novice
McCormack, Gore, & Thomas (2006)	16 beginning teachers in England - induction program	Journals, interviews	Orientation sessions regarding policies, regulations, resources, and supportive personnel were useful components. Elementary teachers valued same grade level relationships, but secondary teachers tended to value informal mentoring they received from colleagues in the same subject versus their formal mentors

<u>Induction Program Policies and Implementation</u>			
Kardos & Johnson (2010)	374 first- and second-year teachers - induction program	Interview	Mentors and novices are often matched inappropriately and low percentages of novices had conversations with their mentors about the core activities of teaching
Bauer & LeBlanc (2002)	35 groups of beginning teachers	Focus group interview	Novice are often unsure of how they are matched with a mentor, but found the most effective relationships to be those in which the mentor focused on improving the novice's practice by being a critical friend
Alhija & Fresko (2010)	118 mentors - induction program	Survey	Satisfying mentor-novice relationships often related to program policy on recruitment, training, and matching of mentors with novices
Youngs (2007)	20 first- and second-year teachers from two school districts	Interviews, observations	Policy differences in mentor selection and assignment between two districts led to higher quality assistance in the areas of curricular knowledge, planning instruction, and reflecting on practice for novice
Kilburg, Kilburg, & Hancock (2006)	149 mentor-novice pairs	Survey, interview	The greatest impacts on the mentor-novice relationship included insufficient assigned time for mentoring work and inappropriate matches based on personality, grade level, and school placement
<u>Training focused on Mentoring</u>			
Koballa, Kittleson, Bradbury, & Dias (2010)	37 secondary mentors - mentor training program	Interviews, group discussions, written cases, postings	Participants learned how to use the discourse of science teaching, classroom observation, and interpersonal mentoring strategies to mediate their thinking through training programs

Tang & Choi (2005)	52 mentors	Group interviews	Participants were able to connect research-based knowledge learned in a training with their mentoring practice, which helped improve their conceptual and empathetic understandings as well as their competence
Crasborn, Hennissen, Brouwer, Korthagen, & Bergen (2008)	40 elementary mentors - mentor training program	Pre- and post-training observations	While mentors acquired skills on supervision and communication in a training, a shift was observed in the frequency and duration of the use of skills after the training
Harrison, Lawson, & Wortley (2005)	30 secondary mentors - mentor training program	Audio and video tape of meetings with beginning teachers	Mentors who participated in a project on how to engage novices in self-evaluation were able to use the prompts and styles learned to promote the novice's self-reflection
The Influences of School Contexts on Mentoring Relationships and Novices' Teaching			
<u>School Culture, Organization, Curriculum, and Assessment</u>			
Kardos, Johnson, Peske, Kauffman, & Liu (2001)	50 second year teachers	Interview	The orientation of the school culture (veteran, novice, or integrated) influences that determines the norms of interaction and the amount of guidance provided novice teachers. The integrated culture provided beginning teachers sustained support and regular interaction with mentors
Wang (2001)	23 US, UK, and Chinese mentor-novice pairs	Interviews, weekly logs	The decentralized curriculum and teacher-controlled assessments of the US led mentors and novice to focus on individual students and developing their own style and philosophy of teaching; where as the centralized curriculum and assessment of China promoted learning and understanding of the curriculum and textbooks

<u>Compatible and Incompatible Situations</u>			
Dymoke & Harrison (2006)	7 second-year teachers, 4 department heads, & 5 mentors in England	Interview	When the induction program and school held incompatible goals, beginning teachers did not learn to become self-monitoring or critically reflective practitioners
Nasser-Abu, Alhija, & Fresko (2010)	243 Israeli beginning teachers - induction program	Survey	When the induction program and school held compatible goals, mentors and novice felt more satisfied with their experience
Shapira-Lishchinsky (2009)	169 Israeli secondary science and technology teachers	Survey	When mentoring relationships focused on a conceptual understanding of teaching, beginning teachers viewed the mentoring relationship as more effective

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