An alternative conception of mentor–novice relationships: Learning to teach in reform-minded ways as a context

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Abstract

Teacher educators have suggested that mentoring has the potential to help novices learn to teach in reform-minded ways. This suggestion implies a change in the nature of mentor–novice relationships as conceptualized in the existing literature and an understanding of the complexities of mentoring relationships. Based on critical constructivist and social cultural perspectives of learning as well as research on learning to teach, we conceptualize 16 types of mentor–novice relationships and identify challenges and complexities associated with moving novices toward reform-minded teaching. Drawing on exemplary mentoring cases, we illustrate some of our conceptualized mentor–novice relationships and their consequences on learning to teach in reform-minded ways. Finally, we suggest that helping mentors and novices develop a shared vision for teaching and relevant beliefs about learning to teach is a central challenge for using mentoring to support reform-minded teaching.

1. Introduction

In this article, we critique existing conceptions, theoretical bases, and limitations for mentor–novice relationships that focus on socializing new teachers into existing cultures for teaching practice. We then situate mentoring relationships in several countries where the goal is to support teaching reform and analyze the complexity of such contexts and relationships. Drawing on relevant learning theories and research findings on learning to teach and

teacher mentoring, we propose an alternative conception of mentoring relationships that takes into consideration both the complexity of mentoring relationships and the circumstances necessary for such relationships to support reform-minded teaching.

Using this new conception, we identify 16 types of mentor–novice relationships and discuss the challenges and dilemmas associated with each relationship in moving novices toward reform-minded teaching. Furthermore, we illustrate several of these mentoring relationships with data from case-study literature. Finally, we argue that the inconsistencies between mentors and novices in their visions for teaching and learning to teach provide the primary challenge that teacher educators face in developing

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mentor–novice relationships that support reform-minded teaching. We concluded that teacher educators and program developers may need to offer different professional development for various mentor–novice relationships.

2. Changing function of mentoring and a new conceptualization of mentor–novice relationships

Increasingly, teacher mentoring has become a popular strategy to support new-teacher induction into teaching for different countries, such as the US (Odell, 1986), England (Furlong, 2002), Netherlands (Veenman & Denessen, 2001), Germany (Jones & David, 1997), Norway (Nilssen et al., 1998), Sweden (Franke & Dahlgren, 1996), and China (Wang & Paine, 2001). In spite of the differences across countries in the structure of mentoring relationships, many share a similar expectation for mentoring. Specifically, it is assumed that by working closely with the new teacher in the context of teaching, an expert teacher can facilitate the transition for a student of teacher education to be a qualified teacher in the existing school culture and be retained as a teacher across time (Cochran-Smith & Paris, 1995). Substantial studies on teacher mentoring have been developed to codify interpersonal mentoring skills that allow mentors to use their own expertise effectively in supporting new teachers' induction into the existing school system (Gold, 1996; Huling-Austin, 1990). Teacher mentoring policy initiatives and programs have been developed to select and train experienced teachers to meet such needs of new teachers in induction contexts (Feiman-Nemser et al., 1998).

However, this popular assumption that mentor–novice relationships can provide new teachers with a smooth socialization into existing school cultures has become problematic. The existing culture and practice of teaching in countries such as the US (Darling-Hammond, 1998), England (Furlong, 2002), Germany (Jones, 2000), and other European countries (Edwards, 1998), have become the center of public criticism for their irrelevance to the needs of students for participating in the global economy, sustaining social diversity, and expanding democratic ideals. As a result, various reform initiatives have developed external to the schools. Teacher mentoring has been identified as a necessary support for reforming existing teaching practice in the US context (Wang & Odell, 2002) and the contexts of England and Wales (Edwards, 1998). These situa-

tions create an ever more complex reality for mentor–novice relationships for several reasons.

First, the kind of teaching that new teachers are supposed to develop through their relationship with mentors is no longer one historically embedded in the existing school culture. Instead, reform-minded teaching is seen by some researchers as potentially effective for helping students learn in ways that are consistent with social, economic, and political needs of society (Cochran-Smith, 1991). For example, in the US, such reform-minded teaching is different from pervasive teaching practice as it relates to conceptions of knowledge, learning, and teaching as well as the consequences for student learning. Reform-minded teaching relies on curriculum standards developed by professional organizations and supports students' active construction, discovery, sharing, and examination of knowledge in various subject contents (Darling-Hammond & Ball, 1998). It can also be defined as teaching that is consistent with critical pedagogy where developing positive student dispositions related to social justice and democratic values is paramount (Cochran-Smith & Lytle, 1999). In addition, reform-minded teaching can be culturally-relevant teaching based on critical-race theory where students are helped to reach academic excellence by building on the strengths and typical characteristics of students with diverse kinds of cultural and racial backgrounds (Ladson-Billings, 1994). All of these reform-minded approaches are different from prevailing teaching practice that assumes learning is the individual student's mastery of well-defined but isolated facts, concepts, and theories through a prescribed and controlled sequence (Bloom, 1971; Gagne, 1965) and teaching as knowledge transmission from teacher to students and teachers as sources, reinforcers, and judges of students' learning (Rosenshine, 1985; Skinner, 1968). This situation, where prevailing views vary dramatically from reform-minded views of teaching and learning, results in a complex reality that the kind of teaching novice teachers are supposed to develop is neither necessarily reflected in the school contexts in which the mentor–novice relationship is situated (Putnam & Borko, 2000) nor is it necessarily consistent with the visions for teaching that mentors and novices hold (Little, 1990).

Second, learning to teach for new teachers in these situations is no longer an issue of whether they are able to have a smooth induction into the status quo (Edwards, 1998) through their apprenticeship

of observation of (Lortie, 1975) or their peripheral participation in the existing culture and practice of teaching (Lave & Wenger, 1991). It becomes a process in which new teachers develop relevant dispositions, knowledge, and skills necessary for reform-minded teaching through deconstruction and reconstruction of the existing teaching culture and practice (Cochran-Smith & Lytle, 1999; Feiman-Nemser & Parker, 1992b). The complexity for learning to teach under these circumstances is significant. It has been shown that even if the mentor and novice are both committed to reform-minded teaching, they may not have an understanding of how mentoring should be carried out to support practices that are consistent with reform-minded teaching (Wang & Odell, 2003).

Third, mentor–novice relationships traditionally developed to support new teachers' smooth transition into the existing teaching culture face complex challenges as the goal expands to the new task of supporting novices as they learn reform-minded practice. Mentor teachers' expertise in functioning effectively in the existing culture, a valuable source for helping novices to learn to teach in prevailing ways, may not be as valuable or relevant to novice teachers who are learning to teach in reform-minded ways (Puk & Haines, 1999). In addition, mentors and novices may not share common visions of teaching, learning, learning to teach, or views about their mentoring relationship (Wang & Odell, 2003).

This shifting role of mentor–novice relationships from supporting novice teachers' smooth transition into the existing culture and practice of teaching to assisting novices as they learn to teach in reform-minded ways calls for a new conception of the relationship that considers both the mission of the mentoring relationship and its complex reality. Such a conception should provide a theoretical framework that identifies directions for research on teacher mentoring and the ways in which the findings from the research can be interpreted.

3. Existing conceptions of mentoring and their limitations

Traditionally, mentor–novice relationships are not well conceptualized. Emerging from the field of teacher mentoring are three major theoretical assumptions underlying various pre-service and induction mentoring programs. They are humanistic, situated apprentice, and critical constructivist perspectives. In reality, a particular program may be developed based on any of the above three without particular attention to the conflicts and limitations across these perspectives. Each perspective on mentoring is based on a particular view of learning with primary attention given to specific goals that the relationship should achieve or a specific problem the relationship should address without recognizing the more complex realities of mentor–novice relationships in relation to accomplishing the goals or addressing the problems.

3.1. Humanistic perspective of mentor–novice relationships

The humanistic perspective of learning suggests that most learning problems are directly related to the learner's personal incompetence in relating to the physical and social environment and is shaped by the stance he or she takes toward himself or herself in learning (Rogers, 1982). Thus, instead of focusing on specific content and the process of learning, the development of the learner's self-esteem and confidence in learning through a counseling process is crucial to solve these problems.

From this perspective, the fundamental goal of mentor–novice relationships is to help novices' smooth transition into teaching by dealing with the reality shock and psychological stress caused by the demands on their personal and professional lives during their induction into the existing culture and practice of teaching (Gold, 1989). It is assumed that mentors' emotional and psychological support are necessary for novice teachers to identify and resolve these conflicts, establish self-esteem, and develop confidence as a teacher at a personal level in the early stage of their career (Enz & Cook, 1992; Odell & Ferraro, 1992; Veenman, 1984). It is assumed that novices' high self-esteem and confidence will help them remain in teaching and that their accumulated teaching experiences will help them become effective teachers (Huling, 1999).

In practice, a mentor teacher assumes the role of a counselor who helps novices identify and resolve personal conflicts, redefine their needs as a teacher, and feel confident about teaching (Gold, 1996). In return, mentors obtain relevant social recognition and psychological reward (Little, 1990; Wagner et al., 1995). Interpersonal skills such as how to be a friend and a good listener for the novices, how to identify novices' personal needs and problems, and how to help novices develop confidence are the

focus (Feiman-Nemser & Parker, 1992b; Wang & Odell, 2002). They are asked to provide whatever personal support novices need, be open-minded about whatever ideas novices want to try, and be encouraging and not judgmental (Odell et al., 1987). It is a popular practice in the selection of mentors to choose those that have helpful personalities and share a philosophy of education and teaching with their novices (Odell, 1990).

Humanistic mentoring relationships may be useful in supporting novice teachers indirectly as they are learning to teach in reform-minded ways. That is, it may help reduce the stress resulting from differences that exist between what the novice is learning to teach and the prevailing practice encouraged in the specific school context. However, as a way to meet the goal of supporting novice teachers as they learn to teach in reform-minded ways, humanistic mentoring relationships are limited in several ways.

Conceptually speaking, central to the humanistic conception is a harmonious personal relationship between mentor and novice that is expected to help mentors meet motivational and emotional needs of novices, lead novices to high self-esteem as teachers and, in turn, result in successful learning and teaching (Gold, 1990, 1996). Consequently, it leaves what and how novices learn to teach in the hands of novices themselves. Such a conception is inconsistent with research on teacher learning in reform-minded contexts that suggests novices' learning is found to be a process of construction and reconstruction of one's teaching knowledge, in which their own ideas of teaching are carefully examined and transformed (Richardson, 1997; Wideen et al., 1998) and that learning to teach is a process of building a new understanding of teaching while battling assumptions and norms underlying prevailing or existing teaching practice and ideas about how teaching can be learned (Zeichner & Hoeft, 1996).

Practically, such a conception of mentoring relationships does not focus on the content and process of reform-minded teaching nor on any resultant problems. To help novices learn to teach in reform-minded ways, they need to develop conceptions of knowledge, learning, and teaching, a deeper knowledge of various subject contents and their connections, and skills of inquiry into teaching (Ball & Cohen, 1999; Cohen et al., 1993; Kennedy, 1991a). By focusing solely on important personal communication skills, it also limits how

mentors are selected and trained for their jobs with little consideration given to mentors' conceptions about teaching and their teaching practice (Wang & Odell, 2002). Such mentoring conceptions and practices often directly and indirectly shape the direction and nature of teaching for novice teachers and are often inconsistent with teaching practice envisioned by reformers (Puk & Haines, 1999).

3.2. Situated apprentice perspective of mentor–novice relationships

The situated apprentice perspective assumes that all knowledge is contextualized and that it grows out of the context where it is used (Brown et al., 1989; Rogoff, 1984). Learning involves a gradual participation in the practices of a professional community through apprenticeships (Lave & Wenger, 1991).

Based on this perspective, the fundamental goal of mentoring relationships is to help beginning teachers deal with the persistent problem of connecting university course work to teaching (Dewey, 1964; Kennedy, 1997; Wideen et al., 1998) and then help them transition smoothly into the existing teaching profession (Feiman-Nemser, 1990; Kagan, 1992). Mentors' technical support and contextualized guidance are seen as necessary for preservice teachers to identify and resolve problems connecting theory and practice, developing necessary teaching knowledge and skills in the context of instruction, and becoming part of the existing teaching culture (Imig & Switzer, 1996; McIntyre et al., 1996).

In practice, mentor teachers are experts with a strong practical and contextualized knowledge of teaching (Tharp & Gallimore, 1988) who help beginning teachers develop practical knowledge including teaching techniques and skills, who know the available resources for teaching, and who understand the contexts and cultures of teaching (Feiman-Nemser & Remillard, 1996; Wildman et al., 1992). For this role, mentor teachers need to know how to demonstrate the problems of teaching, articulate practical knowledge, and decrease their influence as novice teachers gain the confidence to function independently as teachers (Feiman-Nemser & Remillard, 1996). In selecting and preparing mentors, focus is placed on mentors' practical experiences with teaching, articulating practical knowledge through coaching and demon-

stration, identifying resources, and providing contexts where novices learn to teach as needed in the existing culture (Cochran-Smith & Lytle, 1999; Feiman-Nemser & Parker, 1992a).

A situated apprenticeship mentoring relationship can support novice teachers as they are learning to teach in reform-minded ways when the culture and practice of teaching are consistent with the vision of reform-minded practice and where both mentor and novice are committed to learning to teach in reform-minded ways by helping the novice gradually transition into the existing culture. However, this conception assumes that learning is a linear and gradual process of growing from being students with textbook knowledge to being skillful and competent practitioners who have accumulated substantial practical knowledge embedded in the expertise of the mentor and the existing culture and practices of the teaching profession (Kagan, 1992). Thus, it leaves the kind of teaching knowledge that novice teachers need to develop in tact without careful reflection and examination (Franke & Dahlgren, 1996). Consequently, it contradicts the research findings on teaching and learning in reform contexts that suggests the existing culture and practice of teaching need to be transformed. It also fails to reflect the current understanding about knowledge and learning and thus, fails to serve the needs of student learning (Ball, 2000; Resnick, 1987) since learning to teach is a process of learning continuously to transform existing knowledge and practice that involves both mutual critique and self-examination among teachers in light of shared notions about good teaching and observations of each other's teaching (Ballantyne et al., 1995; Hiebert et al., 2002). Thus, the situated apprentice mentor–novice relationship serves to sustain existing teaching practices and norms instead of transforming the existing culture and practice (Cochran-Smith, 1991; Cochran-Smith & Lytle, 1999; Cochran-Smith & Paris, 1995).

Practically speaking, it is important to help novices become familiar with techniques and skills, available resources, and the culture of teaching in the existing school. However, such practices are insufficient in providing novice teachers with opportunities to learn how to deconstruct their initial conceptions about teaching, culture, and teaching practice and to reconstruct ideas in ways that are consistent with practices of reform-minded teaching in various contexts (Reynolds, 1995; Richardson, 1997).

3.3. Critical constructivist perspective of mentor–novice relationships

Critical constructivist mentoring relationships have two theoretical bases. The first is critical theory that assumes the fundamental goal of learning to be continuously deconstructing and then reconstructing existing knowledge and practice toward emancipatory ends (Norffke, 1997). The second is the constructivist assumption that knowledge is actively built by learners through the process of assimilation and accommodation both of which are shaped by the learner's initial conception (Von Glasersfeld, 1995).

Following these theoretical assumptions, the goal of critical constructivist mentor–novice relationships is to critique existing knowledge, structures, and the culture of teaching and schooling, develop a strong commitment toward reform-minded teaching, and work collaboratively to transform such knowledge and practice continuously for social justice (Cochran-Smith, 1991; Cochran-Smith & Lytle, 1999; Guyton & Hidalgo, 1995; King & Bey, 1995). Mentors in such relationships are regarded as agents of change (Feiman-Nemser & Parker, 1992b) and know how to work with novices to articulate intentions of and pose questions for existing knowledge and teaching practice and develop and examine new ideas and assumptions about teaching (Franke et al., 1998; Groswami & Stillman, 1987; Howey, 1988). In selecting and preparing mentors, focus is on their relevant dispositions for and commitment toward improving or reforming teaching, ability to teach in the existing culture of teaching with a reform-minded vision, and experiences in inquiring about teaching practice. Teachers are encouraged to work with other teachers and professionals in improving teaching and education for children (Wang & Odell, 2002).

Clearly, the critical constructivist perspective of teacher mentoring is consistent with the general goal of reform-minded teaching as well as the emerging literature on teacher learning, in which teacher learning is conceptualized as a processes of conceptual transformation (Kennedy, 1991b) and cultural transformation (Hiebert et al., 2002) through collaborative reflection in or on each other practice (Schon, 1987). However, this perspective has potential shortcomings.

Conceptually speaking, the critical constructivist perspective is based on the premise that all existing knowledge of teaching is ultimately problematic if it

is not the result of collaborative inquiry by every mentor and novice (Cochran-Smith & Lytle, 1999), without attention to novices' opportunity to access the knowledge that has been constructed, widely agreed upon, and accepted by the larger professional community. Alternatively, such a mentoring relationship is conceptualized based on the ideal situation in which mentor and novice share the same commitment toward reform-minded teaching and inquiry-based views of learning to teach (Cochran-Smith, 1991).

However, in reality, both mentors and novice teachers often hold beliefs about knowledge, learning, and teaching different from reform-minded teaching (Wang & Odell, 2002). Mentors are more likely to see their role as a mentor to offer emotional and psychological support for novices while leaving the content and approaches to teaching in the hands of novices whether at the induction level (Ganser, 1996; Lemberger, 1992) or preservice level (Sudzina et al., 1997; Williams, 1993). Novice teachers also tend to expect mentors' emotional and technical support while given the autonomy to try their own ideas and approaches to teaching at both preservice (Christensen & Conway, 1991; Hardy, 1999; Tellez, 1992) and induction levels (Enz & Cook, 1992; Odell et al., 1987; Veenman, 1984). Mentoring practices seem to reflect popular mentor and novice assumptions of their roles and relationships with a strong focus on helping novice teachers develop teaching techniques and skills, knowing the available resources for teaching, and understanding the contexts and cultures of teaching (Evertson & Smithey, 2000; Wildman et al., 1992). These focuses often stay the same across different national contexts even when mentors are committed to reform-minded teaching (Wang, 2001; Winograd et al., 1995). Therefore, mentoring practices consistent with a critical constructivist perspective typically are not achieved, and mentor–novice relationships that align with reform-minded teaching are limited as a result.

The existing conceptions of mentoring relationships and their limitations discussed above call for an alternative conception that takes into consideration various mentor–novice relationships, identifies the challenges of such relationships in relation to novices' learning to teach in reform-minded ways, and provides necessary guidelines for designing mentoring programs and structuring mentoring relationships that help move novice teachers toward reform-minded teaching. In the remaining sections of this paper, we propose a framework of various mentor–novice relationships, illustrate some of these relationships as they are emerging from research on mentoring, and identify challenges associated with each of these relationships in promoting reform-minded teaching.

4. Conception of mentor–novice relationships: rationale and sources

Our discussion in previous sections not only suggests the need for an alternative conception of teacher mentoring relationships, but also identifies the complexities that need to be considered. First, the new conception needs to consider the complex contexts in which teaching and learning were initially conceptualized and practiced by mentors and novices and the extent to which they are similar to or different from reform-minded teaching (Cohen, 1988, 1990). It is our assumption based on the teacher learning literature that such differences will exert huge influences on the direction, process, and the consequences of the mentoring relationship.

Second, a new conception needs to reflect current research findings related to teaching and teacher learning in reform contexts. Dispositions, knowledge, and skills for reform-minded teaching are substantially different from teaching in the existing culture (Ball & McDiarmid, 1989; Romberg, 1992). Teacher learning is a process of knowledge construction and reconstruction through individual and collaborative inquiry into one's own teaching (Feiman-Nemser & Remillard, 1996; Hiebert et al., 2002), in which conceptual conflict and transformation are not only unavoidable but important mechanism for learning to teach (Kennedy, 1991a). The dynamic relationship between different kinds of teaching and various ways of learning to teach, based our understanding of teacher learning, would determine the nature of the mentoring relationship and its potential to focus on reform-minded teaching.

Third, a conceptualization of mentoring relationships needs to be useful in helping researchers, policy makers, and practitioners better identify the problems and issues in mentoring relationships, develop relevant and effective policy initiatives for supporting the development of productive mentoring relationships, and understand the challenges and dilemmas of mentoring that support reform-minded teaching.

Following the above considerations, we propose a new conception of mentoring relationships that focuses on the following two sets of questions. In the first set, we consider four questions related to who the mentor is: (1) what kind of teaching does the mentor expect, either explicitly or intuitively, the novice to practice through this mentoring relationship? (2) to what extent is the expected teaching consistent with reform-minded teaching? (3) how does the mentor expect, either explicitly or intuitively, the novice to learn to teach in the mentoring relationship? (4) to what extent is the kind of learning to teach that the mentor expects the novice to experience through the mentoring relationship consistent with learning to teach in reform-minded ways?

In the second set of questions, we consider four questions related to who the novice is: (1) what kind of teaching does the novice want to learn, either explicitly or intuitively, through this mentoring relationship? (2) to what extent is the kind of teaching that the novice wants to learn consistent with reform-minded instruction? (3) how does the novice expect, either explicitly or intuitively, to learn to teach in the mentoring relationship? (4) to what extent is the kind of learning to teach that the novice expects to experience through the mentoring relationship consistent learning to teach in reform-minded ways?

Based on the above considerations and responses to the two sets of questions, we can group mentoring relationships conceptually into four categories and 16 variations as shown in Table 1. Although particular mentoring relationships may not fit precisely into one of the variations and these variations may not represent every conceivable configuration of a mentor–novice relationship, we think that our current conception represents the most important variations of mentoring relationships keeping reform-minded teaching as a focus. It is our contention that mentoring relationships can generally be situated within the range of our categories and their variations.

5. Conception of mentor–novice relationships: its variations and examples

In this section, we explain each major category of mentor–novice relationships and its variations. We then use four pairs of mentoring relationships to illustrate the categories. The research projects from which these four cases are drawn include, *The qualitative study of mentored learning to teach mathematics,* conducted by one of the authors on four pairs of mentoring relationship in an innovative teacher education program (Wang, 2001) and, *The qualitative study of mentored learning to teach writing*, conducted by both authors on two novices from an innovative urban alternative teacher education program (Wang & Odell, 2003). Please read the publications as referenced above for a detailed description of data collection and analysis for each of these specific cases.

5.1. Mentoring relationships with consistent ideas about teaching and learning to teach

This category of mentor–novice relationships features both mentor and novice holding compatible ideas about teaching and learning to teach through a mentoring relationship, which again may include four possible variations. The first variation is the mentor–novice relationship in which both mentor and novice share common ideas about reform-minded teaching; their ideas are consistent with those identified by the research on teacher learning and mentoring. The second variation is opposite of the first variation and is represented by both the mentor and novice sharing ideas about teaching different from reform-minded instruction; their ideas are not consistent with those identified by the research on teacher learning and mentoring using a constructivist approach, but are more like those of humanistic or situated apprentice mentoring. A range of mentoring relationships can exist along a continuum with the first and second variations described above at each end of the continuum.

In the third variation for this category, both mentor and novice share common ideas about teaching that are not consistent with reform-minded instruction. However, they both share views consistent with research on teacher learning and mentoring where mutual observation and reflections on each other's teaching are major models of learning to teach. The last mentoring relationship variation is when both mentor and novice hold similar ideas about reform-minded teaching but share ideas and practices of learning to teach and mentoring different from research on teacher learning and mentoring, such as those shown in humanistic or situated apprentice mentoring.

Conceptually speaking, mentors in this category will likely feel comfortable about their relationship with novices since both share common ideas about

Table 1
Categories and variations of mentor–novice relationships

Novices	Mentors			
	Mentor who believes and practices reform-minded teaching and research-based learning to teach	Mentor who believes and practices non-reform-minded teaching and non-research-based learning to teach	Mentor who believes and practices non-reform-minded teaching and research-based learning to teach	Mentor who believes and practices reform-minded teaching and non-research-based learning to teach
Novice who wants to learn reform-minded teaching through research-based learning to teach practice	Category One: *Variation (1)* Mentor–novice relationship with consistent ideas of teaching and learning to teach	Category Two: *Variation (1)* Mentor–novice relationship with inconsistent ideas of teaching and learning to teach	Category Three: *Variation (1)* Mentor–novice relationship with inconsistent ideas of teaching but consistent ideas of learning to teach	Category Four: *Variation (1)* Mentor–novice relationship with consistent ideas of teaching but inconsistent ideas of learning to teach
Novice who wants to learn non-reform-minded teaching through non-research-based learning to teach practice	Category Two: *Variation (2)* Mentor–novice relationship with inconsistent ideas of teaching and learning to teach	Category One: *Variation (2)* Mentor–novice relationship with consistent ideas of teaching and learning to teach	Category Four: *Variation (2)* Mentor–novice relationship with consistent ideas of teaching but inconsistent ideas of learning to teach	Category Three: *Variation (2)* Mentor–novice relationship with inconsistent ideas of teaching but consistent ideas of learning to teach
Novice who wants to learn non-reform-minded teaching through research-based learning to teach practice	Category Three: *Variation (3)* Mentor–novice relationship with inconsistent ideas of teaching but consistent ideas of learning to teach	Category Four: *Variation (3)* Mentor–novice relationship with consistent ideas of teaching but inconsistent ideas of learning to teach	Category One: *Variation (3)* Mentor–novice relationship with consistent ideas of teaching and learning to teach	Category Two: *Variation (3)* Mentor–novice relationship with inconsistent ideas of teaching and learning to teach
Novice who wants to learn reform-minded teaching through non-research-based learning to teach practice	Category Four: *Variation (4)* Mentor–novice relationship with consistent ideas of teaching but inconsistent ideas of learning to teach	Category Three: *Variation (4)* Mentor–novice relationship with inconsistent ideas of teaching but consistent ideas of learning to teach	Category Two: *Variation (4)* Mentor–novice relationship with inconsistent ideas of teaching and learning to teach	Category One: *Variation (4)* Mentor–novice relationship with consistent ideas of teaching and learning to teach

both teaching and learning to teach. However, the mentoring will not always lead to reform-minded teaching. Emerging from our study of mentoring is a case at the preservice level that has features of variation two where the mentor and novice both have beliefs about teaching different from reform-minded teaching and ideas of learning to teach different from that of constructivist mentoring (Wang, 1998). Situations such as this may prevail in many mentoring programs at both induction and preservice levels.

5.1.1. Case of Kelly and Lisa

Kelly was an intern teacher in an innovative five-year teacher education program and worked in a first-grade classroom for her year-long internship. Based on the initial interview at the beginning of her internship, Kelly clearly did not share ideas about mathematics teaching consistent with research on mathematics teaching (Romberg, 1992). For example, she saw mathematics as a hierarchy of basic skills that "a teacher needed to give to students" and her role as a teacher was to help students

"memorize all the facts of addition and subtraction." Her ideas of mathematics teaching were clearly different from the expectation of her teacher education program for learning to teach mathematics which stressed student mathematics reasoning, connections, communication, and problem solving as envisioned by US mathematics reformers (National Council of Teachers of Mathematics, 1991). Kelly did have one idea regarding mathematics teaching consistent with her teacher preparation program in that she wanted to give students "chances to explore their own ways of solving math problems".

Kelly's mentor, Lisa, was a teacher with 15 years teaching experience, and her ideas of mathematics teaching resonated with the popular traditional ideas of mathematics teaching that her novice held, but were more specific and contextualized. Based on the interview in the beginning of the program, Lisa thought, "Mathematics is the knowledge of skill progression" and to acquire such skills, students needed to understand and remember facts and rules. Teaching observation analysis suggested that Lisa's teaching mathematics did focus on students' understanding of a specific mathematics skill. For example, in each lesson, she demonstrated a specific skill for her students and then had students practice the skills systematically. As she said in the interview, "I can put addition paper in front of my kids and they look at you like "what?" Then you do the first problem together, or you do some together. They go through it, and they complete the entire page."

Lisa and Kelly also had similar ideas about how novices learn to teach in a mentoring relationship. Lisa expected Kelly to know the levels of children mathematics skills and expected Kelly to learn how to help students practice skills. Lisa believed that her role as a mentor was "to provide examples and to model the different ways that I did things" as well as offer a place, materials, and encouragement "for Kelly as she practiced teaching. Kelly also thought the "two most important ways for me to learn are to observe and practice" and "until I get in front of my students actually teaching it, I will not say I have learned. That is how I learn about myself, and the way I teach math is from observing her (Lisa) and actually doing it."

During the program, Lisa and Kelly were able to implement their vision of mathematics teaching and how to learn such practice-based teaching. In the beginning of the program, Lisa modeled mathematics teaching for Kelly and explained what and why she did things. As Kelly started to teach, she offered specific curriculum ideas as well as materials and resources for Kelly to plan a lesson. Then Lisa checked the lesson plan, made sure relevant materials were used, and discussed any problems that occurred in Kelly's planning and teaching. Kelly thought that her mentor really supported her learning to teach mathematics by showing her a model of how to cover materials and directly telling her what content and material she needed to cover for her mathematics teaching. She was also satisfied with Lisa's constant support of offering suggestions and pointing out places where she had problems and made mistakes.

In the end, Kelly moved closer to Lisa at both conceptual and practical levels in teaching mathematics based upon interview and observation data. They shared ideas about teaching mathematics and compatible visions for learning to teach. Kelly moved closer conceptually and practically to prevailing mathematics teaching and away from her program's expectation through her mentoring relationship. Both felt that their mentoring relationship was a positive experience for them.

5.2. Mentoring relationships with inconsistent ideas about teaching and learning to teach

The central feature of mentoring relationships in this category is that both mentor and novice are committed to contradictory ideas about teaching and learning to teach. Under this category are four possible variations of mentoring relationships. In the first variation, the mentor has ideas and/or practices of teaching different from reform-minded teaching and believes in mentoring practices more aligned with humanistic or situated apprentice mentoring than in a critical constructivist mentoring. However, the novice is committed to learning reform-minded teaching and would like to learn to teach in ways consistent with constructivist mentoring as research on teacher learning has supported. Such a situation is consistent with a study on the field teaching experiences for preservice teachers from a reform-minded teacher education program in Canada (Puk & Haines, 1999).

The second variation is when the mentor holds ideas and/or practices consistent with reform-minded teaching and research-based ideas about learning to teach. However, the novice in this situation is committed to learning a kind of teaching different from reform-minded practice and wants to

learn to teach in ways that are different from the mentors' expectations. Again, a range of mentoring relationships can exist along a continuum with the first and second variations described above at each end of the continuum.

In the third variation, the mentor holds ideas about reform-minded teaching but hold beliefs about mentored learning to teaching closer to the humanistic or situated apprentice perspective rather than the constructivist perspective. In contrast, the novice has ideas about teaching in ways different from reform-minded teaching yet expects to learn to teach in constructivist ways as research has suggested through reflection and inquiry in collaboration with the mentor.

The fourth variation of mentoring relationships is when the mentor believes or practices a kind of teaching contradictory to reform-minded practice but would like to engage the novice in inquiry into his or her teaching as suggested by the research on teacher learning. However, the novice teacher in the situation prefers reform-minded teaching but would like to learn it by independent trial and error rather than through constructivist mentoring.

Conceptually speaking, both mentor and novice in this category will likely feel uncomfortable about their relationship. The hidden and obvious conflicts at the conceptual and practice levels are likely to be the major themes of the mentoring relationship. Such conflicts have been captured by several studies at both preservice levels (Puk & Haines, 1999; Schmidt & Knowles, 1994) and at induction levels (Corley, 1998; Kilbourn & Roberts, 1991) in different national contexts. In spite of conflicting themes for mentoring relationships, the consequences of novices' learning to teach in different variations of this category are not all necessarily negative. Instead, depending on how such conflicts between mentor and novice are resolved and transformed during the mentoring process, novices' learning to teach can be qualitatively different. The following case from our study on mentoring at the preservice level illustrates features of novices' learning to teach in the first variation of this category. The mentor has ideas and/or practices of teaching different from reform-minded teaching and believes in mentoring practices more aligned with humanistic or situated apprentice mentoring than in a critical constructivist mentoring while the novice is committed to learning reform-minded teaching and would like to learn to teach in ways consistent with constructivist mentoring. (Wang, 1998).

5.2.1. Case of Jaime and Bank

Jaime came from the same innovative 5-year teaching program that Kelly was and was in her year-long internship in a fifth-grade classroom. According to the interview conducted in the beginning of her internship, Jaime had several abstract ideas about reform-minded mathematics teaching as reflected in the US national standards (National Council of Teachers of Mathematics, 1989, 1991). For example, she thought that mathematics was not always fixed, but "you can answer it from different ways." She assumed that mathematics teaching should focus on developing students' conceptual understanding of basic mathematics concepts "through their own thinking "instead of having them tested and memorize it as a fact." Jaime also regarded the process of mathematics learning as a comfortable or enjoyable experience for students.

Jaime's mentor, Bank, had taught 20 years. Although he claimed that he was embracing reform-minded teaching, he taught mathematics in ways consistent with prevailing teaching practice. In his words, he was "still more an instructor" who would like to show his students the answers instead of inspiring them to discover it by themselves. The observation of his teaching featured him demonstrating a mathematics idea followed by students practicing it. Thus, the kind of teaching that he exposed Jaime to was more traditional and contradictory to what Jaime wanted to learn.

The discrepancy between what Jaime wanted to learn to teach and the kind of teaching that Bank was practicing in his classroom made both mentor and novice take on quite different roles in their relationship. Bank believed that one of his roles as a mentor was to be a friend who provided emotional support. As he said in the interview, "I am a friend and someone to give them (interns) some support when things are rough and things are not going in the right way. I am going to be a kind of help to pick them up a little bit and let them know tomorrow is going to be a new day. And it will be all right sometimes." The other role Bank wanted to play was to provide alternative suggestions or resources if Jaime had difficulties in teaching mathematics and came to him for help. However, Jaime expected her mentor in her internship to be one who "would teach the way I wanted to teach," would model the kind of teaching that she wanted to learn, and analyze her lesson plans and her actual teaching through reflective interactions with her.

However, her early observation convinced her that Bank was not teaching in ways that she wanted to learn, and she decided to seek support from other teachers inside and outside of the school for the kind of teaching she wanted to learn.

During the program, Bank tried to stay out of Jaime's way and only intervened when Jaime was missing something important for students' learning or when Jaime had difficulties in making pedagogical decisions and came to ask him for support. Jaime also tried to avoid Bank's influence on her teaching. Even if she had problems and difficulties, she felt that it was up to herself to resolve them or to consult with other teachers. When the mentor's uninvited assistance occurred, Jaime usually regarded it as interference. She felt extremely uncomfortable about Bank's jumping in when she was teaching. As she said, "when I was talking, he sometimes would like to jump in the lesson and not let me finish. Because he was used to giving all the information first and then letting them work, and I let them work first and then come to the conclusions. He was afraid that I was not giving them the information that I needed. I was frustrated that he would be jump in 'cause I wanted kids to come to the conclusion without his help." She regarded Bank's mentoring only useful when he was open to letting her develop her individual style of mathematics teaching.

The interview and observation data suggested that Jaime was not able to move closer to reform-minded instruction at conceptual and practice levels. Although she was able to let students' discuss their own ideas, she was unable to handle resultant conflicting ideas and support students' as they resolved these differences. Both Jaime and Bank were pleased about their experiences and friendship in the mentoring relationship. However, the friendly relationship did not contribute to learning the reform-minded teaching Jaime wanted to learn.

5.3. Mentoring relationships with inconsistent teaching but compatible learning to teach ideas

In this category of mentoring relationships, both mentor and novice have contradictory ideas about teaching but they share similar conceptions about learning to teach with four possible variations of mentor–novice relationships. The first variation suggests that the mentor has ideas or practices consistent with reform-minded teaching while the novice wants to learn a kind of teaching inconsistent

with reform-minded practice. However, they both share similar ideas about learning to teach different from suggestions by the research on teacher learning.

The second variation is that the mentor holds ideas and practices of teaching different from reform-minded practice while his or her novice is committed to such reform-minded teaching. However, they both share similar ideas of learning to teach closer to humanistic or situated apprentice perspectives.

The third variation of mentoring relationship shows that the mentor has ideas or practices consistent with reform-minded teaching while the novice does not. However, both mentor and novice share the ideas of research-based learning to teach through constructivist mentoring.

The fourth variation for category three is when the mentor has ideas or practices inconsistent with reform-minded teaching while the novice is committed to such instruction. Yet, both mentor and novice share similar ideas about learning to teach through constructivist mentoring.

In theory, mentors and novice in this category may feel uncomfortable about their relationships caused by their conflicting ideas about teaching. The hidden and obvious conflicts at the conceptual and practice levels are the major theme for mentoring relationships in this category. Such conflict often becomes the focus of mentoring relationships at the preservice level, in particular, because novice teachers teach in the assigned mentors' classrooms (Graham, 1997; Gratch, 1998). Different consequences for learning to teach may occur depending on how such conflicts between mentor and novice are resolved and transformed during the mentoring process. The following case from our study on mentoring at the preservice level has features of the first variation that illustrates conflict between mentors and novices and the impact on novices' learning (Wang & Odell, 2003).

5.3.1. Case of Pam and Nancy and Priscilla

The novice, Pam, was from a 1-year post-BA alternative and field-based teacher education program. She brought a strong image of writing instruction that reflected prevailing writing instruction into her internship in the second-grade classroom where her mentors, Nancy and Priscilla, team-taught in a diverse urban school. Based on the interview, Pam believed that to help students develop academic and social skills, a teacher needed

to develop a model of teaching in "a highly ordered situation where you [the teacher] have to follow the steps." She saw her role as telling students what they should do in an entertaining way and assumed such teaching "was closer to the reality of elementary teaching." Based on program initial surveys, Pam agreed with many ideas that reflect traditional writing instruction focusing on students' words, sentences, and grammar and disagreed with many ideas about writing instruction encouraged by US reform standards in literacy education that focus on students' expression and reasoning of ideas where grammar instruction is embedded.

Pam's ideas about teaching and writing instruction were clearly in conflict with the teaching and writing instruction that her mentors, Nancy and Priscilla, practiced. Both mentors in the situation held ideas that were closely aligned with US reform-minded writing instruction. They had common goals for learning to write that were not only functional, but were also focused on developing new ideas and a new perspective for looking at the world (Calkins & Graves, 1980; Graves, 1996) and on developing writers who expressed their ideas (Flower, 1988, 1994; Hayes & Flower, 1986). They agreed that writing instruction should help students learn to write through thinking and communicating their ideas about what they observe and read. Both mentors used a readers' and writers' workshop approach to teach writing (Tompkins, 2001).

While Pam had different ideas about teaching and writing instruction from her mentors, her ideas about how she was going to learn to teach were similar to those of her mentors. Pam assumed teaching was personal and, accordingly, that every teacher should develop his or her own model of teaching. She believed that learning to teach was a process of "basically trial and error" and made up her mind to try some of her "cool ideas of teaching." These ideas seemed to be shared by her mentors who regarded preservice teachers' own efforts as ultimately important in learning to teach. In this process, their role as mentors was to use their teaching as a reference for preservice students and respond to questions about learning to teach.

As both novice and mentors implemented their visions for teaching and learning to teach, confrontation situations occurred. Pam experimented with her own ways of teaching and was initially encouraged by her mentors but eventually caused a problem for students' learning to write in the classroom. The mentors' interference in Pam's teaching caused Pam to believe her learning was not supported by the mentors. This pushed both the novice and mentors to the point that mentors had to explain and defend their teaching methods during several uncomfortable and defensive conversations with Pam. Pam started to feel that the mentors were not supporting her, and asked to have her internship placement changed to another classroom. The struggle between Pam and her mentors did not change until Pam had a chance to experiment with her own teaching in a different classroom and saw the traditional approach as being less effective in teaching students how to elaborate and develop writing.

A follow-up study with Pan in her own classroom a year later showed that Pam started to experiment with her writing instruction by using some strategies of reform-minded teaching practice while primarily pursuing traditional goals for writing instruction. She focused on helping students learn words, sentences, and grammar, instead of expressing and communicating their own ideas. The reform-minded teaching that Nancy and Priscilla practiced in their classroom did not help Pam move toward the same kind of teaching. However, their confrontational relationship during the program left both parties with unpleasant memories.

5.4. Mentoring relationships with consistent teaching but incompatible learning to teach ideas

The major characteristic of mentoring relationships in this category is that both mentor and novice are committed to the same kind of teaching but they fail to share similar ideas about how novices' learn to teach. Again four variations of this category can occur. The first variation is when both mentor and novice hold ideas of reform-minded teaching as a goal for novice learning to teach in the mentoring relationship. However, the novice wants to learn to teach as research has suggested for constructivist mentoring while the mentor has ideas of learning to teach consistent with a humanistic or situated apprenticeship perspective.

The second variation features the mentor and novice sharing ideas of teaching different from reform-minded teaching. Yet, the mentor has ideas about learning to teach through constructivist mentoring, while the novice does not share these ideas.

The third variation is when both mentor and novice have ideas consistent with reform-minded

teaching as their goal for the mentoring relationship. However, the mentor has ideas about research-based learning to teach and constructivist mentoring but the novice does not share these ideas.

In the fourth variation, mentor and novice share ideas or practices of teaching different from reform-minded practice. However, the novice holds ideas consistent with research-based learning to teach and constructivist mentoring while the mentor has ideas of learning to teach consistent with a humanist or situated apprenticeship perspective.

Conceptually speaking, mentors and novice in this category likely feel comfortable about their relationship as they share conceptions about teaching. Existing studies in teacher mentoring are limited in showing how conflicting ideas about learning to teach and mentoring affect mentor–novice relationships and novices' learning. However, we were able to identify one such case that features the first variation of category four, that is where both mentor and novice hold ideas of reform-minded teaching but where the novice wants to learn to teach as research has suggested while the mentor has different ideas about learning to teach from the novice (Wang & Odell, 2003).

5.4.1. Case of Danielle and Nancy and Priscilla

Danielle was another intern from the alternative teacher education program who was doing her internship in the same classroom where Nancy and Priscilla taught and where Pam was doing her internship. However, her experiences learning to teach writing were more pleasant and successful than her peer, Pam was.

Danielle had an ambiguous image of teaching that would help students learn and that did not include a specific pedagogy for a particular academic subject at the beginning of the program. However, a initial survey suggested that Danielle tended to agree with assumptions about writing instruction encouraged by the US reform standards for the Language Arts and disagree with those ideas reflecting traditional writing instruction. This situation put her in a position in which she felt comfortable about the kind of teaching that Nancy and Priscilla practiced.

Danielle also brought a more active vision of learning to teach into her internship that was different from those ideas held by Pam and her mentors. Danielle assumed that she needed to learn how to set goals and priorities for teaching and to find efficient ways through reflective interactions

with mentors to achieve them. She also thought that she should constantly ask questions of the mentors and find effective approaches in a systematic manner in order to accomplish goals and establish priorities. These beliefs about learning to teach also helped prepare Danielle to adapt to the teaching expectations in her mentors' classroom.

As she moved into her internship, Danielle's attitude fit well with the mentors' expectations that preservice teachers should take initiative in their learning while mentors offer relevant references and modeling if asked. Danielle spent substantial time in the beginning "watching mentors model teaching in action" during which time she developed a general image of teaching writing in the mentors' classroom. Then, she gradually participated in conversations with her mentors about teaching writing and children's learning and developed a deeper understanding of what was happening in the classroom. Danielle further identified with mentors' writing instruction through a comparison between students' learning to write in the mentors' classroom and in a classroom where a traditional approach to writing instruction was used.

In spite of her mentors' less active role in mentoring, Danielle's active agenda for learning to teach did help her move closer to reform-minded writing instruction at both conceptual and practical levels. She was able to continue her learning to teach in this direction as she moved into her first year of teaching even though she was in a school context where such teaching was not encouraged. Both Danielle and her mentors felt comfortable about their relationship during the mentoring program.

6. Conclusion and implications

Throughout the article, we have distinguished reform-minded teaching from prevailing teaching practice since the former is the goal for mentoring programs in many countries, such as the US (Darling-Hammond, 1998), England (Furlong, 2002), Germany (Jones, 2000), and other European countries (Edwards, 1998). This emphasis on moving away from prevailing teaching practice to a different kind of teaching that is more reform minded makes the traditional function of teacher mentoring, supporting novice teachers' smooth transition into the existing teaching culture, questionable and problematic. Our alternative conception of mentoring relationships presented in the sections above represents our effort to bring

conceptual clarity to the various relationships that result when novice teachers and mentors have similar or differing beliefs about teaching and mentoring. It is intended to give researchers a useful conceptual framework for identifying how the various relationship patterns might affect how novice teachers learn to teach in reform-minded ways and for designing particular studies to investigate mentor and novice learning. We also hope our conception will help policy makers and mentor program developers to focus on crucial issues, important challenges, and dilemmas associated with teacher mentoring that is intended to promote reform-minded teaching. Moreover, the variations in mentor–novice relationships may shed light on practical problems that surface between mentors and novices in their daily work together.

For the purpose of conceptual clarity, we identified 16 variations in mentor–novice relationships. Indeed, this does not mean there can be no blend between more traditional ways of teaching and mentoring and reform-minded approaches or that every program should pursue the same goal of teacher mentoring as a support for reform-minded teaching without any attention to the other important goals. Other mentoring program goals such as understanding the culture and resources of the existing school system and helping teacher retention certainly are additional considerations for those working in mentoring programs.

Our examination of the three existing conceptions of mentoring: humanistic, situated apprenticeship, and critical constructivist, has led us to conclude that none of them alone addresses the complicated processes of learning to teach. It is neither our intention to disregard contributions that humanistic, situated apprenticeship, or critical constructivist perspectives can have on teacher development. Indeed, focusing on the emotional needs of novices as suggested by the humanistic approach, for example, may be an important goal of mentoring programs. A major suggestion herein is that considering any single perspective on learning to teach through mentoring, whether it be humanistic, situated apprenticeship, or critical constructivist perspective is alone unlikely to lead to teaching and mentoring practices consistent with the expectations of teacher education reformers that are emerging in different countries.

Our analysis of the conception of mentoring relationships and the corresponding cases also raises several important questions for the research community. First, while we can conceptually identify various categories and variations of mentoring relationships in light of reform-minded teaching, the prevalence of each category and variations in the reality of mentoring is not clear. Second, while we have offered some examples of mentoring relationships to illustrate the problems and challenges that some of these teacher relationships imply, most of the challenges and dilemmas that come with these categories and variations of mentoring relationships are not clearly identified. Third, a related question is whether there are influences that individuals outside of the mentoring relationships can have to move each relationship in a direction of supporting novice teachers' learning reform-minded teaching.

Finding answers to these questions would be helpful to policy makers and program developers in making decisions related to the selection and education of mentors. Moreover, they would help in matching mentors appropriately with novices holding various beliefs about teaching and learning to teach and in developing different supports for different kinds of mentoring relationships. The answers may also help provide mentoring practitioners a useful guide in identifying the needs and problems faced by novice teachers in learning reform-minded teaching.

References

Ball, D. L. (2000). Bridging practices: Intertwining content and pedagogy in teaching and learning to teach. *Journal of Teacher Education*, *51*(3), 241–247.

Ball, D. L., & Cohen, D. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In L. Darling-Hammond, & G. Sykes (Eds.), *Handbook of policy and practice* (pp. 3–32). San Francisco, CA: Jossey-Bass.

Ball, D. L., & McDiarmid, G. W. (1989). *The subject matter preparation of teachers (Issue Paper No. 89-4)*. E. Lansing: National Center of Research on Teacher Learning, Michigan State University.

Ballantyne, R., Hansford, B., & Packer, J. (1995). Mentoring beginning teachers: A qualitative analysis of process and outcomes. *Educational Review*, *47*(3), 297–307.

Bloom, B. S. (1971). Mastery learning. In J. H. Block (Ed.), *Mastery learning: Theory and practice*. New York: Holt, Rinehart & Winston.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Education Researcher*, *18*(1), 32–34.

Calkins, L. M., & Graves, D. H. (1980). Research update: When children want to punctuate: Basic skills belong in context. *Language Arts*, *57*(5), 567–573.

Christensen, J. E., & Conway, D. F. (1991). The use of self-selected mentors by beginning teachers and new-to-district teachers. *Action in Teacher Education*, 12(4), 21–28.

Cochran-Smith, M. (1991). Learning to teach against the grain. *Harvard Educational Review*, 61(3), 279–310.

Cochran-Smith, M., & Lytle, S. (1999). Relationship of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 24, 249–298.

Cochran-Smith, M., & Paris, P. (1995). Mentor and mentoring: Did Homer have it right? In J. Smith (Ed.), *Critical discourses on teacher development* (pp. 181–202). London: Cassell.

Cohen, D. K. (1988). Teaching practice: Plus ca change. In P. W. Jackson (Ed.), *Contributing to educational change: Perspectives on research and practice* (pp. 27–84). New York: McCutchan.

Cohen, D. K. (1990). A revolution in one classroom: The case of Mrs. Oublier. *Educational Evaluation and Policy Analysis*, 12(3), 327–345.

Cohen, D. K., McLaughlin, M. W., & Talbert, J. E. (Eds.). (1993). *Teaching for understanding: Challenges for policy and practice*. San Francisco: Jossey-Bass.

Corley, E. L. (1998). *First-year teachers: Strangers in strange lands*. Chicago, IL: Paper presented at the Annual Meeting of the Midwestern Educational Research Association.

Darling-Hammond, L. (1998). Teacher learning that supports student learning. *Educational Leadership*, 55(5), 6–11.

Darling-Hammond, L., & Ball, D. L. (1998). *Teaching for high standards: What policymakers need to know and be able to do (CPRE Joint Report Series No. JRE-04)*. Philadelphia, PA: National Commission on Teaching and America's Future Consortium for Policy Research in Education.

Dewey, J. (1964). The relation of theory to practice in education. In R. D. Archambault (Ed.), *John Dewey on education* (pp. 313–338). Chicago: The University of Chicago Press.

Edwards, A. (1998). Mentoring student teachers in primary schools: Assisting student teachers to become learners. *European Journal of Teacher Education*, 21(1), 47–62.

Enz, B.J., & Cook, S.J. (1992). Student teachers' and cooperating teachers' perspectives of mentoring functions: Harmony or dissonance? *Paper presented at the Annual Meeting of the American Educational Research Association*, San Francisco, CA.

Evertson, C. M., & Smithey, M. W. (2000). Mentoring effects on proteges' classroom practice: An experimental field study. *Journal of Educational Research*, 93(5), 294–304.

Feiman-Nemser, S. (1990). Teacher preparation: Structural and conceptual alternatives. In W. R. Houston (Ed.), *Handbook of research on teacher education* (pp. 212–233). New York: Macmillan.

Feiman-Nemser, S., & Parker, M. B. (1992a). *Los Angeles mentors: Local guides or educational companions? (Research Report No. 92-10)*. East Lansing: National Center for Research on Teacher Learning, Michigan State University.

Feiman-Nemser, S., & Parker, M. B. (1992b). *Mentoring in context: A comparison of two US programs for beginning teachers (NCRTL special report)*. East Lansing, MI: National Center for Research on Teacher Learning, Michigan State University.

Feiman-Nemser, S., & Remillard, J. (1996). Perspectives on learning to teach. In F. B. Murray (Ed.), *The teacher educator's handbook* (pp. 63–91). San Francisco: Jossey-Bass Publishers.

Feiman-Nemser, S., Schwille, S., Carver, C., & Yusko, B. (1998). *A conceptual analysis of literature on beginning teacher induction. (A work product of the National Partnership on Excellence and Accountability in Education Report)*. Washington, DC: US Department of Education.

Flower, L. (1988). The construction of purpose in writing and reading. *College English*, 50(5), 528–550.

Flower, L. (Ed.). (1994). *Making thinking visible: Writing, collaborative planning, and classroom inquiry*. Urbana, IL: National Council of Teachers of English.

Franke, A., & Dahlgren, L. O. (1996). Conceptions of mentoring: An empirical study of conceptions of mentoring during the school-based teacher education. *Teaching and Teacher Education*, 12(6), 627–641.

Franke, M. L., Carpenter, T., Fennema, E., Ansell, E., & Behrend, J. (1998). Understanding teachers' self-sustaining, generative change in the context of professional development. *Teaching and Teacher Education*, 14(1), 67–80.

Furlong, J. (2002). Ideology and reform in teacher education in England: Some reflections on Cochran-Smith and Fries. *Educational Researcher*, 31(6), 23–35.

Gagne, R. (1965). *The condition of learning*. New York: Holt, Rinehart and Winston.

Ganser, T. (1996). What do mentors say about mentoring? *Journal of Staff Development*, 17(3), 36–39.

Gold, Y. (1990). Psychological support for mentors and beginning teachers: A critical dimension. In T. M. Bey, & C. T. Holmes (Eds.), *Mentoring: Contemporary principles and issues* (pp. 25–34). Reston: Association of Teacher Educators.

Gold, Y. (1996). Beginning teacher support: Attrition, mentoring, and Induction. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.), *Handbook of research on teacher education* (2nd ed., pp. 548–616). New York, NY: Macmillan LIBRARY Reference USA.

Gold, Y. A. O. (1989). The dimensionality of a modified form of the Maslach Burnout Inventory for university students in a teacher-training program. *Educational and Psychological Measurement*, 49(3), 549–561.

Graham, P. (1997). Tensions in the mentor teacher–student teacher relationship: Creating productive sites for learning within a high school English teacher education program. *Teaching and Teacher Education*, 13(5), 513–527.

Gratch, A. (1998). Beginning teacher and mentor relationships. *Journal of Teacher Education*, 49(3), 220–227.

Graves, D. H. (1996). Teaching writing. Spot the lifetime writers. *Instructor*, 105(7), 26–27.

Groswami, P., & Stillman, P. (1987). *Reclaiming the classroom: Teacher research as agency of change*. Upper Montclair: Boynton/Cook.

Guyton, E., & Hidalgo, F. (1995). Characteristics, responsibilities, and qualities of urban school mentors. *Education and Urban Society*, 28(1), 40–47.

Hardy, C. A. (1999). Preservice teachers' perceptions of learning to teach in a predominantly school-based teacher education program. *Journal of Teaching in Physical Education*, 18(2), 175–198.

Hayes, J. R., & Flower, L. S. (1986). Writing research and the writer. *American Psychologist*, 41(10), 1106–1113.

Hiebert, J., Gallimore, R., & Stigler, J. W. (2002). A knowledge base for the teaching profession: What would it look like and how can we get one? *Educational Researcher*, 31(5), 3–15.

Howey, K. (1988). Mentor-teachers as inquiring professionals. *Theory into Practice*, 27(3), 209–213.

Huling, L. (1999). *Policy implications of novice teacher support programs*. Paper presented at the Texas Senate Education Committee.

Huling-Austin, L. (1990). Teacher induction programs and internships. In W. R. Houston, M. Haberman, & J. Sikula (Eds.), *Handbook of research on teacher education* (pp. 535–548). New York, NY: Macmillan.

Imig, D. G., & Switzer, T. J. (1996). Changing teacher education programs: Restructuring collegiate-based teacher education. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.), *Handbook of research on teacher education* (2nd ed., pp. 213–225). New York, NY: Macmillan LIBRARY Reference USA.

Jones, L. R., & David, B. S. (1997). Teachers' perceptions of mentoring in a collaborative model of initial teacher training. *Journal of Education for Teaching*, 23(3), 253–261.

Jones, M. (2000). Becoming a secondary teacher in Germany: A trainee perspective on recent developments in initial teacher training in Germany. *European Journal of Teacher Education*, 23(1), 65–76.

Kagan, D. M. (1992). Professional growth among preservice and beginning teachers. *Review of Educational Research*, 62(2), 129–169.

Kennedy, M. (1991a). *An agenda for research on teacher learning (NCRTL Special Report)*. East Lansing, MI: National Center for Research on Teacher Learning, Michigan State University.

Kennedy, M. M. (1991b). Some surprising findings on how teachers learn to teach. *Educational Leadership*, 49(3), 14–17.

Kennedy, M. M. (1997). The connection between research and practice. *Educational Researcher*, 26(7), 4–12.

Kilbourn, B., & Roberts, G. (1991). May's first year: Conversations with a mentor. *Teachers College Record*, 93(2), 252–264.

King, S. H., & Bey, T. M. (1995). The need for urban teacher mentors: Conceptions and realities. *Education and Urban Society*, 28(1), 3–10.

Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African American children*. San Francisco, CA: Jossey-Bass Inc.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lemberger, D. (1992). *The mantle of a mentor: The mentor's perspective*. San Francisco, CA: Paper presented at the Annual Meeting of the American Educational Research Association.

Little, J. W. (1990). The mentoring phenomenon and the social organization of teaching. *Review of Research in Education*, 16, 252–279.

Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago: The University of Chicago Press.

McIntyre, D. J., Byrd, D. M., & Foxx, S. M. (1996). Field and laboratory experiences. In J. Sikula, T. Buttery, & E. Guyton (Eds.), *Handbook of research on teacher education* (pp. 171–193). New York: Macmillan.

National Council of Teachers of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (1991). *Professional standards for teaching mathematics*. VA: National Council of Teachers of Mathematics.

Nilssen, V., Gudmundsdottir, S., & Wangsmocappelen, V. (1998). Mentoring the teaching of multiplication: A case study. *European Journal of Teacher Education*, 21(1), 29–45.

Norffke, S. (1997). Professional, personal, and political dimensions of action research. *Review of Research in Education*, 22, 305–343.

Odell, S. J. (1986). Induction support of new teachers: A functional approach. *Journal of Teacher Education*, 37(1), 26–29.

Odell, S. J. (1990). Support for new teachers. In T. M. Bey, & C. T. Holmes (Eds.), *Mentoring: Developing successful new teachers* (pp. 3–24). Reston, VA: Association of Teacher.

Odell, S. J., & Ferraro, D. (1992). Teacher mentoring and teacher retention. *Journal of Teacher Education*, 43(3), 200–204.

Odell, S. J., Loughlin, C. E., & Ferraro, D. P. (1987). Functional approach to identification of new teacher needs in an induction context. *Action in Teacher Education*, 8(4), 51–57.

Puk, T. G., & Haines, J. M. (1999). Are schools prepared to allow beginning teachers to reconceptualize instruction? *Teaching and Teacher Education*, 15(5), 541–553.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning. *Educational researcher*, 29(1), 4–15.

Resnick, L. B. (1987). Learning in school and out. *Educational Researcher*, 16(9), 13–20.

Reynolds, A. (1995). The knowledge base for beginning teachers: Education professors' expectations versus research findings on learning to teach. *The Elementary School Journal*, 95(3), 199–221.

Richardson, V. (1997). Constructivist teaching and teacher education: Theory and practice. In V. Richardson (Ed.), *Constructivist teacher education* (pp. 3–14). Washington, DC: The Falmer Press.

Rogers, C. (1982). *Freedom to learn in the eighties*. Columbus, OH: Merrill.

Rogoff, B. (1984). Introduction: Thinking and learning in social contexts. In B. Rogoff, & J. Lave (Eds.), *Everyday cognition: Its development in social context* (pp. 1–8). Cambridge, MA: Harvard University Press.

Romberg, T. A. (1992). Problematic features of the school mathematics curriculum. In P. N. Sackson (Ed.), *Handbook of research on curriculum* (pp. 749–788). New York: Macmillan.

Rosenshine, B. (1985). Direct instruction. In T. Husen, & T. N. Postlethwaite (Eds.), *International encyclopedia of education*, Vol. 3 (pp. 1395–1400). Oxford: Pergamon Press.

Schmidt, M., & Knowles, J. G. (1994). *Four women's stories of "failure" as beginning teachers*. New Orleans, LA: Paper presented at the Annual Conference of American Educational Research Association.

Schon, D. (1987). *Educating the reflective practitioner*. San Francisco: Jossey Bass.

Skinner, B. F. (1968). *The technology of teaching*. New York: Appleton Century-Crofts.

Sudzina, M., Giebelhaus, C., & Coolican, M. (1997). Mentor or tormentor: The role of the cooperating teacher in student teacher success or failure. *Action in Teacher Education*, 18(4), 23–35.

Tellez, K. (1992). Mentors by choice, not design: Help-seeking by beginning teachers. *Journal of Teacher Education*, 43(3), 214–221.

Tharp, G., & Gallimore, R. (1988). Assisting teacher performance through the ZED: A case study. In Tharp, &

Gallimore (Eds.), *Rousing mind to life: Teaching, learning, and schooling in social context*. Cambridge: Cambridge University Press.

Tompkins, G. E. (2001). *Literacy for the 21st century: A balanced approach*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Veenman, S. (1984). Perceived problems of beginning teacher. *Review of Educational Research*, 19(3), 143–178.

Veenman, S., & Denessen, E. (2001). The coaching of teachers: Results of five training studies. *Educational Research and Evaluation: An International Journal on Theory and Practice*, 7(4), 385–417.

Von Glasersfeld, E. (1995). *Radical constructivism: A way of knowing and learning*. Washington, DC: Falmer Press.

Wagner, L. A., Ownby, L., & Gless, J. (1995). The California mentor teacher program in the 1980s and 1990s: A historical perspective. *Education and Urban Society*, 28(1), 20–39.

Wang, J. (1998). *Learning to teach mathematics: Preservice teachers, their collaborative teachers and instructional contexts*. Unpublished doctoral dissertation, East Lansing: Michigan State University.

Wang, J. (2001). Contexts of mentoring and opportunities for learning to teach: A comparative study of mentoring practice. *Teaching and Teacher Education*, 17(1), 51–73.

Wang, J., & Odell, J. S. (2003). Learning to teach toward standards-based writing instruction: Experiences of two preservice teachers and two mentors in an urban multicultural classroom. *Elementary School Journal*, 104(2), 147–175.

Wang, J., & Odell, S. J. (2002). Mentored learning to teach and standards-based teaching reform: A critical review. *Review of Educational Review*, 7(3), 481–546.

Wang, J., & Paine, W. L. (2001). Mentoring as assisted performance: A pair of Chinese teachers working together. *The Elementary School Journal*, 102(2), 157–181.

Wideen, M., Mayer-Smith, J., & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of Educational Research*, 68(2), 130–178.

Wildman, T. M., Magliaro, S. G., Niles, R. A., & Niles, J. A. (1992). Teacher mentoring: An analysis of roles, activities, and conditions. *Journal of Teacher Education*, 43(3), 205–213.

Williams, A. (1993). Teacher perceptions of their needs as mentors in the context of developing school-based initial teacher education. *British Educational Research Journal*, 19(4), 407–420.

Winograd, K., Higgins, K., McEwan, B., & Haddon, L. (1995). Relinquishing field supervision to the mentors: University teacher educators rethink their practice. Paper presented at the Annual Conference of the American Educational Research Association, San Francisco.

Zeichner, K. M., & Hoeft, K. (1996). Teacher socialization for cultural diversity. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.), *Handbook of research on teacher education* (2nd ed., pp. 525–547). New York, NY: Macmillan LIBRARY Reference USA.