



Opportunities to develop adaptive teaching expertise during supervisory conferences

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ABSTRACT

Adaptive teaching expertise is a critical component of quality teaching. University-based supervisors should employ specific supervision styles and discourse types during post-lesson observation conferences to help student teachers develop adaptive competencies such as, justifying decision-making, balancing experimentation and risk to pupils, and discussing instructional adaptations to address pupils' contextualized-needs. Findings from a sixteen-week, multiple-case study suggest that student teachers and supervisors ($N = 6$) do not use critical discourse to capitalize on opportunities to develop adaptive teaching expertise. If student teachers are expected to become adaptive experts, teacher educators must learn how to leverage discourse to promote development of adaptive teaching expertise.

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1. Introduction

1.1. Framing the study

Teacher quality is an ill-defined and multi-dimensional concept (Ball & Hill, 2008; Grossman, 2008) but in the last decade, adaptive teaching expertise has been identified as a critical competency of quality teachers. Though adaptive teaching expertise has been identified as a component of high quality teaching (Cochran-Smith & Feiman-Nemser, 2008; Hatano & Oura, 2003; Sawyer, 2006), little is known about the best ways to help novice teachers develop adaptive teaching expertise. Therefore it is difficult to design reforms aimed at improving this outcome of teacher education (Cochran-Smith & Zeichner, 2005; Guyton & McIntyre, 1990; Sawyer, 2006).

A dearth of empirical research describes adaptive *teaching* expertise, related to expertise in *teaching*. Similar to *managing complexities* (Lampert, 2001, pp. 1–8), adaptive expertise is what enables learners to “appropriately [apply their learning] across experiences” and “is supported by the extent to which learners understand the goals and principles of relevant activities and gain experience” in authentic contexts (Rogoff, 2003, p. 255). Adaptive experts are also able to reflect and reform their actions and learn from their own experiences, which prepare them for ongoing, future learning (Bransford & Schwartz, 1999; Liston & Zeichner, 1991).

Developing expertise in a content area is not the same as developing adaptive *teaching* expertise. Content adaptive experts are concerned with developing deep complex understandings of their discipline content areas. These types of experts develop banks of common errors that pupils make aligned with a given content area and then draw on their deep content knowledge and multiple ways of knowing (from several perspectives) to make sense of discipline-specific concepts and ideas (Bransford, Brown, & Cocking, 2000). An adaptive expert in a content area is not necessarily a teacher, nor does their adaptive expert status denote that they are capable of teaching. Adaptive *teaching* experts are pedagogical experts that engage in a process of self-assessing and strategically adjusting their decision-making before, during, and after teaching episodes. They are able to strategically move away from planned curriculum components to better support the contextual needs of their pupils, question familiar solutions to problems by noticing unique features, and recognize the need to refine, change, and try out different decisions while paying close attention to the impact on their pupils.

Field-based clinical experiences are fertile learning environments, which help novice teachers develop adaptive teaching expertise (Ajayi & Lee, 2005; Davenport & Smetana, 2004; Freidus, 2002; Griffin, 1989; Scheeler, McAfee, Ruhl, & Lee, 2006; Shantz & Ward, 2000). The field experience has been noted as “one of the most defining moments in a teacher’s career” (Pena & Almaguer, 2007). Although teacher preparation programs have nuanced differences across the globe, clinical field

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experiences are ubiquitous components of many teacher education programs. Efforts aimed at helping student teachers develop adaptive teaching expertise should be contextualized within field placements.

Currently, opportunities for teaching novices how to develop adaptive teaching expertise during field experiences are seldom mentioned in the literature (Cochran-Smith & Feiman-Nemser, 2008). Most literature on adaptive expertise is related to content expertise not teaching expertise. Unlike developing content expertise centered on fluently chunking, and adapting technical application of strategy components, developing teaching expertise requires guidance from an expert who can help novice student teachers learn from a highly complex and deeply contextualized learning process. This process includes employment of critical and justificatory discourse which lead to articulating, rationalizing, and justifying decision-making, noticing and adapting to the needs of the context and pupils, and recognizing the need to balance between experimentation and risk to pupils' emotional well being and academic growth. University-based supervisors need to be adept at recognizing opportunities to prompt novices to engage in these types of discourses during discussions about observed teaching episodes.

1.2. Purpose

Development of adaptive teaching expertise remains an under-researched concern (Cochran-Smith & Feiman-Nemser, 2008). These concerns likely stem from a largely unsupported assumption that supervisory conferences provide student teachers with structured contexts for learning how to develop adaptive teaching expertise. Since “what gets learned at one time influences a teachers' readiness for and openness to subsequent learning” (Feiman-Nemser & Remillard, 1999, p. 79), it is critical to discern how teacher educators could, or do, function as guides during conferences with the aim of helping student teachers enter a “trajectory of development” (Knowles & Cole, 1996; Zeichner & Teitelbaum, 1982). Without a deeper understanding of what transpires during these conferences, it is incredibly difficult to design teacher preparation reforms aimed at providing learning opportunities, which would contribute to the development of adaptive teaching expertise (Cochran-Smith & Zeichner, 2005; Guyton & McIntyre, 1990; Sawyer, 2006).

The purpose of this study was to investigate supervisory conferences to identify conditions under which opportunities to learn how to develop adaptive teaching expertise flourish. Two such conditions include the types of discourse employed and supervision styles. To fulfill this aim, the investigation was organized around three common and well-researched problems which novices encounter during field experiences that hinder the development of adaptive expertise, (1) *unquestioned familiarity*, (2) *dual purposes*, and (3) *context* (Anagnostopoulos, Smith, & Basmadjian, 2007; Boydell, 1986; Eilam & Poyas, 2006; Feiman-Nemser & Buchmann, 1986; Grossman, 1995; Tuomi-Grohn & Engstrom, 2003; Zeichner & Teitelbaum, 1982). Using these three problems as a framework, the researcher sought to learn how university-based supervisors helped student teachers engage in conversations around these common experience-based problems. Specifically, the aim was to identify the supervision styles and types of discourse used when addressing or failing to address the three specific problems. Achieving this goal would provide evidence that the post-lesson observation conference is a context for learning how to develop adaptive teaching expertise and the study would serve to specify conferencing styles and discourse types that can be leveraged in ways that enable conference participants to create and capitalize on learning opportunities.

2. Theoretical framework: situated learning theory and adaptive expertise

University level reforms are currently focused on how to better educate teachers to prepare them to face challenges presented in the classroom and to improve pupil academic achievement (Ball & Hill, 2008; Grossman, 2008). Education researchers urged teacher educators to shift from only evaluating teaching behaviors to measuring other aspects of teacher quality in an effort to teach teachers how to learn from their teaching (e.g., Hiebert, Morris, Berk, & Jansen, 2007). Many situated learning theorists support this shift (Bransford et al., 2006; Bransford & Schwartz, 1999; Brown & Campione, 1990; Sawyer, 2006) and more specifically, define teacher quality as a teacher who demonstrates high levels of adaptive expertise (Bereiter & Scardamalia, 1993; McDiarmid & Clevenger-Bright, 2008; Sternberg & Grigorenko, 2000).

According to Greeno (1997), “[situated] learning can provide a broader framework for understanding and improving educational practice...[by] develop[ing] more adequate concepts about systems in which individuals participate...[and] develop their identities as contributors and learners along trajectories” (p. 15). Within the context of student teaching conferences, which houses a community of learners, albeit a community of two, the relationship between the situation and participants gives rise to activity (Greeno, 1989; Hutchins, 1995; Lave, 1988). The activity, or conference discourse, is thus an inextricably connected whole, encompassing the student teacher, the supervisor, and their actions (Chalies, Ria, Bertone, Trohel, & Durand, 2004).

2.1. Situated learning and problems hindering adaptive expertise development

Situated learning is defined as a reciprocal relationship between the contextual environment and actors in the environment (Brown & Campione, 1990; Brown, Collins, & Duguid, 1989; Bruffee, 1999; Lave & Wenger, 1991; Rogoff, 1994). Crawford (2006) pulls from “constructs of situated learning...as a theoretical framework for interpreting the learning environment of the teachers” (p. 618) in order to explore interrelations between context and learning. Contextual factors include common problems that arise during specific learning experiences. These problems are likely to heavily influence how learning processes are organized (Eilam & Poyas, 2006; Spiro, Coulson, Feltovich, & Anderson, 1988).

2.2. Situated learning and discourse types aimed at supporting adaptive teaching expertise

Conference discourse can be leveraged to help student teachers make sense of their experiences and develop adaptive teaching expertise. Teacher educators must provoke student teachers to justify, self-assess, and self-reform their teaching practices (Blacker, 2007; Liston & Zeichner, 1991). For example, Liston and Zeichner (1991) used an inquiry-oriented approach to encourage teacher educators to engage pre-service teachers in discourse that enabled developing teachers to go beyond retelling and describing. Through rationale production, student teachers' learn to justify their practices and learn to judge the merit of their choices via self-regulated assessment (Blacker, 2007). Participation in making justifications and practicing to self-assess helps student teachers to prepare for roles as perpetual learners now and in the future which is a tenet of adaptive expertise (Bransford & Schwartz, 1999).

It is critical to study the types of discourse exchanged between field instructors or supervisors and their student teachers. According to learning science scholars, “the best learning takes place when learners articulate their unformed and still developing

understanding, and continue to articulate it throughout the process of learning” (Sawyer, 2008, p. 6). This articulation process could be a key component of supervisory conferences, since “articulating and learning go hand in hand in a mutually reinforcing feedback loop. In many cases learners don’t actually learn something until they start to articulate it – in other words, while thinking out loud, they learn more rapidly and deeply” (Sawyer, 2008, p. 12). Borko and Mayfield (1995) called for additional research on “*guided teaching relationships* and their influence on prospective teachers”, which they deemed to be “crucial to designing teacher education experiences that will be effective in preparing novices” to teach in better ways (p. 503, emphasis added). Studying student teachers’ and university-based supervisors’ articulation of ideas within observation conferences will yield descriptive accounts of potential opportunities to develop adaptive teaching expertise.

3. Novices’ problems

Expert teachers make many decisions before, during, and after teaching. Teacher decisions are often highly complex because teachers face complex and ever-changing problems. Three features that make a problem routine; 1.) well-defined, 2.) stable learning environment, 3.) shared values and goals between teacher and learner are simply non-existent in today’s classroom (Lin, Schwartz, & Hatano, 2005). Therefore, teachers must learn how to learn from their own teaching so that they can strategically adapt their decision-making to various demands related to diverse contextual and pupil needs. Adaptive teaching experts excel at analyzing their decisions because they think deeply about their justifications for decision-making, notice pupils’ needs in real-time, are capable of making adjustments to their planned decisions, in-action, and for future action and are able to balance their own experimentation with potential risks to their pupils. Adaptive teaching expertise has been equated with adaptive metacognition (Lin et al., 2005) because teachers must be able to think about their own decision-making before they are able to predict and then analyze the impact of their decisions.

There are undoubtedly many reasons why novices are unable to notice the needs of their pupils and make decisions in real-time or reflect on decision-making as a way to prepare for future learning from their teaching. The three problems described below are not all encompassing, but were purposefully selected because of their relationship to the development of adaptive teaching expertise and experience-based learning. A description of this relationship is summarized in Table 1.

Several widely cited novice teachers’ problems, can be addressed through talking with others about one’s own teaching (Feiman-Nemser & Buchmann, 1986). Addressing these problems

would provide opportunities for learning and set student teachers on a trajectory of development toward the development of adaptive expertise (Anagnostopoulos et al., 2007; Boydell, 1986; Grossman, 1995; Tuomi-Grohn & Engestrom, 2003; Zeichner & Teitelbaum, 1982).

First, student teachers revert to teaching in ways that they were taught when they were pupils. Novices fail to question what is familiar and make instructional decisions as if what is familiar, is best. Feiman-Nemser and Buchmann named this the *unquestioned familiarity* pitfall (1986). Inspired by Feiman-Nemser and Buchmann, in this study, the concept of *unquestioned familiarity* is expanded to include repeating observed cooperating teacher performances without questioning the value or underlying assumptions behind cooperating teachers’ decisions. During the student teaching practicum the *unquestioned familiarity* problem arises because the student teacher readily implements the practices of the cooperating teacher. While the cooperating teacher may be modeling highly effective decision-making, the student teacher is often not privy to the cooperating teacher’s internal rationale. This impedes the development of adaptive teaching expertise because the student teacher fails to make their own decisions based on any type of justification related to their pupils’ emotional or academic needs nor does the student teacher understand or know about the cooperating teacher’s internal and invisible decision-making processes.

Second, student teachers do not realize that the practicum classroom serves a dual purpose: (a) learn how to teach (b) help pupils learn. This *dual purpose* pitfall, inspired by the original cross-purposes pitfall so named by Feiman-Nemser and Buchmann (1986) is an obvious problem. The problem is one of balance. Expert teachers continually learn from their teaching by deliberately trying out their decision-making and making revisions based on pupils’ unanticipated reactions or needs. An adaptive expert teacher continually learns how to balance and revise this experimental process by trying to minimize the risk to pupils’ well being, safety, and learning. Novice teachers find it difficult to recognize that the enterprise of teaching is always *dual purposed*. Opportunities to practice balancing these purposes are often not realized and development of adaptive teaching expertise is hindered.

Third, novices fail to interpret classroom contexts as highly complex and often base their decisions on superficial understandings of classroom dynamics (Eilam & Poyas, 2006). At times, novices fear going off script, holding tightly to pre-made lesson plans and curriculum guides, forgetting that the documents were created without taking the diverse and often unanticipated needs of pupils or real-life, real-time contexts into account. This is a *context* problem. Conversely, adaptive teaching experts recognize that they must strategically use pre-determined and often mandated curricular guides with a critical eye toward making necessary

Table 1
Summary of connections between novices’ problems and adaptive teaching expertise.

Novice problems	Adaptive experts learn to...
<p><i>Unquestioned familiarity</i> Student teacher thinks what is familiar is best and/or imitates the cooperating teacher.</p>	<p>Question what seems to be familiar and recognizes/notices the novelty of problems (Lin et al., 2005; Liston & Zeichner, 1991). Prepare for future learning by being aware of, articulating, and assessing their instructional decision-making (Bransford & Schwartz, 1999). Develop into a self-regulated learner engaged in learning from their own teaching (Darling-Hammond & Bransford, 2005). Experiment with instructional decisions in the classroom (Beeth & Adadan, 2006; Beck & Kosnik, 2002; Dewey, 1938; Grossman, 1995) while managing adverse effects to pupils.</p>
<p><i>Dual purpose</i> Student teacher does not recognize or balance the dual purposes of the practicum experience and fails to perceive them self as a learner and/or fails to balance experimentation with risks to pupils.</p>	<p>Negotiate and develop professional discourse, and strategically apply knowledge of teaching across diverse teaching and learning contexts (Rogoff, 2003). Develop the understanding that an effective solution for one particular situated problem may not necessarily suit another (Eilam & Poyas, 2006).</p>
<p><i>Context</i> Student teacher thinks that what works in one context will work across contexts and allows curriculum materials to dictate what and how content is taught without considering necessary changes to support pupils’ unanticipated needs before, during, or after teaching.</p>	

adaptations before, during, and after teaching. For adaptive teaching experts there is no such thing as a ‘best practice’ because what is best for one student in one context is not best for all students. The *context* problem is not merely an issue of differentiation, a pre-planned set of strategies employed to attend to wide-learning gaps between pupils in one classroom, rather the problem is that student teachers lack the understanding that an “effective solution for one particular situated problem may not necessarily suit another” (Eilam & Poyas, 2006, p. 338). Without being aware of the highly complex and contextualized environment, student teachers fail to use pupil cues to practice making necessary real-time changes based on pupils’ needs.

4. Leveraging discourse

The experiential nature of the practicum by itself will not help student teachers engage in types of learning that are necessary to prepare them for continuous learning from their teaching in the future (Liston & Zeichner, 1991). Instead, novices need to learn how to articulate self-assessments or produce justifications, which can be fruitful activities when attempting to develop adaptive teaching expertise (Darling-Hammond & Bransford, 2005; Hatano & Oura, 2003; Rogoff, 2003). Novices need guidance to develop this self-regulated process (Darling-Hammond & Bransford, 2005; Shulman & Shulman, 2004; Stones, 1987). University-supervisors act as “experts [who] notice features of situations and problems that escape the attention of novices” (Bransford et al., 2006, p. 25), and can articulate what they have noticed to help student teachers reflect on their practice in a way that would not be possible if student teachers were reflecting on their own. Without the activity of voicing internal metacognitive processes during conferencing, student teachers would “lack the capacity for learning from experience” (Shulman & Shulman, 2004, p. 264) and would become stymied in their pursuit of learning how to teach (Bransford et al., 2000, p. 12; Shin, Wilkins, & Ainsworth, 2006).

Discourse exchanged within supervisory conferences is complex. In the context of this study, discourse was defined as an exchange of dialog between the supervisor and student teacher, which includes feedback, information, opinions, judgments, rationales, explanations, praise, or suggestions. Specific types of discourse help student teachers learn about the process of learning how to learn from their teaching. Zeichner et al. (1988) described four main categories of discourse: factual, prudential, justificatory, and critical. The latter two discourse types are likely to promote student teachers’ engagement in reflecting and producing rationales or justifications for decision-making. Supervisors must use, and prompt student teachers to use, critical and justificatory discourse to help student teachers make and justify instructional decisions, engage in self-assessment by judging the merit of their choices, and develop instructional rationales based on evidence of pupil learning (Bransford & Schwartz, 1999; Christensen, 1988; Feiman-Nemser & Buchmann, 1986; Liston & Zeichner, 1991; Williams & Watson, 2004; Zeichner & Teitelbaum, 1982).

5. Supervision styles

Harrison, Lawson, and Wortley (2005) describe five mentoring (supervision) styles used during conversations with novices: *telling*, *active coaching*, *guiding*, *inquiry* and *reflecting*. Table 2 below is a slightly modified version of the original “Framework of Mentoring Styles” (p. 273).

Use of different supervision styles are apt to influence which type of discourse is exchanged because different styles rely on employing specific types of discourse. For example, *telling* is not likely to promote the critical reflective discourse aimed at

Table 2
Supervision styles.

Supervision style	Description
Telling	Supervisor offers tips, suggests areas for improvement, offers opinions, and judgments.
Active Coaching	Supervisor makes systematic interventions in the student teachers’ reflections on practice, allows the student teachers to articulate their experience and sifts out significant features, values and assumptions. Supervisor challenges student teachers’ versions of events and examines alternative possibilities.
Guiding	Supervisor is a critical friend and focuses on pupils’ learning rather than teaching performance. Questioning revolves around asking “why” rather than the “how” or “what” of teaching performance. Supervisor drives the process by examining and challenging the planning and intentions of the student.
Inquiry	Supervisor and student teacher operate together, through co-inquiry, to investigate the causes or possible solutions and to look for new situations in which to test ideas. They both draw on the evidence from the classroom. The supervisor allows the student teacher to take the lead in the evaluation.
Reflecting	Supervisor probes, questions and, while providing a fund of relevant contextual knowledge and experiences of their own in relation to critical reflection, allows the student teacher to engage in reflection and reflects on conditions and contributing factors.

developing adaptive expertise, since *telling* does not include the use of justificatory or critical discourse (Feiman-Nemser, 2012). Additionally, focusing on what happened and merely recounting a lesson will not produce opportunities to discuss the three types of novices’ problems that hinder the development of adaptive expertise. Table 3 below summarizes the alignment between discourse types, supervision style, novice problems and the theoretical framework.

6. Context and participants

Participants in this study were from the same public university on the mid-Atlantic coast of the United States of America. Undergraduate students majoring in elementary teacher education (ETE) attend a four-year, eight semester program including course work in content areas and teaching methodology. Students are dual certified. ETE majors earn certifications to teach elementary school. Second certifications are earned in either special education (disabilities) or a discipline-specific middle school area (ages 10–13).

Students complete three levels of field-based teaching experiences. In level one, students spend time working with individual pupils in tutoring relationships and observe cooperating teachers. In level two, students intermittently teach lessons to an entire class during three weeks of field experiences. The final level, the student teaching practicum, includes two full-time eight-week placements. Since every graduate earns two certifications, they must complete two student teaching placements. Students are first placed in an elementary school. Then, students who pursue dual certification in special education are placed in a special education environment while students who seek middle school certification finish their student teaching experience in a middle school. The same university-based supervisor is assigned to conduct field visits and conferences of the same cohort of student teachers throughout all field experiences.

6.1. Participants

University-based supervisors are full-time clinical faculty members in the School of Education. In addition to supporting

Table 3
Theoretical framework alignment.

Situated learning theory			
Perspective/Lens	Design	Unit of study	Coded Unit labels
<i>Situated learning</i> theory provides a framework for understanding educational practice via descriptions of systems in which individuals participate and develop their identities as contributors and learners along trajectories (Greeno, 1997).	When education researchers aim to describe the student teaching practicum and learning within the situation they use situated learning theory to support their use of <i>case study designs</i> (Crawford, 1996; Chalies et al., 2004; Shulman & Shulman, 2004).	The <i>conference discourse</i> is connected to the experience, encompassing the student teacher, the supervisor and the environment (Brown & Campione, 1990; Brown, Collins, & Duguid, 1989; Bruffee, 1999; Chalies et al., 2004; Lave & Wenger, 1991; Rogoff, 1994).	<i>Supervision style</i> (pilot data) Telling Active coaching Guiding Inquiry Reflecting <i>Discourse types</i> Factual Prudential Justificatory Critical <i>Novices' problems</i> Unquestioned Familiarity Dual purpose context

student teachers, supervisors design and implement the student teaching curriculum. The researcher purposefully selected three supervisors, from an initial pool of five volunteers, based on the greatest variation of supervision style, which was determined by collecting pilot data via researcher-observed conferences, conducting structured one-on-one interviews, surveying student teachers, and employing the use of a self-report ranking tool. Data collection instruments were developed based on the previously mentioned work of Harrison et al. (2005), which described five supervision styles: *telling*, *active coaching*, *guiding*, *inquiry* and *reflecting*. The three supervisors, that represented the greatest variation in style included, Dolly, Alice, and Sandra (all pseudonyms).

Although Tang and Chow (2006) posited that supervisors “need to choose appropriate supervisory approaches in order to address supervisees’ developmental needs and the nature of the supervision situations” (p. 1068), the supervisors in this study reported that they rarely augment their style. Pilot data was used to discern the supervisors’ styles before the study began and the consistency of style was confirmed over time. Table 4 summarizes findings from pilot data analysis.

Participants had worked at the University for a minimum of nine years, had at least ten years of k-12 teaching experience, and held a master degree (see Table 5).

6.2. Student teachers

One student teacher, paired with the three supervisors, was selected from two student teachers nominated by each supervisor. The purpose of the student teacher selection was to create a participant pool that included a range of student teaching placements. Indicators that were considered for the greatest variations were, grade level, subject matter, and school placement (see Table 6). Student teachers were all Caucasian females, were 20–21 years of age, and were considered to be of middle to upper middle socio-economic background.

Table 4
Supervisors’ styles based on self-report, student teachers’ perspectives, ranking tool and researcher’s observations of conferences.

Supervisor style from self-report	Supervisor style from student teachers’ perspectives	Style based on researcher Observations of conferences and interviews
Dolly (TELLING)	Dolly (REFLECTING)	Dolly (GUIDING)
Alice (REFLECTING)	Alice (GUIDING)	Alice (GUIDING)
Sandra (TELLING)	Sandra (TELLING)	Sandra (TELLING)

Table 5
University-based supervisors’ professional experiences.

Supervisor	K-12 teaching experience	Supervisory experience	Highest degree
Alice	>10 years	>30 years	Masters
Dolly	>10 years	>10 years	Masters
Sandra	>10 years	>10 years	Masters

6.3. Student teaching placements

Student teaching placements occur across several in-state school districts. Placements included pupil populations that were predominantly Caucasian and had moderate socio-economic status (middle class). All elementary school placements were inclusion model classrooms, which means that students with legally identified special learning needs were included with regular education students. In all cases, a special education teacher provided in-class support. Elementary class sizes ranged from seventeen to twenty-two pupils and the pupils’ ages ranged from seven to nine years old. Two middle school classrooms and one elementary special education classroom served as the second site for practicum placements. Each of the middle school placements used inclusion models and one used an academic tracking model where pupils were homogeneously assigned to classes based on their academic skill levels. Pupils’ ages in the middle school ranged from eleven to thirteen years old. The elementary special education classroom was a small learning environment for five young children with ages ranging from seven to nine.

Table 6
Student teachers and placements.

Student teacher	Placement 1 (8-weeks)	Placement 2 (8-weeks)
Eva	<i>Elementary A</i> Inclusion education ^a 3rd grade, 17 students	<i>Elementary B</i> Special education 2nd and 3rd grade, 5 students
Abby	<i>Elementary C</i> Inclusion education ^a 2nd grade, 18 students	<i>Middle school D</i> Inclusion Education ^a 6th Grade, 10–20 students
Chrissy	<i>Elementary E</i> Inclusion education ^a 3rd Grade, 22 students	<i>Middle school F</i> Inclusion and tracked ^a 8th Grade Math, 20 students

^a *Inclusion education* means that pupils with identified special education needs were taught in the same classroom. Usually a teacher certified in special education provided push-in support. *Tracked education* means that pupils are academically homogeneously assigned to the classroom.

Observations of teaching performances took place in the practicum classrooms and then the post-lesson observation conferences were held in small, private conference rooms, immediately after teaching performances. University-based supervisors observe one lesson and conduct one conference per week for each student teacher. Conferences between student teachers and supervisors generally last for 35 min and student teachers receive a supervisor-generated feedback form or other anecdotal notes at the conclusion of the conference.

7. Exclusion of the cooperating teacher

Discourse is also exchanged between cooperating teachers and student teachers (e.g., Borko & Mayfield, 1995; Feiman-Nemser & Buchmann, 1986; Griffin, 1999). However, this type of discourse was not included in this study. Contrary to the idea of life-long teacher learning and development, Borko and Mayfield (1995) found that cooperating teachers wanted to shorten the learning curve of student teachers by providing an abundance of advice. Unlike supervisors, cooperating teachers are sometimes not privy to university requirements, frameworks, or perspectives on teaching (Borko & Mayfield, 1995; Lyle, 1996). Additionally, Chalias et al. (2004) found that cooperating teachers try to avoid conflict and promote an environment of excessive neutrality, which makes them seem indulgent toward their student teachers. The immediate and persistent needs of the cooperating teacher's pupils may also hinder the cooperating teacher's flexibility and time to adequately address obstacles within the student teaching practicum (Lyle, 1996). Though cooperating teachers are required to provide feedback, the length, quality, and structure of conferences are not consistent. Additionally, the same cooperating teacher does not serve as a host teacher for more than eight weeks so the data collection timeline would have been limited. For these reasons, cooperating teachers were not included in this study.

8. Mode of inquiry and data sources

8.1. Design

Merriam (1998) defines a qualitative case study as “an intensive, holistic description and analysis of a single instance, phenomenon, or social unit” (p. 27). Discourse exchanged during supervisory conferences between dyads, were the case unit. A multiple-case study design was employed over a sixteen-week period with four data collection points, two in the first eight-week placement and two in the second eight-week placement. At each point, the researcher-observed each dyads' conference and conducted post-conference one-on-one interviews with all six participants. The four data collection points resulted in twelve observed and audio-recorded supervisory conferences and twenty-four one-on-one post-conference interviews (See Table 7).

To provide a description of what occurred during conferences, several sources of data and data collection tools were used. The data sources were audio recordings of the post-lesson observation conferences, audio recordings of the post-conference one-on-one participant interviews, student teachers' lesson plans, supervisor formative observation feedback forms, retrospective surveys, biographical surveys and field notes. Audio data were recorded using a digital recorder. Data related to body language and the physical features of the conference setting were collected via field notes.

Field notes were also used to guide the use of a semi-structured post-conference interview protocol through the development of “markers” (Weiss, 1994). Markers are defined as a “passing reference made by a respondent to an important event or feeling state” (Weiss, 1994, p. 77). Markers, traditionally noted when conducting

Table 7

Data collection dates for each dyad.

Supervisor	Dolly	Alice	Sandra
Placement 1	September 16, Week 3	September 9, Week 3	September 10, Week 3
	October 7, Week 6	September 30, Week 6	October 1, Week 6
	November 12, Week 11	November 4, Week 11	November 5, Week 11
Placement 2	December 3, Week 14	December 3, Week 14	December 2, Week 14

an interview and explored through the use of probes, were also recorded with field notes during the supervisory conference. Markers were also used as topics for probes during the one-on-one participant interviews. The interviews functioned as *member checking*; venues to affirm inferences made by the researcher (Weiss, 1994). Interviews were also used to probe for additional information related to opportunities for addressing novices' problems, as identified by the researcher. Excerpts from the one-on-one interviews are included in the findings section.

8.2. Coding

Units of analysis, or multiple sized coding segments, can be determined in a variety of ways including: turn-taking (Allwright, 1980), features of speech, speech acts, activities or events (Lampert & Ervin-Tripp, 1993). Descriptions of each of these coding segments are provided in Table 8 below. Two types of codes were assigned to conference observation data. A coding manual was developed to guide coding throughout data analysis. Analytic memos were also drafted between data collection weeks.

Audio recordings of conferences and semi-structured interview data were transcribed and coded using *a priori* codes (Lampert & Ervin-Tripp, 1993). After pilot data were collected and the supervisor style labels were assigned, two core coding categories were used: discourse type and novices' problems. Guba and Lincoln (1981) suggested that a set of categories is complete if there is a “minimum of unassignable data items, as well as relative freedom from ambiguity of classification” (p. 96). Therefore, data, which did not align within prescribed coding categories, but fell within coded discourse aligned with key problems, were stored in an “other category” and mined for additional codes and themes at the conclusion of the data collection cycle. Data were coded in two cycles. First, a sign system (Titscher, Meyer, Wodak, & Vetter, 2000) was applied when the researcher identified one of the three previously described problems during discourse exchanges. Second, the participants' turn-taking utterances (Allwright, 1980), which fell within the previously coded transcribed sections, were coded according to discourse types. Member checks were conducted

Table 8

Coding categories and units.

Coding category	Category codes	Coding unit
Discourse types	Factual	Turn-taking (Allwright, 1980)
	Prudential	
	Justificatory	
	Critical	
Novices' problems	Dual purpose	Sign (Titscher et al., 2000)
	Unquestioned familiarity	
	Context	

during one-on-one interviews with each participant after every supervisory conference.

8.3. Analysis

Taylor and Bogdan (1984) are cited as originally dividing qualitative data analysis into three phases: “discovery, coding, and discounting” (Anderson & Burns, 1989, p. 201). These three phases occurred throughout the data collection process via the constant comparative method. The transcripts of conferences were transcribed into a double columned analysis form to keep running code notes and write analytic memos (Eisner, 1998; Weiss, 1994). The constant comparison method (Merriam, 1998) was used to analyze data within and across cases and helped the researcher draw relationships between discourse types and problems by comparing newly coded data with previously coded data after each observation.

Critical discourse analysis (CDA) has been used to show the impact of “social practice” and “social relationships”, particularly in teacher development when attempting to find answers to “practical questions related to social behavior” (Titscher et al., 2000, p. 145, 147). Researchers who employ CDA borrow from the theories of Bakhtin (genre theory) and Althusser (ideology theory) to develop methods that enable the analyzer to ascribe “signs” or units of meaning to discourse (Titscher et al., 2000, p. 58). According to Titscher et al. (2000), semiotics, or the study of how meaning is constructed, provides a conceptual framework in which researchers view communication as linked signs with significant meanings while identifying “bridges” between “surface structure” (immediately accessible meanings) and “deep structure” (norms, values, or attitudes) (pp. 126–127). To explore the relationship between novices’ problems and discourse types, intermediary bridges between surface (e.g., discourse) and deep (e.g., novices’ problems) structures of meaning need to be constructed. Once signs, which only retain their meaning “through their position in a semiotic system” and their “distinctiveness from other signs” (p. 126), are coded as instances of discussed problems (opportunities to develop adaptive expertise) or not discussed problems (barriers to the development of adaptive expertise) they were then related to discourse types.

9. Design features contributing to trustworthiness

9.1. Confirmability

Rates of inter-coder agreement were used to contribute to confirmability of codes. A second coder, a fourth-year doctoral student at the university that served as the context for this study, was provided with a coding manual and was taught the coding scheme and process. In the first round of coding, the rate of inter-coder agreement was estimated to be 0.55 (Kappa coefficient) for discourse type codes. Though these results were considered moderate (Landis & Koch, 1977), it was decided that a negotiated approach would serve to further strengthen the coding scheme. In a negotiated approach, the researcher and second coder coded the transcripts and then discussed their codes to bring most coded messages into alignment. In this process negotiated agreement moved beyond inter-coder reliability toward a “state of intersubjectivity, where raters discuss, present, and debate interpretations to determine whether agreement can be reached” (Lampert & Ervin-Tripp, 1993, p. 6). After the negotiation period, the second coder independently coded a second set of discourse data and higher rates of agreement were attained. For the second round of coding, the inter-coder reliability for the discourse types was estimated to be 0.9 (Kappa coefficient). According to Landis and Koch (1977), Kappa values from 0.40 to 0.59, are considered moderate,

0.60–0.79 are taken as substantial, and 0.80, and above are considered outstanding.

9.2. Credibility

Credibility of inferences in this study was garnered through comparing data from field notes, interview transcripts, transcripts of supervisory conferences, supervisor formative observation feedback forms, and member checks. Since a case study is defined as an investigation of a “social phenomenon within its real-life context, using multiple data sources” (Anafara & Mertz, 2006, p. 40), collection from multiple pools of data was used to secure the credibility of posited inferences. The longevity of the study also supports its credibility. The data collection phase spanned the entire student teaching practicum and the four-collection points occurred at the beginning and end of both placements within one semester. This collection cycle accounted for two teaching contexts per dyad and contributed to a fuller understanding of what occurred during supervisory conferences.

9.3. Dependability

Dependability, rather than reliability, was supported through coding development. Data analysis is deemed dependable if inconsistencies in coding schemes or categorizations are identified (Bloomberg & Volpe, 2008). Inconsistencies in coding schemes and categories were flushed out during the data analysis phase and inter-coder reliability check. The use of the constant comparative method and negotiated coding helped to strengthen the dependability of the inferences drawn from the data. Since cross-case analysis showed a strong pattern, evidenced by the repetition of codes across all three dyads, the dependability of findings from this study were strengthened and will hopefully be deemed more useful by readers.

Miles and Huberman (1994) stated that “the meanings emerging from the data have to be tested for their plausibility, their sturdiness, their ‘confirmability’...otherwise we are left with interesting stories about what happened with unknown truth or utility (p. 22).” Confirmation of the coding schemes and categories was assessed through the use of second coder and by only using codes that were consistent across data from all three dyads.

9.4. Transferability

Finally, transferability instead of generalizability, is developed by persuasively guiding the reader to see applications of findings outside of the immediate context of the study. Merriam (1998) posited that reader or user generalizability “involves leaving the extent to which a study’s findings apply to other situations up to the people in those situations” (p. 211). As stated earlier, the student teaching practicum is a ubiquitous component of teacher education programs worldwide. The study attempts to highlight how the findings of this contextually bound qualitative study may apply to social situations within the student teaching experience at other universities. However, the transferability of these findings is left for the reader to determine. A summary of how the design of the study contributed to the credibility, dependability, and confirmability is provided below (See Table 9).

10. Findings and discussion

10.1. Supervision style

This section provides an overview of what the supervisors’ styles based on observation of supervisory conferences and follow-

Table 9
Contribution to trustworthiness.

Nature of trustworthiness	Data collection and analysis plan
Credibility	<ul style="list-style-type: none"> - Full transcription of recorded audio - Immediacy of probes for novice problems via 1v1 interviews - Length of data collection period - Symmetry of data collection period
Dependability	<ul style="list-style-type: none"> - Negotiated co-coding - Constant comparative method - Member checks
Confirmability/ Transferability	<ul style="list-style-type: none"> - Second coder to establish inter-coder agreement [Cohen's Kappa statistic: <i>discourse types</i>-0.90 <i>teaching-learning</i>-0.78 (estimated Kappa coefficients)] - Audit trail

up one-on-one interviews with participants. Overall, pilot data analysis resulting in the labeling a supervision styles was confirmed throughout the duration of the study (as previously explicated in Table 4).

10.1.1. Alice: guiding and reflecting

Each conference began with Alice asking Eva how she thought the lesson went. Eva would give an account of the lesson, including details about her plans and commentary about the pupils' progress. Alice would then ask what the learning objectives were for the lesson and prompt Eva to give explicit examples of how she assessed the pupils' understandings. If Eva began to stray from the topic of objectives, such as mentioning classroom management, Alice would assure her that they would discuss that topic shortly. After discussing the lesson objectives and assessment strategies, Alice would discuss each of the major domains that appear on the observation feedback form, which was designed based on Charlotte Danielson's framework (Danielson, 1996). Alice always read directly from the form and was sure to read back any direct quotes that reflected what Eva said during her lesson delivery. Alice explained that she did this because she was "holding up a mirror" for Eva to see herself. Alice was particularly adamant that Eva develop more detailed lesson plans with a stronger focus on her assessment methods and differentiated instructional strategies. Alice also shared, "I wanted to establish a rapport with her. So I try to make her feel comfortable." Throughout the conferences, Alice maintained a strict focus on collecting evidence of pupil learning and designing instruction based on pupils' needs.

Analysis of observation data showed that Alice's conferencing style matched the self-reported and student-reported data which resulted in labeling Alice's supervision style as *reflecting* and *guiding*. Alice sought to become a "critical friend" by building rapport and she continuously challenged Alice to refine her planning and articulate her intent through rationales and justifications (*guiding*). Additionally, Alice revealed that she served as a mirror for Eva and she provided opportunities for reflection on pupil needs (*reflecting*).

10.1.2. Sandra: telling

Sandra began each conference by asking Chrissy how the lesson went. Chrissy would share her ideas about the lesson and Sandra would encourage Chrissy to begin by discussing positive aspects of her lesson. Sandra always reserved her own opinion. Sandra shared her reasoning for this practice,

From past experience, if I tell the student teacher what I think first, they tend to just agree and then they have nothing to add or to say. I find that when I withhold my ideas, there is a better

chance of getting them talking about their strengths and weaknesses. They give me insights about how they are feeling.

After allowing Chrissy to describe the positive aspects of a lesson, Sandra would make comments about what Chrissy did well. Then, she would ask Chrissy to talk a little bit about what she would do differently next time. Sandra would share suggestions at this point. Finally, Sandra would reveal her observation notes. Conferences always ended with goal setting and Sandra encouraged Chrissy to use her own words when setting and writing goals. In response to how she felt about conferencing with Sandra, Chrissy shared,

Coming out of it I feel like if I just keep on doing what I'm doing I will be good. Sometimes I have doubts about myself as a teacher, but this really confirms that I'm doing what I'm supposed to be doing right now. And I'm good at it. It is a really good feeling.

Based on self-report and student teacher reports, Sandra's conferencing style was labeled as *telling*. This label was confirmed by the observation data. Sandra offered suggestions and prompted Chrissy to share her own strengths and weaknesses. Sandra also showered Chrissy with praise and judged Chrissy's performances as highly competent (*telling*).

10.1.3. Dolly: telling, reflecting, guiding

Dolly opened each conference with a discussion of Abby's emotional health, followed by asking Abby how she felt about the lesson. Abby would give a lengthy description of her lesson with Dolly interjecting questions toward the goal of clarifying or asking Abby to justify some instructional decision or give the origin of an idea or source of material. Then, Dolly would share a suggestion for improvement and connect Abby's experiences with her own (Dolly's) past experiences. Finally, Dolly would encourage Abby by praising her growth in the field and help her select and set goals for the following week. Conferences would typically conclude by Dolly asking Abby if she had any additional questions or concerns and by reminding Abby that she could call her or email her at any time. When asked to describe Dolly's conferencing practices, Abby shared,

She always tries to tell me that she's not there to critique me she's there to help me get better. I feel like she's there to kind of be my journal...she helps me figure out what I want to work on and for me it's a great way to reflect and to learn from that.

Dolly's observed conferencing practices matched the analysis of the self-report and student teacher reported data, which resulted in three style labels, *telling*, *reflecting*, and *guiding*. Dolly shared judgments about Abby's teaching and offered tips (*telling*), she shared her own teaching experiences as a way to inform refinements in Abby's practice (*reflecting*), and she encouraged Abby to share rationales for why she made particular instructional decisions (*guiding*).

10.2. What did opportunities to discuss the three problems look like?

This section provides descriptions of the ways in which supervisors capitalized on opportunities to discuss the three problems that novice student teachers encountered during student teaching.

10.2.1. Unquestioned familiarity

When a student teacher thinks that what is a familiar practice is what is most appropriate, the *unquestioned familiarity* problem occurs. Student teachers may imitate the teaching practices of others without questioning the value or usefulness (Feiman-Nemser & Buchmann, 1986). This problem damages opportunities to develop adaptive teaching expertise because student teachers do not make deliberate decisions in their application of teaching

methods or instructional techniques. Rather, they use what is familiar, missing out on learning how to strategically adapt their understanding of teaching and learning, a major tenet of adaptive teaching expertise. There were multiple instances of supervisors prompting student teachers to identify the source of a particular practice however there were much fewer instances of supervisors using justificatory discourse to discern the student teachers' reasoning behind their decision-making. If student teachers are not prompted to justify their decisions opportunities for developing adaptive expertise are lost.

Alice to Eva: I like how you refer to your students as friends. Is that something you have always done?

Eva to Alice: No, my cooperating teacher does it and I really like how it works. It creates such a positive environment. We really try to help increase social relations between the students, because they don't know how to do that. Calling everyone friends really helps them feel connected to each other.

The dialog above depicts an opportunity to explicitly address the importance of deliberate decision-making. Though the student teacher shared that she implemented the familiar, a potential novice problem, the student teacher was able to articulate multiple reasons, which justified her decision. Ideally, the supervisor would have discussed the importance of justifying decision-making so that the student teacher could continue the practice of questioning the familiar. This type of meta-conferencing, that is discussing the conference itself, would help to highlight the importance of using justificatory discourse to articulate conscious decision-making.

There were also instances when supervisors deliberately instructed their student teachers to follow the cooperating teachers' practices without discussing why the practices were beneficial.

Sandra to Chrissy: However your cooperating teacher has the classroom management system set up, use it. Don't hesitate; they will walk all over you.

Sandra stated that there would be negative consequences if Chrissy did not implement the cooperating teacher's management system, the pupils would take advantage of her novice status. However, the opportunity to discuss why the management system was useful was lost and so was the potential to understand the complex web of reasoning that prompts each teacher decision. The process of discussing decision-making for a given practice was non-existent.

10.2.2. *Dual purpose problem*

The *dual purpose* problem is obvious due to the dual purposes of the practicum classroom: the simultaneous education of student teachers and their pupils. The student teacher needs opportunities to discuss ways in which they have practiced balancing these two purposes while minimizing risk to their pupils. Experimenting with instructional decisions in the classroom promotes teacher learning (e.g. Beeth & Adadan, 2006; Beck & Kosnik, 2002; Dewey, 1938; Grossman, 1995). However, some experimental practices might have adverse effects on pupils. The need to balance student teacher experimentation and ensure positive pupil learning is difficult and forces the student teacher to recognize the duality of purposes. When student teachers are made to realize that they are situated to serve *dual purposes*, they can learn how to negotiate professional discourse with their cooperating teacher and jointly decide what types of experimental practices are deemed to pose the least risk to pupils. This negotiation process helps student teachers develop professional discourse and embark on development toward adaptive teaching expertise.

Abby explained that her cooperating teacher allowed her to manipulate the classroom climate but not the instructional planning or delivery. Most likely, Abby's cooperating teacher placed a premium on her pupils' learning and balanced Abby's need to experiment with decision-making by not allowing her to adjust the planned instructional program. Abby shared her concern with her supervisor Dolly. Dolly responded:

Dolly to Abby: You can ask her if you can help and help her co-lesson plan. But ultimately, we are guests in her classroom, so if she says no, then you have to get prepared as best you can as far as knowing the content and be sure to execute it the best you can.

In the dialog above, it is important to note that the coop might be modeling appropriate instruction, or she might not be. Either way, Dolly explicitly recognized that the pupils' classroom was not an environment that allowed the student teacher to freely experiment with teaching/instructional/management strategies. Dolly described the classroom as a place for pupils to learn, even though it was also a place where the student teacher was supposed to learn how to teach. Dolly's comment provided an opportunity for Abby to learn how to balance these *dual purposes*. The opportunity would be clearer if Dolly engaged Abby in a conversation about the cooperating teacher's decision-making related to balancing risk to pupils and the learning of the student teacher. During a follow-up interview with Dolly, the researcher asked about the cooperating teacher not allowing Abby the freedom to plan or co-plan. Dolly responded:

At the end of the day, it is their classroom, they're accountable to the parents, and we're in for a short period of time and then leave. I would never want a coop to say I forced them to let a student teacher take over and then the pupils' grades are really not up to where they need to be.

It is difficult to argue with Dolly's depiction of the classroom's contextual constraints as a learning environment for student teachers. Dolly could engage her student teacher in brainstorming multiple hypotheses for her cooperating teacher's decisions and develop and predict the impact of alternative decisions. Critical and justificatory discourse would be essential to this process.

10.2.3. *Context problem*

The *context* problem occurs when the novice student teacher is not aware that a variety of contextual aspects, such as student characteristics, physical classroom environment, cultural factors, and community setting, will likely impact his or her pupils' engagement with the instructional content (Eilam & Poyas, 2006). An adaptive expert teacher will acknowledge and make decisions based on contextual factors. Expert teachers will use this critical awareness to strategically apply his or her pedagogical knowledge when designing, implementing, and revising their instructional program (Rogoff, 1999; Sawyer, 2008). Due to the design of this particular university's teacher preparation program, student teachers had a unique opportunity to recognize deep contextual shifts because they all completed two eight-week placements in different schools.

When Chrissy completed her elementary school placement and moved to middle school she began to realize that each of her five sections of students had vastly different class personalities. She explicitly talked about ways in which the different groups of students changed the contextual dynamic of the classroom and that in turn, her instructional decisions needed to be different.

Chrissy to Sandra: The other section really challenges me, they are very chatty. I try to use reinforcements like using tickets. They are

the kind of class where they make comments and they have to get it out. That's the class where I have to get the pacing down.

In a one-on-one follow-up interview, the researcher probed Chrissy to discern if Chrissy was attempting to confront the *context* problem. Chrissy emphasized the students' skill levels as a contributing factor to the differences between her course sections and she recognized that pupils' diverse education needs impacted her instructional decision.

Chrissy to Researcher: It's the mix of students. I think they have an attitude that they don't want to be there and they don't like math. They have also had trouble with math in the past and they are carrying that attitude over here. These students were on the edge on the [state test] benchmark so they get extra time in math instruction.

Chrissy, like all novices, needed multiple opportunities to discuss ways in which she altered her decision-making before, during, and after teaching, based on the unique needs of her students. Critical and justificatory discourse must be used to help Chrissy process her learning experiences in ways that would lead to the development of adaptive expertise.

10.3. How often did conference participants capitalize on opportunities to discuss novice problems?

Table 10 provides a summary of the total amount of opportunities that conference participants discussed related to the three problems novices face when learning how to develop adaptive teaching expertise. There were a total of thirty-one opportunities to discuss the three key problems across all four-collection points for each dyad. The opportunities were divided into the three types of problems and were then split between two columns; discussed or not discussed. Numbers under the D (problem discussed) in Table 10 below indicate the number of times that a particular problem was discussed during a supervisor led conference. For example, if a student teacher and supervisor discuss that an instructional technique is effective for some pupils but not other pupils, this could lead to an understanding of the *context* problem. Conversely, the number under the ND (not discussed) indicates the number of times that a particular problem arose but was not discussed; an opportunity was missed. For example, if a student teacher discusses a best practice that will surely work for all pupils and the supervisor fails to provoke the student teacher to discuss instances when the practice actually might not be effective, the student teacher will develop a superficial understanding of highly contextualized problems and an opportunity to discuss the *context* problem would be missed.

More than half of the opportunities were missed, or not discussed (ND). Findings show that even though supervisor and student teacher pairs address certain problems during some conferences, they miss the opportunity to discuss the same problems during other conferences. This finding suggests that if adaptive teaching expertise is a learning goal, supervisors must be

Table 10
Capitalizing on opportunities to discuss novice problems.

D = problem discussed	Dolly/Abby		Sandra/Chrissy		Alice/Eva		Total	
	D	ND	D	ND	D	ND	D	ND
Unquestioned familiarity	1	2	2	0	3	0	6	2
Dual purpose	2	1	0	1	4	3	6	5
Context	2	1	2	1	4	2	8	4
TOTAL	5	4	4	2	11	5	20	11

consistently aware of the types of problems which, when discussed, are opportunities to learn how to develop adaptive teaching expertise.

10.4. Supervision styles and discourse types

Alice's use of the *guiding* and *reflecting* supervision style resulted in conferences, which yielded the most discussions of novice problems and opportunities to develop adaptive expertise. Dolly's use of *guiding*, *reflecting*, and *telling* supervision styles and Sandra's *telling* supervision style each resulted in less than half the amount of opportunities afforded during Alice's conferences. These results suggest that the *telling* conferencing style is not strongly related to opportunities for discussing novice problems in ways that contribute to the development of adaptive expertise. Seeking relationships between supervisory styles and discourse types helps to explain and strengthen this finding. Critical and justificatory discourse types are necessary to use when a supervisor requires that a student teacher articulate internal decision-making processes (Zeichner, Liston, Mahlios, & Gomez, 1988) and judge the value of decisions (Feiman-Nemser, 2012). These types of discourse are aligned with *guiding* and *reflecting* supervision styles. Table 11 summarizes the alignment between conference style and discourse type and shows relationships to the number of opportunities to discuss novices' problems.

Overall, when opportunities to discuss the three key problems arose, all three supervisors did not systematically employ critical or justificatory discourse types. This finding is similar to other findings from discourse analyses focused on supervisory conferences (Chalies et al., 2004). Infrequent use of critical and justificatory discourse is problematic since these types likely contribute to the development of adaptive teaching expertise. Similarly, overuse of *telling* impedes the likelihood of critical and justificatory discourse and limits the possibility of discussions related to the three novices' problems. If the majority of the discourse is centered on how the student teacher feels, recounting the lesson, and giving advice, as is typical of the *telling* style, than opportunities to discuss the complexities of learning how to teach and discovering the deep rationales behind decision-making are non-existent.

10.5. Conferences as a context for learning: supervision style

Findings of this study support the claim that supervisory conferences provide a space to take advantage of opportunities to develop adaptive teaching expertise. However, the conference is not systematically leveraged to address or discuss these problems. Even when opportunities to discuss novices' problems arose, supervisors spent the majority of conferences recounting what happened, asking student teachers to discuss how they felt, helping the student teacher build confidence, and giving advice. Though these types of activities may contribute to teacher learning, they do not require student teachers to justify their instructional decisions, discuss how the context of the classroom impacted their decisions, or explain how they balanced their own learning with risks to pupils. These are instrumental competencies, which contribute to adaptive teaching expertise. Findings suggest that a closer look at supervision styles, which foster opportunities to discuss the complex work of teaching

Table 11
Supervision style and opportunities to discuss novice problems.

Supervisor	Style	Discourse types aligned with style	Number of opportunities
Alice	Guiding	Justificatory, critical	16
Dolly	Guiding, telling, reflecting	Justificatory, critical, prudential, factual	9
Sandra	Telling	Prudential, factual	6

and learning to teach, may yield a framework for teacher educators to learn how to use conference discourse to help novice teachers make sense of a ubiquitously required experiential learning opportunity.

11. Contributions and significance

Though others point to the critical need for teachers to develop adaptive expertise (Baroody & Dowker, 2003; Berliner, 2001; Borko & Livingston, 1989; Darling-Hammond & Bransford, 2005), it is important to note that currently, most adaptive expertise literature is related to expertise in a *content* area (Hatano & Oura, 2003). This study functions as one step toward highlighting the critical connection to the types of discourse and supervision styles, which can be used to help facilitate the development of adaptive teaching expertise during field experiences. This study also carried a strong level of ecological validity due to the real-life real-time contextual setting in which data were collected, which other researchers have not yet garnered. Though researchers have described what adaptive teaching expertise looks like in controlled experiments, often with computer simulations, (e.g. Lin et al., 2005; Lin & Lehman, 1999) few have described opportunities to develop adaptive teaching expertise over time or in real-life contexts. Ultimately, this study generated support that supervisors can purposefully employ discourse types and supervision styles so that student teachers learn to articulate their rationales and justifications for decision-making, balance their own learning while managing risks to pupils, and deliberately use contextual and pupil cues to make adjustments to their instructional decisions.

12. Future research

Though this study provided evidence that specific supervision styles, discourse types, and discussion of novices' problems provide key learning opportunities, the data yielded connections to only three of the five supervision styles. Other styles and style combinations need to be empirically investigated. Additionally, assessment methods to measure the development of adaptive teaching expertise are elusive. There are currently no known assessment measures for adaptive teaching expertise (Sawyer, 2006). Teacher performance evaluation tools measure what teachers know and are able to do but do not measure the invisible and complex web of thinking and decision-making behind what teachers do. New teacher assessment tools such as the Teacher Performance Assessment (TPA) designed under the direction of Darling-Hammond, may provide the opportunity to capture this critical data by requiring pre-service teachers to write a planning and lesson delivery commentary (<http://scale.stanford.edu>). This data could be used to help guide teacher educators' field instruction and conferencing practices.

The need for developing adaptive teaching expertise is growing. "Not only are the demographics and classrooms changing but so too is our knowledge of the social, technical, and natural world...as a consequence, teachers must adapt (Cochran-Smith & Feiman-Nemser, 2008, p. 146)." Teacher educators and teacher researchers must rigorously investigate the multiple routes toward developing adaptive teaching expertise and collectively decide how to teach, measure, and promote the competencies that define an adaptive teaching expert.

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